Towards Elimination of Vertical Transmission of HIV: Utilisation of HIV and Sexual and Reproductive Health Interventions by Female Sex Workers in Kenya and South Africa

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Abstract

Given their high risk of HIV and unintended pregnancy, female sex workers (FSWs) have high and sustained risk of vertical transmission of HIV during pregnancy, delivery or breastfeeding. Prevention of Mother To Child Transmission (PMTCT) is a four-prong approach to reducing vertical transmission. It includes HIV prevention in women of childbearing age, utilisation of family planning services for HIV infected women, completion of the PMTCT cascade (ANC attendance, HIV counselling and testing, ART for infected mother, ARV prophylaxis and correct feeding practices for the for uninfected infant) and providing care, ART and support to HIV-infected mothers and their children who are living with HIV. Paper A reports on results of a multivariate logistic regression carried out on routine clinic data from drop-in centres serving FSWs in Kilifi and Mombasa counties in Kenya. The analysis found high utilisation of family planning but relatively low utilisation of PrEP. Overall, FSWs with more self-reported sex acts per week and thus higher risk for pregnancy had greater utilisation of family planning suggesting a good level of risk perception. FSWs with more self-reported sex acts per week and thus higher risk for HIV had lower utilisation of PrEP suggesting barriers to acceptability of PrEP. Geographical disparities were noted with odds of PrEP utilisation in Mombasa being higher than in Kilifi reflecting the sparse distribution of facilities offering PrEP in Kilifi and difficulty accessing these clinics due to higher poverty rates. Odds of family planning utilisation in Kilifi was higher than in Mombasa reflecting the secondary benefits of family planning research underway in Kilifi. The analysis found that PrEP utilisation does not appear to vary by the peer educator workload which may suggest PrEP hesitancy and a preference for more familiar HIV prevention methods. Utilisation of family planning was greater amongst those with a higher peer educator workload possibly reflecting understanding of, need for and acceptance of family planning. Paper B reports on findings of in-depth interviews carried out amongst FSWs in Port Elizabeth, South Africa to understand the barriers and facilitators to PMTCT cascade completion, as well as their experiences when participating in a peer mentorship programme. Cascade completion was inhibited by lack of knowledge, low socioeconomic status, substance use, and various intersecting stigmas. Facilitators included support from family and friends, desire to protect their own health and that of their children, and the ease of use of interventions. Benefits of peer education programmes included increased knowledge and utilisation of PMTCT services, personal development, and relationship building between FSWs and with their families. Mentors noted experiencing self-improvement and a sense of fulfilment from participating in the programme, however, being a mentor took an emotional toll and left them with a sense of helplessness when faced with insurmountable mentee challenges. Strategies to increase knowledge and acceptability of interventions include building health literacy to improve individuals' ability to understand and critically analyse health information, and improving patient-provider dynamics to improve transmission of important information. FSWs' programmes should include treatment for mental ill-health and substance use, and development of tailored, informed interventions that address the complex and overlapping correlates of psychological morbidity. Health care workers and the community at large should be sensitised on the plight of key populations to reduce stigma, for example through trainings and community health education programmes. Further, advocates should engage decision makers to encourage them to adopt less punitive sex work legislation and, in the case of South Africa, streamline legislation around migrant access to care. The public health system should be strengthened by increasing national funding to address shortages in human resources and improve the quality and accessibility of health facilities. Lastly, peer education programmes should be evaluated to ensure that they are sustainable and transformative, tackling key issues such as self-stigma and financial security.

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Acronyms

3TC	Lamivudine
ACASI	Audio Computer-Assisted Self-Interview
AG	Attorney General
AGYW	Adolescent Girls and Young Women
AIDS	Acquired Immunodeficiency Syndrome
AMREF	Africa Medical and Research Foundation
ANC	Antenatal Clinic
API	Active Pharmaceutical Ingredients
APO	Adverse Pregnancy Outcomes
ART	Antiretroviral Therapy
ARV	Antiretroviral
AZT	Zidovudine
BHESP	Bar Hostess Empowerment and Support Programme
BPG	Benzathine Penicillin G
BV	Bacterial Vaginosis
CAB LA	Long-acting cabotegravir
CASP	Critical Appraisal Skills Programme
CBT	Cognitive Behavioural Therapy
CCC	Comprehensive Care Centres
CCR5	C-C chemokine Receptor type 5
CHW	Community Health Worker
CI	Confidence Interval
CMD	Common mental health disorders
CMM	Community-based mentor mothers
CPR	Contraceptive Prevalence Rate
CrAg	Cryptococcal Antigen
CSW	Creative Space workshops
CT	Chlamydia trachomatis
CTOPA	Choice On Termination Of Pregnancy Act
DFID	Department for International Development
DICE	Drop-In Centres
DMPA-SC	Subcutaneous Depot Medroxyprogesterone Acetate
DNA	Deoxyribonucleic Acid
DPV-VR	Dapivirine Vaginal Ring
EAC	East African Community
EBPHP	Evidence Based Public Health Policy And Practice
eGFR	Estimated Glomerular Filtration Rate
EID	Early Infant Diagnosis
EMMS	Essential Medicines and Medical Supplies
ESARO	East and Southern Africa Regional Office
FGD	Focus Group Discussion
FP	Family Planning
FSW	Female Sex Worker
GBV	Gender Based Violence
GCP	Good Clinical Practice
GFATM	Global Fund to Fight AIDS, TB and Malaria
GGR	Global Gag Rule
HBM	Health Belief Model

HBsAg	Hepatitis B surface Antigen
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HEI	HIV Exposed Infants
HIV	Human Immunodeficiency Virus
HRBA	Human-Rights-Based Approach
HSRC	Human Sciences Research Council
HSV-2	Herpes Simplex 2
HTC	HIV Testing and Counselling
IBBSS	Integrated Bio-Behavioural Surveillance Survey
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICRH-K	International Centre for Reproductive Health, Kenya
IDI	In-Depth Interviews
IMF	International Monetary Fund
IPV	Intimate Partner Violence
IRB	Institutional Review Board
IUD	Intrauterine devices
IUS	Intrauterine System
JRF	Joseph Rowntree Foundation
KAYP	Key Adolescent and Youth Populations
KDHS	Kenya Demographic Health Survey
KEMSA	Kenya Medical Supplies Authority
KES	Kenya Shillings
KMPDB	Kenya Medical Practitioners and Dentists Board
KNASP	Kenya AIDS Strategic Plan
KNBS	Kenya National Bureau of Statistics
KZN	Kwa-Zulu Natal
LARC	Long-Acting Reversible Contraception
LGBTQI+	Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex
LHW	Lay Health Workers
LMIC	Low- and Middle-Income Countries
LNG	Levonorgestrel
m4RH	Mobile 4 Reproductive Health
MEMS	Medication Event Monitoring System
MERL	Monitoring, Evaluation, Research and Learning
MFA	Maternal-Foetal Attachment
MPH	Master of Public Health
MSEM	Modified Socioecological Model
MSM	Men who have Sex with Men
MTR	Multiple-Tablet Regimens
NASCOP	National AIDS and STI Control Programme
NDoH	National Department of Health
NG	Neisseria Gonorrhoeae
NGO	Non-Governmental Organisation
NHI	National Health Insurance
NICE	National Institute for Health and Care Excellence
NVP	Nevirapine
OASH	Office of the Assistant Secretary for Health
OECD	Organisation for Economic Co-operation and Development
OHSC	Office of Health Standards Compliance

OPA	Organisational and Policy Analysis
OR	Odds Ratio
PAHO	Pan American Health Organisation
PE	Peer Educator
PEARL	PMTCT Effectiveness in Africa: Research and Linkages to Care
PEP	Post-Exposure Prophylaxis
PEPFAR	United States President's Emergency Plan For AIDS Relief
PLHIV	Persons Living with HIV
PMA	Performance Monitoring for Action
PrEP	Pre-Exposure Prophylaxis
PWID	People Who Inject Drugs
SADC	Southern African Development Community
SADHS	South African Demographic Health Survey
SAHMS	South African Health Monitoring Survey
SAHPRA	South African Health Products Regulatory Authority
SAL	Structural Adjustment Loans
SAP	Structural Adjustment Programmes
SMS	Short Message Service
SOP	Standard Operating Procedures
SRH	Sexual and Reproductive Health
SRHR	Sexual and Reproductive Health and Rights
SSA	Sub-Saharan Africa
STI	Sexually Transmitted Infection
STR	Single-Tablet Regimens
SW	Sex Worker
SWEAT	Sex Workers Education and Advocacy Task Force
SWOP	Sex Workers Outreach Programme
TAPS	Treatment And Prevention for Sex workers
TasP	Treatment As Prevention
TB	Tuberculosis
TDF/FTC	Tenofovir/emtricitabine
TG	Transgender
THC	TB/HIV Care
TOP	Termination Of Pregnancy
TOT	Training of Trainers
TPB	Theory of Planned Behaviour
TV	Trichomonas Vaginalis
TWG	Technical Working Group
UHC	Universal Healthcare Coverage
UIC	Unique Identifier Code
ULMO	Understanding Leadership, Management and Organisations
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UPFS	Uniform Patient Fee Schedule
USD	United States Dollars
USPHS	United States Public Health Service
UTT	Universal Test and Treat
VL	Viral Load
VMMC	Voluntary Medical Male Circumcision

VOICE	Vaginal and Oral Interventions to Control the Epidemic
VRC	Violence and Recovery Centre
WB	World Bank
WHO	World Health Organisation
Wits RHI	Wits Reproductive Health and HIV Institute
YWSS	Young Women who Sell Sex
ZAR	South African Rand

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I am grateful to my mother and to my siblings for tirelessly supporting and encouraging me over the years.

My deepest appreciation goes to my husband and daughter, Charlie and Michelle. Thank you for your patience, understanding and unconditional love and support.

Dedication

This thesis is dedicated to the memory of my father, Amb. J.P. Mbogua.

DrPH Integration Statement

This integrating statement summarises my learning process over the course of my Doctorate in Public Health (DrPH) studies beginning in September 2016. The DrPH degree offers a combination of theoretical and practical knowledge on leadership, management, and research.

Prior to enrolment in the DrPH and following completion of my Master of Public Health (MPH) degree in 2005, I worked in policy research for 3 years and HIV prevention clinical research for 8 years. My decision to apply for the DrPH programme stemmed from my interest in evidence-based research but also my interest in translating research to policy.

The DrPH consists of three components: the taught component, the Organisational and Policy Analysis (OPA) project and the research project. The taught component took place between September and December 2016, the OPA attachment from April to June 2017 and the research project from February 2019. I began this degree as full-time student however changed to part-time studies in May 2018.

Taught Component

During the first 10 weeks at the LSHTM, I attended the taught component which comprised of two core modules namely, Evidence Based Public Health Policy And Practice (EBPHP) and Understanding Leadership, Management and Organisations (ULMO). The aim of the EBPHP course was to enable students to locate, assess, synthesise, present, and use research-based information to influence public health policy and improve public health in a range of settings. The ULMO course explored management and organisational theories and how they might be applied to studying organisations and to the students' professional practice as managers. The ULMO course also included a three-day retreat in which students had the opportunity to reflect on their personal development and career planning.

For the EBPHP module students were required to submit two assignments. The first assignment involved preparation of a strategy designed to get a research driven issue onto the policy agenda of a Ministry of Health. My issue of interest was obesity/overweight in Kenya, and my strategy of choice was implementation of a sugar tax. For the second assignment, students were required to conduct a systematic review and write a policy brief on "Early Warning Systems". For this assignment, I conducted a systematic review to investigate the performance of infectious disease surveillance systems, specifically, to determine how well the surveillance systems were able to detect disease outbreaks, and the impact of interventions introduced to improve existing surveillance systems.

For the ULMO module students also submitted two assignments. The first was a strategic analysis of an organisation. I chose to conduct a strategic analysis of the Wits Reproductive Health and HIV Institute (Wits RHI) in Johannesburg, South Africa, an organisation I had worked at prior to joining the DrPH programme. The second assignment required students to develop a Personal Development Plan. This involved identifying our career and personal goals and objectives, selecting activities to undertake to achieve these goals and objectives, determining indicators of success and support/resources needed, and setting target dates.

Organisational and Policy Analysis (OPA) Project

The OPA attachment was undertaken from April 2017 to early August 2017 at the United Nations Population Fund East and Southern Africa Regional Office (UNFPA ESARO) in Johannesburg, South Africa where I was engaged as an intern. The analysis, writing and revision of the OPA report lasted another 12 months.

Prior to the OPA, I had an interest in the sex worker (SW) population, specifically delivery of services to them. UNFPA ESARO was a prime choice for the OPA as within the United Nations (UN) family and amongst regional technical partners, they are the organisation mandated to take the lead on HIV prevention for key populations, including SWs. UNFPA ESARO had developed a technical and programmatic guide that defines a minimum package of advocacy and programmatic interventions to strengthen combination HIV prevention outcomes for SWs. The overall aim of my project was to evaluate the organisation's effectiveness in supporting implementation of interventions targeting female, male and transgender SWs in South Africa and to provide recommendations for improvement.

Through semi-structured interviews, document reviews and meeting observations, I gained a deeper understanding of the organisation's internal environment as well as any external factors that either contributed to or created barriers to implementation of interventions for SWs. I provided recommendations to enhance the capacity of UNFPA to support implementation of interventions for SWs. These included:

- Elimination of silos and streamlining systems within the organisation to improve coordination
- Sensitisation of staff around SW issues and ensuring they have technical capacity to perform their roles
- Exploring additional fundraising options to offset the reduction in donor funding
- Identifying ways to deliver services to hard-to-reach SW populations
- Enhancing the capacity of public facilities to deliver services to SWs, for example through promoting uptake of international guidelines at the local level and formation of a community of practice to streamline development of guidelines
- Supporting negotiations for block procurement to reduce financial burdens to countries in the region
- Advocating for changes in sex work legislation.

Research project

My initial topic of interest was "Barriers and facilitating factors to Prevention of Mother-To-Child-Transmission (PMTCT) knowledge and cascade completion by Female Sex Workers in Zambia and South Africa". My interest in this topic stemmed from my work prior to joining the DrPH programme. Specifically, I had been working at the Wits Reproductive Health and HIV Institute (Wits RHI) where I managed a pre-exposure prophylaxis (PrEP) and early treatment demonstration project amongst female sex workers (FSWs) in Gauteng province, South Africa. During my time there, I noted that in most programmes there was no discussion on the health outcomes of the children of FSWs. Further, there is minimal research into FSWs' experiences as HIV infected mothers in need of PMTCT despite their high and sustained risk of vertical transmission of HIV.

For the qualitative component I obtained data from the Johns Hopkins School of Public Health (JHSPH). The data was collected through in-depth interviews (IDIs) carried out amongst 36 FSWS in Port Elizabeth, South Africa between October and November 2018. The quantitative component of the study was to use secondary data from Population Council, specifically, data collected amongst FSWs during the Integrated Bio-Behavioural Surveillance Survey (IBBSS) conducted across four districts in Zambia, namely Lusaka, Livingstone, Ndola and Solwezi.

I upgraded on 29 November 2018 and received conditional approval without the need for a second upgrade. I wrote and submitted a revised document addressing concerns raised by committee members and received final confirmation of my passing the upgrading on 08 February 2019. Approval from the LSHTM ethics committee was obtained on 11 February 2019. Unfortunately, upon receipt and review of the IBBSS data in March 2019, I discovered that it would not be feasible to use the dataset as there were many gaps in the data. I therefore set out to find another dataset to use for the quantitative component. After searching for some months, I settled on secondary data from the International Centre for Reproductive Health, Kenya (ICRH-K), specifically, data from an HIV and SRH service delivery programme for FSWs in Kilifi and Mombasa counties at the coast of Kenya. Following discussions with the ICRH-K team we noted that it would be useful to not only consider PMTCT but also other HIV and sexual and reproductive health (SRH) services, such as PrEP and family planning. Considering this, I revised the title of my research to "Utilisation Of HIV And Sexual And Reproductive Health Interventions By Female Sex Workers In Kenya And South Africa for Maternal and Child Welfare". In May 2020, I submitted an amendment to the LSHTM Ethics form informing them of the change in datasets for the quantitative component, as well as the decision to expand the research to include additional HIV and SRH services. Ethics approval from the LSHTM ethics was obtained on 19 June 2020. Local approval for use of ICRH-K data was granted by the Africa Medical and Research Foundation (AMREF) on 16 April 2021. Following my viva in March 2023, I have since revised the title of the thesis to 'Towards Elimination of Vertical Transmission of HIV: Utilisation of HIV and Sexual and Reproductive Health Interventions by Female Sex Workers in Kenya And South Africa'.

Conclusion

The core modules, OPA and the research project completed during the DrPH programme provided me with a broad range of knowledge and skills. The academic excellence and support provided at the school broadened my understanding of the subjects covered and prepared me for a career as a public health leader.

Structure of the Thesis

Chapter 1 provides the background to the research. This includes the HIV/SRH burden in Kenya, South Africa and globally, the HIV/SRH prevalence amongst sex workers, factors associated with their increased risk, health interventions available and global targets. The chapter goes on to present the research question as well as the study aims and objectives, and a justification for the research. Information about the datasets used, the settings where the research took place, the programmes they are linked to, and the ethical considerations are provided. The chapter concludes with information on the conceptual framework utilised for the research.

Chapter 2 provides a review of existing literature on barriers and facilitators to use of PrEP and family planning, as well as PMTCT cascade completion amongst FSWs in Africa. The section begins with an overview of the search strategy used to identify the literature used. It goes on to provide information on global HIV guidelines interventions, including PMTCT. It then provides a breakdown of the four PMTCT prongs, focusing on PrEP (prong 1), family planning (prong 2) and PMTCT cascade completion (prong 3), including barriers and facilitators to utilisation of these PMTCT interventions identified in the literature, and posited reasons for these barriers and facilitators.

Chapter 3 provides the methodology used. It starts off with an overview of the quantitative component of the thesis, methods used, including recruitment and training, data collection, preparation, and analysis. Next it provides an overview of the aims of the qualitative component of the thesis, background of the programme from which the data was obtained, methods used, design of the data collection tools, recruitment and training of interviewers, participant sampling and recruitment, data collection and analysis. The chapter closes with information on the ethical considerations, specifically, details about the institutions that approved the research, the informed consent process (for the qualitative component) and how participant confidentially was maintained.

The first manuscript (Chapter 4) looks at the association between PrEP and family planning utilisation and number of weekly sex acts by FSWs attending drop-in centre clinics in Coastal Kenya. This paper also looks at how differing peer educator workload impacts service utilisation . Strengths and limitations of the research are presented, as well as recommendations based on the findings of the research.

The second manuscript (Chapter 5) looks at barriers and facilitators to completion of the PMTCT cascade by FSWs Port Elizabeth, South Africa, and the impact of peer mentorship of utilisation of interventions. The manuscript also discusses the experiences of both mentees and mentors participating in the mentorship programme. Strengths and limitations, as well as recommendations are provided based on the findings of the research.

The thesis concludes with a discussion (chapter 6) which includes a summary of the overall findings from each of the papers, recommendations, areas for future research, strengths and limitations, and my conclusions.

References are found in chapter 7.

The appendices (chapter 8) include information about Termination of Pregnancy legislation in South Africa and Kenya, the literature review summary table, policies around migrant access

to health care, information about health service fee schedule in South Africa, data collection tools used for the qualitative and quantitative components, and copies of ethical clearance documents.

1 Study Background

1.1 Introduction

1.1.1 Global HIV/SRH Burden

In 2019, an estimated 38 million people were living with HIV worldwide. With an estimated 20.7 million people infected, East and Southern Africa accounts for more than half (54%) of people living with HIV globally. In the same year, there were 730,000 new infections in the region, just under half of the global total. South Africa accounted for more than a quarter (200,000) of the regions new infections, while seven other countries accounted for more than 50% of new infections: Mozambique (130,000), Tanzania (77,000), Uganda (53,000), Zambia (51,000), Kenya (42,000), Malawi (33,000) and Zimbabwe (40,000) (UNAIDS, 2020c).

Globally, there is also a high sexual and reproductive health (SRH) disease burden. For example, between 2010 and 2014 an estimated 44% of pregnancies worldwide were unintended[1] (Bearak *et al*., 2018). In each of those years, an estimated 25 million unsafe termination of pregnancies (TOPs) took place, with almost all occurring in developing countries. Approximately 8 million of those TOPs were carried out in the least-safe or dangerous conditions (Ganatra *et al*., 2017). In 2012, it was estimated that there were approximately 357 million new cases of four curable sexually transmitted infections (STIs) among people aged 15–49 years (Newman *et al*., 2015). Lastly, estimates published by the World Health Organisation (WHO) indicate that about 1 in 3 women worldwide have experienced either physical and/or sexual intimate partner violence (IPV) or non-partner sexual violence in their lifetime (WHO, 2021e).

1.1.2 National HIV/SRH burden in Kenya and South Africa

HIV burden

In Kenya, an estimated 4% of persons aged 15-49 years were infected with HIV in 2021, down from 5.7% in 2010. New infections (all ages) dropped by 52% from 73,000 in 2010 to 35, 000 in 2021, and there was a 61% decrease in the number of AIDS-related deaths (all ages) from 56,000 to 22,000 deaths in the same period (UNAIDS, 2022).

In South Africa, an estimated 18.3% of persons aged 15-49 years were infected with HIV in 2021, up from 16.3% in 2010. The number of new HIV infections (all ages) decreased by 51%, from 430,000 to 210,000 between 2010 and 2021, and AIDS-related deaths (all ages) decreased by 73% from 190,000 to 51,000 deaths in the same period (UNAIDS, 2022).

Prevalence of curable STIs

According to the 2016 South African Demographic Health Survey (SADHS), 5% of women aged 15-49 years reported that they had an STI in the 12 months before the survey; 9% had a bad smelling, abnormal discharge, and 4% had a genital sore or ulcer. Overall, 12% of women either had an STI or symptoms of an STI during the 12 months before the survey (NDOH *et al*., 2019). The estimated female prevalence was 6.6% for gonorrhoea, 14.7% for chlamydia

[1] Unintended pregnancy refers to a pregnancy occurring when a woman is not planning to have any (more) children, or a pregnancy that occurred earlier than desired (UNFPA, 2022).

and 0.5% for active syphilis, and incidence per 100,000 adult person-years was 16,100 for gonorrhoea, 14,400 for chlamydia and 153 for active syphilis (Kularatne *et al*., 2018).

There is limited research on the prevalence of STIs in Kenya among women in the general population, however two studies showed a high prevalence of curable STIs. Specifically, a study of women attending a family planning clinic in Nairobi found that 13% of female respondents tested positive for chlamydia trachomatis, 0.4 % trichomonas vaginalis and 0% gonorrhoeae (Maina *et al*., 2016).Another study conducted among pregnant women in a rural county hospital in Kilifi, Kenya found that, based on lab results, 20.8% had a curable STI (14.9% for chlamydia, 1.0% for gonorrhoeae, 7.4% for trichomonas vaginalis), while 19.3% had bacterial vaginosis and, upon physical examination, 2.5% had genital ulcers (Masha *et al*., 2017).

Perinatal transmission of HIV and other STIs

HIV

In Kenya, vertical transmission rate including during breastfeeding was 8.9% in 2021, down from 10.4% in 2015. In 2021, there were 5200 new infections among children (0-14 years) compared to 17,000 in 2010, and 3100 AIDS related deaths among children, down from 15,000 in 2010 (UNAIDS, 2022).

In South Africa, vertical transmission rate was 3.5% in 2021, down from 5.1% in 2015. In 2021, there were 3900 new infections among children (0-14 years) compared to 10,000 in 2010, and 2800 AIDS related deaths among children compared to 18,000 in 2010 (UNAIDS, 2022).

Syphilis

Approximately 40% of babies born to women with untreated syphilis can be stillborn or die from the infection as a new-born. Babies born with congenital syphilis can suffer adverse outcomes including bone damage, anaemia, enlarged liver and spleen, jaundice and nerve problems (CDC, 2021). Not only can perinatal transmission of syphilis lead to intrauterine foetal demise and morbidity, but it can also facilitate HIV acquisition thereby impeding progress towards eMTCT (Mati *et al*., 2019).

In 2021, 87% of women accessing ANC in Kenya were tested for syphilis, and 1.14% of those who were tested were positive for syphilis, and 71.6% of the syphilis positive ANC attendants received treatment.

In 2020, just 0.4% of South African women accessing ANC were tested for syphilis. Data on positive syphilis tests for 2020 were not available, however, in 2019, 0.08% of antenatal attendants were positive for syphilis and 71.7%% syphilis positive ANC attendants received treatment (WHO, 2022b).

Hepatitis B

Without any interventions, the risk of vertical transmission of Hepatitis B ranges from 70-90% in women with a high Hepatitis B virus (HBV) viral load, and from 10-40% in women with a low viral load. Chronic infection occurs in majority of infants perinatally infected which can lead to liver disease, cirrhosis or liver cancer (WHO, 2020a). A systematic review and meta-

analysis showed a pooled HBV prevalence of 6.5% amongst pregnant women in Kenya (Makokha *et al*., 2023). A study in KwaZulu-Natal (KZN) found a 5.3% HBV prevalence amongst HIV-infected women attending antenatal clinics (Thumbiran et al., 2014). Another study amongst HIV-uninfected women in Cape Town found that 4.5% were positive for the Hepatitis B surface antigen (HBsAG) (Chotun et al., 2017).

Unintended pregnancy

A common outcome of unmet need for contraception is unintended pregnancy. The Performance Monitoring For Action (PMA) survey found that, in Kenya, 58% of pregnancy were intended and 42% unintended. Of the 42% unintended pregnancies, 30% were mistimed and 12% not wanted (PMA Kenya, 2019). The 2019 South African National Antenatal HIV Sentinel Survey found that 51.6% of pregnancies in the study were unintended, 35.9% were intended, and 12.5% of participants were ambivalent about their pregnancies (Woldesenbet et al., 2021).

Unsafe termination of pregnancy

Unintended pregnancies often result in pregnancy terminations, also referred to as abortion in this document. Abortion is safe if it is carried out using a WHO recommended method that is appropriate to the pregnancy duration and by someone who has the necessary skillset to perform it safely (WHO, 2021a).

In South Africa, SRH rights are enshrined in section 27 of the Constitution, which states that "everyone has the right to access health care services, including reproductive health care" (Republic of South Africa, 1996b). Further, under the 1996 Choice On Termination Of Pregnancy Act (CTOPA) women in South Africa, regardless of age or marital status, have the right to have an abortion on request until the 12th week of pregnancy and with certain conditions before the 20th week (Republic of South Africa, 1996a). Services are offered both at government facilities (free of charge) and non-government facilities (Lafort *et al*., 2017). Legalisation of abortion in 1996 resulted in an immediate decrease in abortion related morbidity, especially in younger women (Jewkes et al., 2005). However, challenges to access to safe abortion remain including women's lack of knowledge about their rights under CTOPA, lack of accessible information on where to obtain an abortion, geographic disparities in accessibility of abortion services (Favier *et al*., 2018) and providers' moral and religious views and associated stigma (Harries, 2020). As a result, some women in South Africa continue to seek abortions outside of designated facilities. Prevalence of unsafe abortion is difficult to quantify (Hodes, 2016), however, it has been estimated that 50% of abortions in South Africa occur outside of designated health facilities (HEARD, 2016). A study conducted amongst 42 women in Cape Town who had sought informal sector abortion services found that (81%) reported having had one informal sector abortion within the past 5 years, 14% reported having had two, and 5% reported having had three (Gerdts et al., 2017). Unsafe abortion remains one of the major causes of maternal morbidity and mortality, and it is believed that the figures are underreported due to cause of death misclassification, for example, deaths being attributed to HIV instead of abortion (NDOH, 2019a).

In Kenya, abortion is regulated by Article 26(IV) of the constitution which states that: "abortion is not permitted unless, in the opinion of a trained health professional, there is need for emergency treatment, or the life or health of the mother is in danger, or if permitted by any other written law" (GoK, 2010). As highlighted in Appendix 8.1, even where a trained

professional sees the need for abortion, they are difficult to implement without threat of legal repercussions for both the patient and the health provider. As such, access to safe TOP in Kenya is severely limited (Luchters *et al*., 2016). The estimated annual incidence of TOP is 48 per 1,000 women of reproductive age (APHRC *et al*., 2013) and approximately 13% of maternal deaths in Kenya are as a result of unsafe TOPs (NCAPD, 2010) although, given that TOP is restricted, it is possible the true TOP rate and contribution of unsafe TOP to maternal mortality are much higher (Hussain, 2012).

Violence

According to the 2022 Kenya Demographic and Health Survey, 34% of women in Kenya experienced physical violence from the age of 15 years. The percentage of women who experienced physical violence in the 12 months prior to the survey declined from 20% in 2014 to 16% in 2022. With respect to sexual violence, 13% of women in Kenya reported that they had experienced sexual violence at some point in their lives, and 7% reported that they had experienced sexual violence in the last 12 months before the survey (KNBS, 2022). In South Africa, 21% of ever partnered women reported ever experiencing physical violence by any partner, 6% had ever experienced sexual violence by any partner, and 17% have ever experienced emotional violence by any partner. Overall, 26% of ever-partnered women had experienced physical, sexual, or emotional violence by a partner (NDOH *et al*., 2019).

1.1.3 Key Populations

Key populations are defined "groups who, due to specific higher-risk behaviours, are at increased risk of HIV irrespective of the epidemic type or local context. Also, they often have legal and social issues related to their behaviours that increase their vulnerability to HIV" (WHO, 2016). Key populations include sex workers (SWs), men who have sex with men (MSM), transgender (TG) people, people who inject drugs (PWID), prisoners and other incarcerated persons (UNAIDS, 2018). These populations frequently lack adequate access to health services and there is increasing awareness of the need to ensure they are reached and retained in care (UNAIDS, 2014a).

1.1.4 Definition of a Sex Worker

The Joint United Nations Programme on HIV/AIDS (UNAIDS) defines sex workers as "female, male and transgender adults (18 years of age and above) who receive money or goods in exchange for sexual services, either regularly or occasionally" (WHO *et al*., 2012). Transactional sex, on the other hand, is defined as "non-marital, non-commercial sexual relationships motivated by an implicit assumption that sex will be exchanged for material support or other benefits. Most women and men involved in transactional sex relationships consider themselves as partners or lovers rather than sellers or buyers" (see Table 1.1) (UNAIDS, 2018).

Table 1.1: Sex Work vs Transactional Sex

Sex work	Transactional Sex
• Self-identifies as sex worker • Money or goods explicitly exchanged • Often little shared emotional intimacy • Exchange of money or goods for sex often occurs at the time of sex	• Does not self-identify as sex worker • Exchange of money or goods implicit in sexual relationship • Often at least some shared emotional intimacy • Provision of money or goods may be temporally disassociated from sex (may occur before or after)

Source: (Wamoyi et al., 2019)

This research included women who self-identified as sex workers.

1.1.4.1 HIV/SRH burden amongst Female Sex Workers (FSWs)

HIV

Female sex workers (FSWs) generally have higher incidence and prevalence of HIV than the general public due to greater exposure to risk factors. For example, globally the risk of acquiring HIV for FSWs is 21 times higher than for adult women aged 15–49 years (UNAIDS, 2019a). Even in very high prevalence countries, HIV prevalence among FSWs is much higher than among the general population. For example, in low- and middle-income countries HIV prevalence was estimated to be 13.5 times greater among FSW as compared to other women of reproductive age (Baral et al., 2012). In Kenya, the 2018 AIDS Response Progress Report reported an HIV prevalence of 29.3% amongst FSWs compared to 6.2% amongst females in the general population aged 15-49 years (NACC, 2018), while HIV prevalence among FSWs in Port Elizabeth, South Africa is nearly three-fold the national prevalence amongst adult women (61.5% versus 23.7%) (Schwartz, 2017; UNAIDS, 2017).

STIs

FSWs also have higher prevalence of STIs. For example, the 2013-2014 South African Health Monitoring Survey (SAHMS) study found the prevalence of syphilis in FSWs to be 9.6% in Cape Town, 16.2% in Johannesburg, and 3.3% in Durban (UCSF, 2015). This was compared to a prevalence of just 0.5% amongst women in the general population in 2017 (Kularatne et al., 2018). In the Kenyan town of Kisumu, 83.8% of FSWs tested positive for Herpes Simplex 2 (HSV-2); and 3.4% were diagnosed with active syphilis; prevalence of Neisseria Gonorrhoeae (NG) and Chlamydia trachomatis (CT), Trichomonas Vaginalis (TV) and Bacterial Vaginosis (BV) were 5.9%, 3.4%, 13.6% and 27.0%, respectively. A further 5.6% presented with genital ulcers (Vandenhoudt et al., 2013). When left undiagnosed and untreated, STIs can result in serious complications and sequelae, such as pelvic inflammatory disease, infertility, ectopic pregnancy, foetal loss, congenital infections and cancer (WHO, 2021d).

Vertical Transmission of HIV and other STIs

More than two-thirds of FSW in sub-Saharan Africa have children (Scorgie *et al*., 2012), and many sell sex during pregnancy (Schwartz *et al*., 2015; Rwema *et al*., 2019). Their high HIV prevalence, sustained antenatal exposure to HIV and other STIs and pervasive barriers to care (Schwartz *et al*., 2015) puts them at higher risk of vertical transmission of HIV and other STIs, such as HBV and syphilis, which can result in a spectrum of adverse outcomes, including foetal loss or stillbirth or, in a liveborn infant, neonatal death, prematurity, low birth weight or congenital syphilis (Gomez *et al*., 2013; Boothe *et al*., 2020).

Unintended pregnancy

In sub-Saharan Africa, unplanned pregnancies among FSWs range from 28.6% in Ethiopia (Weldegebreal *et al*., 2015) to 69.0% in Côte d'Ivoire (Schwartz *et al*., 2015) . In Mombasa, FSWs were reported to have a 51.2% lifetime rate of unintended pregnancy (Simmelink *et al*., 2022), while in Port Elizabeth, 71% of FSW who had ever experienced a pregnancy reported it to be unplanned (Parmley *et al*., 2019b). Unintended pregnancies are associated with negative health outcomes including low-birth weight and increased risk of infant mortality (Hall *et al*., 2017). They are also associated with social and economic consequences, including decreased ability to work and loss of income (Luchters *et al*., 2016). Many FSWs have dependents to support and as such an unintended pregnancy would result in increased financial dependence on sex work which may add to already high levels of stigmatisation (Khan *et al*., 2009; Luchters *et al*., 2016; Ampt *et al*., 2018) and HIV risk.

Unsafe Termination of Pregnancy (TOP)

Unintended pregnancies often result in pregnancy terminations, also referred to as abortion in this document. FSWs in Mombasa reported a lifetime abortion prevalence of 11.9% (Simmelink et al., 2022), while a study in Port Elizabeth found that 71% of the FSW had ever experienced a pregnancy reported it to be unplanned (Parmley *et al*., 2019b). Due to the legislation barriers in Kenya, abortions are often unsafe. An unsafe abortion refers to "when a pregnancy is terminated either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards, or both" (WHO, 2019). A study amongst FSWs in Mombasa, Kenya found that 29.1% had their most recent abortion in the informal sector such as at home, a pharmacy or traditional healer (Simmelink *et al*., 2022). Despite the existence of laws permitting pregnancy terminations in South Africa, FSWs continue to seek unsafe terminations due to challenges with accessibility and stigma from staff at health facilities (Mutandiro, 2022).
As noted earlier, unsafe abortions are associated with complications, including substantial loss of blood and/or haemorrhaging, prolonged pain and illness, immobility, and infertility (Schwartz, *et al*., 2015). Despite knowledge of the associated dangers and associated psychological trauma, self-induced and unregulated terminations still occur illustrating the impact of unintended pregnancy amongst this population (Luchters, *et al*. 2016).

1.1.5 Risk Factors for Heightened SRH burden amongst FSWs

The heightened SRH burden amongst FSWs is due to a number of risk factors, including inconsistent and improper condom use, violence (Deering *et al*., 2013; Kelvin *et al*., 2013; Mooney *et al*., 2013; Pack *et al*., 2014), criminalisation of sex work (UNAIDS, 2010; Acacia Shields, 2012; WHO *et al*., 2012) stigma and discrimination (King *et al*., 2013), lack of

programmes for FSWs (UNAIDS, 2014b) and substance use (Strathdee *et al*., 2011), as highlighted below.

Inconsistent and improper condom use

FSWs have comparatively high numbers of sexual partners compared to women in the general population, however it is inconsistent and incorrect use of condoms that puts them at higher risk of unplanned pregnancy, HIV and other STIs. Inconsistent use of condoms is often due to power imbalances that limit FSWs ability to negotiate condom use with clients (WHO, 2016). For example, some FSWs acquiesce to demands for condomless sex if clients offer to pay more money (Sadati *et al*., 2017). Research has also shown that FSWs are significantly more likely to have unprotected sex with regular (non-paying) partners than with clients (Allen *et al*., 2003; Zhao *et al*., 2008; Stoebenau *et al*., 2009) and as such, relationships that are perceived to be the most intimate impart the greatest health vulnerability (Stoebenau *et al*., 2009). Condom failure is also a common occurrence amongst FSWs, for example, a study amongst FSWs in Cape Town, South Africa found that 90% of the respondents confirmed having experienced condom breakage at some point while working as FSWs, and 85% reported encountering situations of condom slippage. Of those who experience breakage or slippage, 36% continued the sexual encounter with their clients to the end, even after noticing that the condom was broken or had slipped off, and 53% reported doing nothing within the 24 hours after noticing that the condom had failed (Mukumbang, 2017) as opposed to seeking medical care, such as post-exposure prophylaxis (PEP).

Stigma

There have been varying definitions of stigma over time. Stigma was first described an "an attribute that is deeply discrediting and that reduces the bearer from a whole and usual person to a tainted and discounted one" (Goffman, 1963). Stafford (1986) proposed that stigma is “a characteristic of persons that is contrary to a norm of a social unit”. Persons who are stigmatised “possess or are believed to possess some attribute, or characteristic that conveys a social identity that is devalued in a particular context" (Crocker, 1998). Lastly, stigma is “the result of a process in which a series of interrelated components combine, namely identification and labelling of human differences, stereotyping in which the labelled person is linked to undesirable characteristics, placing of labelled people into distinct categories to separate "them" and "us", and loss of status and discrimination” (Link, 2001).

Entrenched stigma towards FSWs and resultant harassment, marginalisation and lack of social support can contribute to higher transmission of HIV and other STIs (WHO *et al*., 2017). For example, FSWs are often neglected or denied services by providers at health facilities (UNAIDS, 2014c). FSWs also avoid health services for fear of harassment which prevents them from accessing essential HIV prevention information, voluntary HIV/STI testing and other sexual and reproductive health services thereby undermining public health efforts (Amnesty International, 2016b).

Violence

FSWs face workplace violence and intimate partner violence (IPV) (WHO *et al*., 2013). For example, 50.9% of FSW respondents, in the South African Health Monitoring Survey (SAHMS), reported that they had been physically abused in the preceding 12 months while 21.9% had been sexually assaulted or raped (UCSF, *et al*., 2015). This is as compared to the

general population where 13% of women experienced emotional, physical, or sexual violence by a partner in the past year (NDOH *et al*., 2019). Violence is a key driver of HIV infection in women and girls (UNIFEM, 2010). For example, modelling estimates in Kenya and Ukraine showed that a reduction of approximately 25% in HIV infections among FSWs may be achieved when physical or sexual violence is reduced (Decker *et al*., 2013). Reasons for increased infection include the fact that coerced sex is rarely protected (Beattie *et al*., 2010) putting the victim at risk of unintended pregnancy and possibly resulting in injuries that can increase the transmission of STIs, including HIV (Miller, 2003). Secondly, men who are sexually violent may be more likely to have multiple partners and be infected with HIV and/or STIs (Van der Straten *et al*., 1995; Dunkle *et al*., 2006; Decker *et al*., 2009). Thirdly, the fear of violence from regular partners (such as husbands and boyfriends) due to inadvertent disclosure of sex work can deter FSWs from negotiating condom use with these partners and from accessing sexual health services (Evans, 2008; Panchanadeswaran *et al*., 2008). Lastly, mental health morbidity arising from violence can reduce the ability of FSWs to negotiate condom use and to access health services (Beattie *et al*., 2010). Violence is also a consequence of HIV infection (UNIFEM, 2010). Stigma towards HIV-infected FSWs can manifest as violence, lack of access to care, marginalisation and repressive laws and policies (NSWP, 2015).

Criminalisation of sex work

FSWs lack legal protection due to criminalisation of sex work (WHO *et al*., 2013) as the illegality of sex work in most countries makes it difficult to report incidences of violence to the authorities (Gable, 2008; Rhodes *et al*., 2008) thereby allowing violence to continue unchecked (Beattie *et al*., 2010). This includes extrajudicial abuse from the police, including rape and bribes. In addition to struggling to negotiate condom use due to power dynamics, FSWs may even avoid carrying condoms as they are often used as "evidence" of law-breaking (Peters, 2015). The repeated cycles of arrest, incarceration, and release can be socially and economically destabilising (Strathdee *et al*., 2015).

Limited access to FSW-friendly facilities

As a marginalised population, FSWs require specialised programmes sensitive to their needs. Such FSW-friendly facilities generally have more privacy, friendlier personnel, perceived higher quality of care and shorter waiting times (Lafort *et al*., 2016). However, historically, across sub-Saharan Africa such programmes have generally been small, local-level efforts (WHO *et al*., 2012). Most are based in urban areas therefore access to care for FSWs in rural areas is limited (Makhakhe *et al*., 2019). Further, most have not evolved to adequately address informal sex workers, as well as mobile- and internet- based sex workers (Wilson, 2015). As such, FSWs mostly access HIV/SRH services at public health facilities, with proximity to facilities being an important factor (Lafort *et al*., 2016), however, discrimination of FSWs is common in these facilities. (Scorgie *et al*., 2013).

Substance use

Research has shown that FSWs have higher rates of substance use than women in the general populations. For women who are drug dependent or inebriated, self-efficacy for negotiating condom use or safer injection use may be compromised. Further, drug withdrawal may lead FSWs to acquiesce to clients' demands for unprotected sex thereby increasing their risk of HIV infection (Strathdee *et al*., 2011). People who inject drugs (PWID) are often targets of violence

resulting in their being driven out of shared venues into hidden communities which further complicates delivery of risk reduction services to them thereby putting them at higher risk of HIV infection (Lambdin *et al*., 2013).

Migration status

A study conducted amongst FSWs in three South African cities (Johannesburg, Rustenburg and Cape Town) noted that sex work constitutes an important livelihood activity for migrant women as 85.3% of the FSWs were migrants (39.0 % internal and 46.3 % cross-border migrants) (Richter *et al*., 2014) (see Figures 1.1 and 1.2). Clients' demands for "fresh faces" (Thomas, 1993) has been cited as a reason for migration. Other factors that lead to migration include poverty (Murrugarra *et al*, 2011), and strained familial relations. Upon arrival in urban areas, lack of economic opportunities, or social and economic support, as well as encouragement from peers doing sex work, desire for money and small luxuries, and early experimentation with selling sex leads to dependence on the relatively high income afforded by the sex trade. Dropping out of school has also been cited as a critical first step on their path to the city and, eventually, to sex work (Onyango *et al*., 2015).

Figure 1.1: Place of origin of internal migrants according to research site

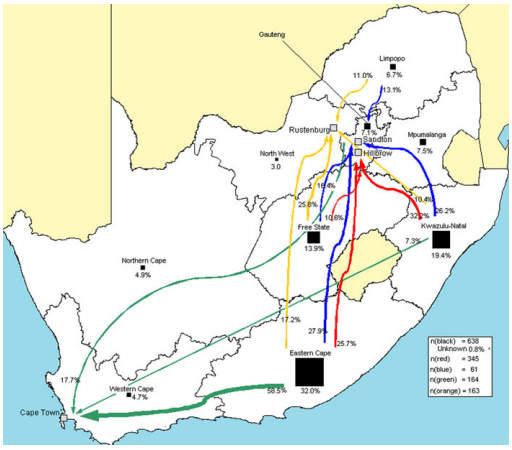
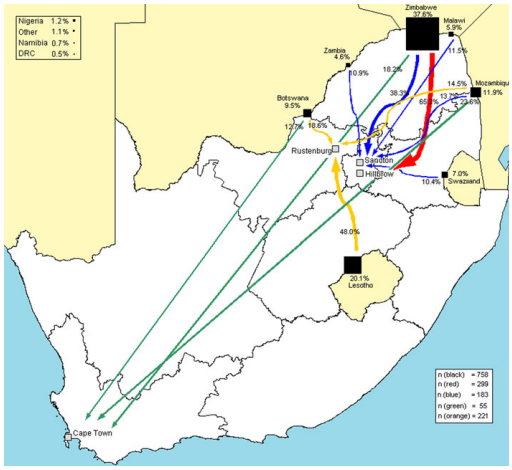


Figure 1.2: Place of origin of cross-border migrants according to research site



[From (Richter et al., 2014) "Migration Status, Work Conditions and Health Utilisation of Female Sex Workers in Three South African Cities"].

Migrant FSWs (internal or external) in lower-income countries have been found to have higher HIV risks than FSWs who are non-migrants (Platt *et al*., 2013). This may be as a result of their inability to obtain access to needed services possibly due to lack of legal status and associated fear of authorities (UNAIDS, 2009), negative attitudes and practices of health professionals towards migrants (Crush, 2011), language barriers and trauma experienced during border crossings (Teagle, 2014).

1.1.6 HIV/SRH Interventions

International Guidelines around SRH/HIV interventions

According to the WHO, sexual health interventions include comprehensive education and information; prevention and control of HIV and other STIs; sexual function and psychosexual counselling gender-based violence prevention, support and care.

A comprehensive package of health services is recommended for HIV prevention. This package should include a mix of evidence based biomedical, behavioural, and structural interventions designed to meet the HIV prevention needs of individuals and communities so as to have the greatest impact on reducing new HIV infections. Biomedical interventions include prevention of vertical transmission, pre-exposure prophylaxis (PrEP), condoms and lubricants, HIV testing, antiretroviral treatment for all (including for Treatment as Prevention, TasP), post-exposure prophylaxis (PEP), voluntary medical male circumcision (VMMC) and needle and syringe programmes. Structural interventions include decriminalisation of HIV transmission and of key populations, addressing gender issues, including and gender-based violence, and establishing laws to protect rights and interventions to reduce stigma and discrimination. Behavioural interventions include counselling on reduction, comprehensive sex education, peer education programmes and social marketing campaigns (WHO, 2021b).

For HIV treatment, in 2016 the WHO recommended initiating ART for all people living with HIV regardless of WHO clinical stage and at any CD4 cell count. This includes infants diagnosed in the first year of life, as well as pregnant and breastfeeding women even if identified late in pregnancy or postpartum so as to reduce maternal viral load and chances of vertical transmission. In 2017 WHO also recommended that ART be initiated within seven days of HIV diagnosis and same-day ART initiation be offered to those who are ready to start (WHO, 2021b).

Reproductive health interventions include contraception counselling and provision; antenatal, intrapartum and postnatal care; fertility care; and safe abortion care (WHO, 2017).

1.1.7 National commitments to key populations

Kenya

The Kenya AIDS Strategic Framework II (KASF II) calls for "prioritisation of combination prevention interventions with equal emphasis on structural, biomedical and behavioural interventions". In acknowledgement of their elevated risk, the strategic framework recommends a minimum standard package of services for FSW, MSM, PWID and Transgender People. This includes behaviour change interventions including PrEP, peer education, condom and lubricant programming, comprehensive SRH services, including STIs, harm reduction interventions for drug use, addressing stigma, discrimination and violence, interventions for

young key populations, community empowerment, prevention and management of co-infections and co-morbidities, and differentiated HIV testing (facility, community and self-test) (NACC, 2021a). The National AIDS and STI Control Programme (NASCOP) has developed various guidelines around care for key populations, including the 2010 National Guidelines for HIV/STI Services for Sex Workers (NASCOP, 2010) which recommended behavioural, biomedical and structural interventions for sex workers, as well as interventions to address psychological and social harms of sex work, and interventions for sexual partners of sex workers. NASCOP also developed the 2014 National Guidelines for HIV/STI Programming with Key Populations (NASCOP, 2014). This consistent support and action from the government over the years has helped scale up key population programming in Kenya (Musyoki *et al*., 2021).

South Africa

The South African government launched the first National Sex Worker HIV Plan (NSWP) 2016-2019 in 2016. The plan recommended six packages of interventions, namely peer education, health care, psychosocial services, human rights, social capital building and economic empowerment (SANAC, 2016b). In 2019, the National Sex Worker HIV, TB and STI Plan (NSWP) 2019-2022 was launched (SANAC, 2019), building on lessons learnt from the first sex worker plan and in line with the National Strategic Plan for HIV, TB and STIs (NSP) 2017-2022. Both the NSWP 2016-2019 and the NSWP 2019-2022 called for decriminalisation of sex work which would alleviate barriers to health service utilisation. The South African National Strategic Plan for HIV, TB, STIs, 2017 - 2022 recommends "a comprehensive package of high-impact, context-tailored, carefully targeted combination prevention interventions", and calls for all key and vulnerable populations to be reached with "customised and targeted HIV prevention interventions" (SANAC, 2019). The South African National Integrated Sexual and Reproductive Health and Rights Policy (Edition 1) seeks to increase quality and access to comprehensive integrated SRH services. The policy advocates for attention and inclusion, of sex workers and other populations including all adolescents, young women and girls, sex workers, LGBTQI+, migrants, people with disabilities, young men and male partners of women seeking SRHR services, and survivors of sexual violence. (NDOH, 2019b).

Service Delivery to Key Populations

In Kenya, key populations can access health services through both the public and private sector. Drop-in Centres (DICEs), also known as "safe spaces" are also available for key populations to access care. These are facilities where key population community members can go for SRH/HIV services and to get referrals (NASCOP, 2016). Similarly, in South Africa, sex workers can access services through both public and private facilities, however, there are clinics that specifically target this population, such as the Wits RHI sex worker programme which offers health services in Johannesburg and Pretoria (UNAIDS, 2017a).

As part of the 2gether 4 SRHR programme, both Kenyan and South African governments have intensified efforts to strengthen the capacity of health facilities to provide quality integrated sexual and reproductive health and rights (SRHR) services for all people, particularly adolescent girls, young people, and key populations (UNAIDS et al., 2021). Challenges remain, however, for example, a study in Kenya found that, despite the existence of polices and strategies for integration, services are not consistently integrated and there is a tendency for health care workers to refer patients, rather than to embrace integration due to providers'

lack of capacity or confidence to provide different services and/or donor funding targeting separate interventions (Kachale *et al*., 2022).

1.2 SRH/HIV Global Targets

1.2.1 Sustainable Development Goals

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity (UN General Assembly, 2015). The 17 SDGs were designed to end poverty, hunger, AIDS, and discrimination against women and girls (UNDP, 2021). Health related targets are capture in SDG 3 which seeks to ensure healthy lives and promote wellbeing for all at all ages (including universal access to HIV prevention services, SRH services and drug dependence treatment and harm reduction services). Additional HIV related targets under SDG 3 include ending AIDS as a public health threat by 2030 (target 3.3) and achieving universal health coverage, access to quality health care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all (target 3.8).

1.2.2 UNAIDS Fast Track Strategy to Ending AIDS by 2030

The UNAIDS Fast Track Strategy to Ending AIDS by 2030 was launched in 2014. The strategy sought to reduce new HIV infections and AIDS-related deaths by 90% by 2030 as compared to 2010. Specifically, it aimed to reduce new annual HIV infections to fewer than 500,000 by 2020 and to fewer than 200,000 by 2030 – ending AIDS as a public health threat. It was centred around the 90-90-90 for treatment and prevention targets, that is by 2020, 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and 90% of all people receiving antiretroviral therapy will have viral suppression. The UNAIDS 'Fast-Track' Strategy ran from 2014 until the end of 2020.

Table 1.2: HIV Testing and Treatment Cascade - Progress by 2020

	People living with HIV knew their HIV status	People diagnosed with HIV on treatment	People receiving ART achieved who viral suppression
Kenya			
All ages	96%	86%	81%
Children (0-14 years)	84%	84%	73%
Women (15+ years)	99%	91%	86%
Men (15+ years)	92%	77%	72%
South Africa			
All ages	92%	72%	66%
Children (0-14 years)	75%	47%	33%
Women (15+ years)	94%	78%	72%
Men (15+ years)	91%	63%	58%

Source: (UNAIDS, 2021b)

With respect to the target of 90% of persons living with HIV knowing their status, the target was not met for children (0-14 years) in both Kenya and South Africa. With respect to the target of 90% of people diagnosed with HIV being on treatment, only women (15+ years) in Kenya met the target. None of the sub-populations in either Kenya or South Africa met the target of 90% viral suppression (UNAIDS, 2021b).

1.2.3 "Start Free, Stay Free, AIDS Free" initiative

In 2015, the "Start Free, Stay Free, AIDS Free" initiative, a joint effort between PEPFAR and UNAIDS, set bold goals of reducing the number of children newly infected annually to less than 40,000 by 2018 and 20,000 by 2020. It also sought to reach and sustain 95% of pregnant women living with HIV with lifelong HIV treatment by 2018. However, in 2020 an estimated 150,000 children became newly infected with HIV (although this represented a decrease from 280,000 in 2010), and only 85% of pregnant women living with HIV were on ARVs (UNAIDS, 2021a).

Table 1.3: Start Free, Stay Free, AIDS Free - Progress to date in Kenya and South Africa

	2015	2020	2022
Kenya			
Percentage of pregnant women living with HIV with lifelong ART	86%	94%	91%
Number of newly infected children	10.4%	9.7%	8.9%
South Africa			
Percentage of pregnant women living with HIV with lifelong ART	94%	97%	96%
Number of newly infected children	5.1%	3.9%	3.5%

Sources: (UNAIDS, 2021b, 2022)

1.2.4 2025 AIDS Targets

In December 2020, the 'Fast-Track' Strategy was replaced by a new five-year plan, the '2025 AIDS Targets' which focus on ending AIDS as a public health threat by 2030. The 2025 targets focus on three interlinked areas – the enabling environment (the 10s), service access (the 95s), and service integration – with at-risk communities and people living with HIV at the centre (UNAIDS, 2020a).

Figure 1.3: 2025 AIDS Targets

Source: (UNAIDS, 2020a)

The 95s' call for 95% coverage of PMTCT services, 95% testing, treatment and viral suppression targets, 95% access to combination prevention services and 95% access to SRH services.

The 10s' call for the removal of societal and legal barriers to HIV services. By 2025:

- Less than 10% of countries should have punitive laws and policies in place that target people living with HIV or marginalised populations
- Less than 10% of people experience stigma and discrimination
- Less than 10% of people experience gender inequality or violence.

The integration target calls for 90% of people living with HIV and people at heightened risk of HIV being linked to services important for their overall health. These include mental health, preventing and addressing gender-based violence (GBV), sexual reproductive health and rights, communicable and non-communicable disease services.

Table 1.4: AIDS 2025 - Progress by 2022 in Kenya and South Africa (95s)

	Kenya (2022)	South Africa (2022)
95% Testing	94%	94%
95% on Treatment	94%	75%
95% Viral suppression targets	89%	69%
95% coverage of PMTCT services	90%	98%

Source: (UNAIDS, 2023)

The available data for 2022 shows that Kenya had achieved 94% testing, 94% on treatment and 89% virally suppressed, while 90% of pregnant or breastfeeding women living with HIV were on treatment. South Africa had achieved 94% testing, 75% on treatment and 69% virally suppressed. 98% of pregnant or breastfeeding women living with HIV were on treatment *(UNAIDS, 2023)*.

1.3 Prevention of Mother-To-Child Transmission (PMTCT) interventions

Elimination of Mother to Child Transmission (eMTCT) refers to a global initiative to reduce the incidence of mother to child transmission, MTCT (or vertical transmission) in a defined geographical area to zero. Currently reducing MTCT to zero is difficult in most settings therefore the goal of eMTCT initiatives is to ensure availability of services to maintain MTCT at a very low level such that it is no longer a public health problem.

EMTCT would be achieved by implementation of Prevention of Mother- To-Child Transmission (PMTCT) interventions. PMTCT interventions include four prongs, that is:

- Prong 1: HIV prevention amongst women of childbearing age
- Prong 2: Family planning services for HIV infected women
- Prong 3: Provide ART to prevent vertical transmission during pregnancy, labour, or breastfeeding
- Prong 4: Provide care, ART and support to HIV-infected mothers and their children who are living with HIV (WHO, 2007).

This research is on preventing HIV transmission to children who are not infected therefore will focus on Prong 1, 2, and 3.

1.3.1 Prong 1: HIV Prevention

As noted earlier, the WHO recommends a combination HIV prevention package that includes a mix of biomedical, behavioural, and structural interventions (WHO, 2021b). Biomedical HIV prevention interventions includes:

- Oral PrEP for people at substantial risk of HIV infection. The dapivirine vaginal ring may be offered as an additional prevention choice for women at substantial risk of HIV infection.
- Correct and consistent use of condoms with condom-compatible lubricants to prevent sexual transmission of HIV and STIs
- Harm reduction measures for individuals who use substances. These include access to sterile injecting equipment, opioid substitution therapy, and psychosocial interventions involving assessment, specific feedback and advice for all key populations with harmful alcohol or other substance use. People likely to witness an opioid overdose should have

access to naloxone and be instructed in its use for emergency management of suspected opioid overdose.
- VMMC for adolescents 15 years and older and adult men in settings with generalized epidemics to reduce the risk of heterosexually acquired HIV infection.
- HIV post-exposure prophylaxis (PEP) regimen with two ARV drugs for those exposed to HIV, but three drugs are preferred.

Structural interventions include decriminalisation of HIV transmission and of key populations, addressing gender issues, including gender-based violence, establishing laws to protect rights and interventions to reduce stigma and discrimination.

Behavioural interventions include counselling on reduction, comprehensive sex education, peer education programmes and social marketing campaigns (WHO, 2021b).

This research focuses on the use of oral PrEP for Prong 1.

1.3.1.1 Pre-Exposure Prophylaxis (PrEP)

Pre-Exposure Prophylaxis (PrEP) involves the use of ARVs by HIV-uninfected people to reduce the risk of becoming infected with HIV. As PrEP is controlled by the user, it may be particularly useful for people who struggle with negotiating for use of HIV prevention products (Davey *et al*., 2019), such as FSWs. By the time this doctoral research was underway, three forms of PrEP had been recommended by the WHO, namely, oral PrEP, the once monthly dapivirine ring and injectable cabotegravir (also known as CAB LA), however only oral PrEP had been approved in Kenya, the location of the HIV prevention (prong 1) component of the research.

Oral PrEP

In July 2012, the U.S. Food and Drug Administration (FDA) approved Truvada (combination of 300mg tenofovir and 200mg emtricitabine (TDF/FTC)) for daily oral use by uninfected adults to help prevent the sexual acquisition of HIV (FDA, 2012)[2].

Following this initial approval, in 2015, the WHO recommended that oral PrEP be offered as an additional prevention option for HIV-uninfected people at substantial risk of HIV infection as part of combination prevention approaches, including integrating PrEP with PMTCT, antenatal and postnatal care programmes in settings of high HIV incidence (WHO, 2015). In 2017, the WHO went on to issue guidance on the utilisation of PrEP by pregnant and breastfeeding women (WHO, 2017b).

Impact of PrEP on HIV prevalence

Clinical trials have shown PrEP to be an effective HIV prevention method (Baeten *et al*., 2012; Thigpen *et al*., 2012; Choopanya *et al*., 2013; Grant *et al*., 2014; Molina *et al*., 2015). However, there have been questions about the effectiveness of PrEP when used by heterosexual women as two of the five oral PrEP trials that have enrolled women, that is VOICE and the Pre-

[2] Concerns exist around initiating PrEP amongst people with chronic Hepatitis B virus (HBV) due to risks of HBV reactivation, hepatitis, and acute liver failure should they stop using PrEP. As such, close monitoring for HBV reactivation and hepatitis flares is necessary (Mohareb *et al*., 2022).

exposure Prophylaxis Trial for HIV Prevention among African Women (Fem-PrEP), demonstrated no effect of daily oral PrEP on HIV acquisition. However both studies also showed poor adherence to PrEP (Van Damme *et al*., 2012; Marrazzo *et al*., 2015) (see table 1.5). In the VOICE trial, adherence appeared to be high based on returned product and empty bottles, as well as a monthly questionnaire and a quarterly audio computer-assisted self-interview (ACASI), however adherence was low based on plasma Tenofovir levels (Tobin, 2015). Similarly, the FEM-PrEP found that adherence was low based on plasma drug levels (Corneli et al., 2016).

A later qualitative study amongst VOICE participants in Johannesburg, South Africa revealed that they had concerns about the safety and efficacy of PrEP. Further, the participants associated ARVs with illness, highlighting confusion between HIV treatment and prevention. There were also concerns about stigma from male partners and the community related to PrEP use which possibly impacted adherence (van der Straten et al., 2014). Adherence (based on plasma tenofovir levels) was found to be better amongst women who were 25 years of age or older, married and multiparous, suggesting that younger women struggled more with adherence possibly due to less social and family support (Tobin, 2015). Interviews with former FEM-PrEP participants in Bondo, Kenya, and Pretoria, South Africa revealed several barriers to PrEP use during the trial, including forgetfulness, low HIV risk perception and not seeing the logic in taking medication when healthy. There were also concerns about PrEP being harmful. Specifically, they were discouraged by their peers due to their own experiences of side effects when taking PrEP or their peers believing that the pill could be harmful. They were discouraged by partners and community members who also believed the pill could be harmful or even cause HIV. Community members also believed that study participants would have to engage in risky behaviour to confirm the efficacy of PrEP (such as, engaging in sex with HIV infected men at the study clinic) or that one must be HIV infected to participate in the trial which resulted in failure to adhere due to anticipated HIV stigma. Participants also did not adhere due to uncertainties about PrEP effectiveness, belief that they were taking the placebo, concerns about side effects, the burden of having to take a pill every day, and the size of the pill and associated difficulty swallowing it. Women who chose not to adhere reported that they continued to participate in the study because of the study-related and ancillary medical care and treatment, the reimbursement they received at each 4-week study visit and/or the opportunity to socialise with other participants during clinic visits (Corneli et al., 2016).

Other clinical trials showed that there is a strong dose–response relationship between adherence to oral PrEP pill-taking and HIV protection (Bekker et al., 2015). These trials also showed that daily oral PrEP prevents HIV acquisition among women in sero-discordant couples when taken with sufficient adherence, and that daily dosing of tenofovir-based oral PrEP reaches concentrations in vaginal tissues that are consistent with levels needed for HIV prevention (Thomson *et al*., 2016).

PrEP continues to show effectiveness in real-world settings, for example, studies in Kenya and Uganda found HIV incidence was 74% lower among PrEP initiators overall and 76% lower among women who initiated PrEP (Koss *et al*., 2021). Further, modelling studies estimated the potential impact of providing PrEP to pregnant and breastfeeding women - the greatest impact of PrEP in pregnancy is in vertical HIV transmission, with projected reductions between 13% in the conservative scenario and 41% in the optimistic scenario (Davey *et al*., 2019).

Table 1.5: Oral PrEP Clinical Trials

Author and Title	Sample size	Data Collection Methods	Location	Intervention	Duration	Efficacy and Adherence (High adherence: ≥80% Low adherence: <80%)
Heterosexuals						
1. Marrazzo *et al*. (2015) Tenofovir-based preexposure prophylaxis for HIV infection among African women (MTN 003, VOICE)	5029 heterosexual women	Randomized, placebo-controlled trial	South Africa, Uganda and Zimbabwe	PrEP vs placebo 5 arms: - Oral TDF/FTC - Oral TDF - Oral placebo - 1% TDF Vaginal gel - Vaginal placebo	Sep 2009 – Nov 2012	Efficacy: No product proven effective in preventing HIV Adherence (by plasma drug detection): Low (TDF/FTC: 29%, TDF: 30%, TDF vaginal gel: 25%).
2. Van Damme *et al*. (2012) Pre-exposure prophylaxis for HIV infection among African women (FEM-PrEP)	2120 women	Randomized, double-blind, placebo-controlled trial	Tanzania, South Africa and Kenya	TDF/FTC vs Placebo	May 2009 - Apr 2011	Efficacy: no efficacy shown Adherence (by plasma drug detection): Low (24%).
3. Thigpen *et al*. (2012) Antiretroviral preexposure prophylaxis for heterosexual HIV transmission in Botswana (TDF2)	1219 heterosexual women and men	Phase III, randomized, double-blind, placebo-controlled clinical trial	Botswana	TDF/FTC vs Placebo	Mar 2007-Mar 2011	Overall efficacy: 62.2% (Women: 49.4%, <u>not</u> statistically significant; men: 80.1%, statistically significant) Adherence (by pill count): high (84.1%) (NB: when the results were analysed separately by sex, efficacy was noted only in men).

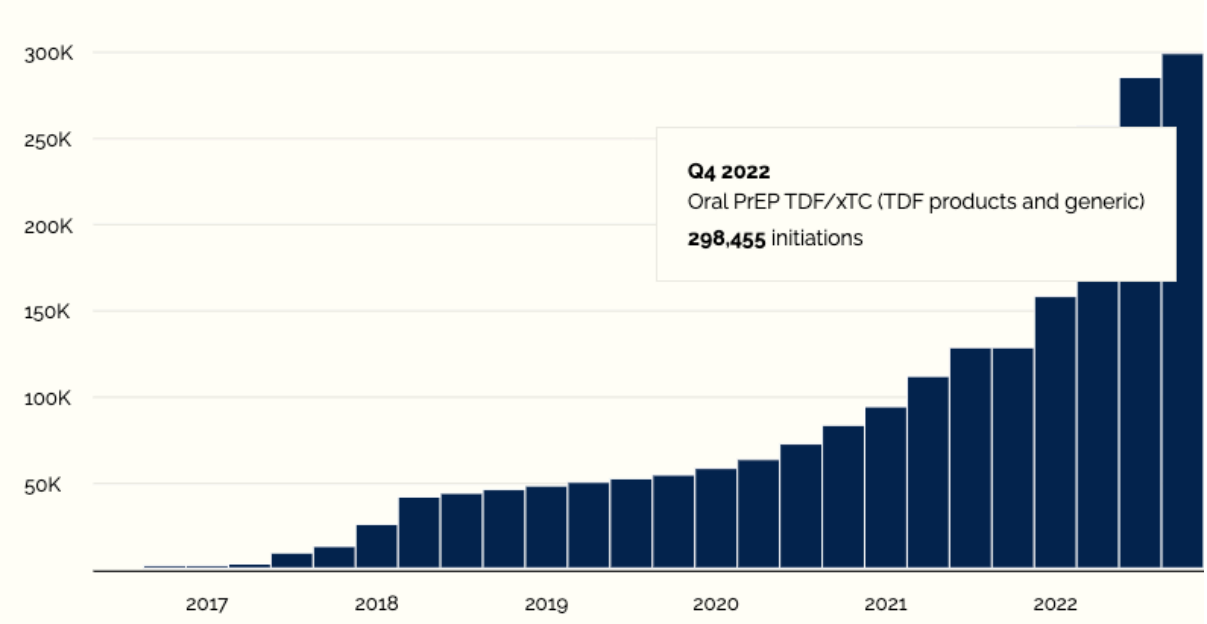
Serodiscordant heterosexual couples						
4. Baeten *et al*. (2012) Antiretroviral prophylaxis for HIV prevention in heterosexual men and women (Partners PrEP Study)	4758 serodiscordant couples	Randomised, double-blind, placebo controlled, phase III trial	Kenya and Uganda	TDF/FTC vs TDF only vs Placebo	May 2008 – Oct 2013	Efficacy: - Daily oral TDF: Women 71%, Men 63% - Daily oral TDF/ FTC - Women 66%, Men 84% Adherence (by plasma drug detection): high (82%).
5. Baeten *et al*. (2014) Single-Agent Tenofovir versus Combination Emtricitabine/Tenofovir for Pre-Exposure Prophylaxis against HIV-1 Acquisition: A Randomized Trial (Partners PrEP continuation)	4410 serodiscordant couples	Randomized, double-blind, placebo-controlled three-arm trial	Kenya and Uganda	TDF/FTC vs TDF only vs placebo	Jul 2008 - Nov 2010	85% relative risk reduction in HIV-1 acquisition for the TDF arm and 93% for the FTC/TDF arm Adherence (by plasma drug detection): Low (78.5%)
PWID						
6. Choopanya *et al*. (2013) Antiretroviral prophylaxis for HIV infection in injecting drug users in Bangkok, Thailand (the Bangkok tenofovir study): a randomised, double-blind, placebo-controlled phase 3 trial (CDC 4370, Bangkok Tenofovir Study)	2413 PWID (489 women and 1924 men)	Randomised, double-blind, placebo-controlled, phase III trial	Thailand	TDF vs placebo	Jun 2005 – Oct 2014	Efficacy: 49% Adherence (by plasma drug detection): Low (67%).

MSM						
7. Grant *et al*. (2014) Pre-exposure chemoprophylaxis for HIV prevention in men who have sex with men (iPrEx)	2499 gay men, other MSM, transgender women	Randomised, double-blind, placebo-controlled phase III trial	Brazil, Ecuador, South Africa, Peru, Thailand and USA	TDF/FTC vs placebo	Jun 2007-Feb 2014	Efficacy: 44% Adherence (by plasma drug detection): Low (51%).
8. Molina *et al*. (2015) On-demand preexposure prophylaxis in men at high risk for HIV-1 infection (IPERGAY)	400 MSM	Randomised, double-blind, placebo-controlled phase III trial	Canada and France	TDF/FTC (intermittent, on-demand') vs placebo	Jan 2012 – June 2016	Efficacy: 86% Adherence (by self- report and plasma drug detection): High (86%).

PrEP implementation in Kenya and South Africa

In July 2016, Kenya launched the 'Guidelines on Use of Antiretroviral Drugs for Treating and Preventing of HIV Infection in Kenya', which recommended the provision of PrEP to HIV negative individuals at substantial ongoing risk of acquiring HIV infection and provided criteria for PrEP initiation[3]. Oral PrEP roll-out was officially launched in Kenya in May 2017 and by the end of 2022 there were 298,455 initiations. It is offered in diverse settings including HIV treatment sites, testing/prevention centres, STI clinics, drop in centres for key populations, and safe spaces for adolescents (Masyuko *et al*., 2018).

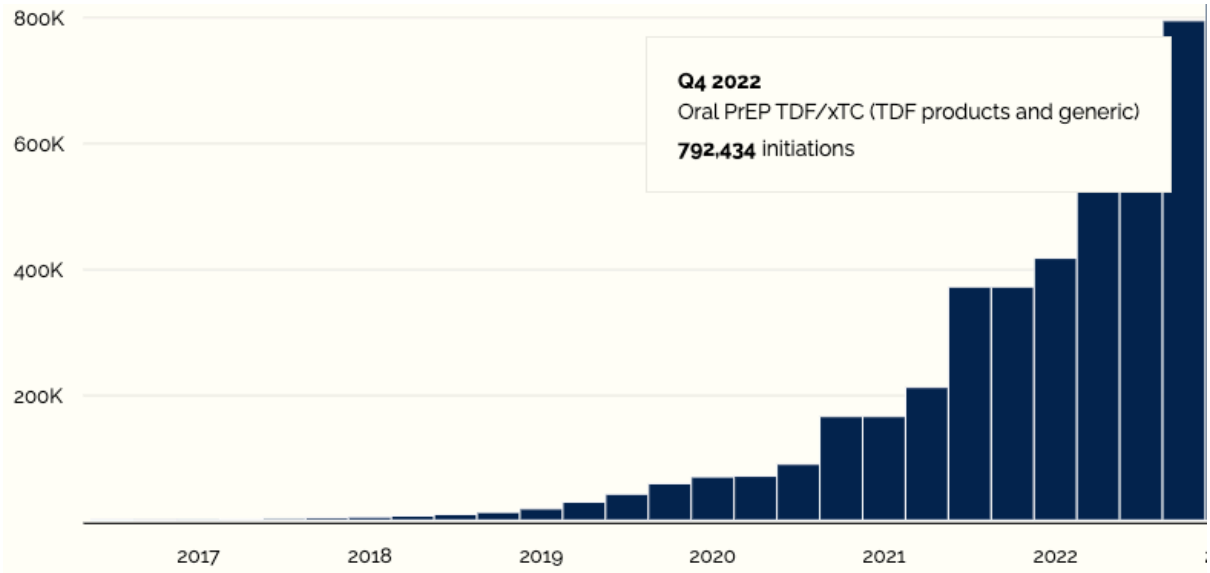
Figure 1.4: Oral PrEP Initiation in Kenya



Source: (AVAC, 2023a)

In May 2016, the South African government launched the 'Guidelines for Expanding Combination Prevention and Treatment Options for Sex Workers: Oral Pre-Exposure Prophylaxis (PrEP) and Test and Treat (T&T)'. In June of the same year, oral PrEP was rolled out to sex workers (NDOH, 2016). These PrEP guidelines were later updated to include additional target populations, including MSM, serodiscordant couples, adolescent girls and young women (AGYW) (NDOH, 2017). By the end of 2022, there were 792,434 initiations (AVAC, 2023a).

Figure 1.5: Oral PrEP Initiation in South Africa



Source: (AVAC, 2023a)

PrEP use during in pregnancy and postpartum

Kenya's HIV Prevention and Treatment Guidelines (2022 edition) state that all pregnant and breastfeeding women who test HIV negative should be screened for eligibility and willingness for PrEP (NASCOP, 2022). The 2020 South African Guidelines for the Provision of Pre-Exposure Prophylaxis (PrEP) to Persons at Substantial Risk of HIV Infection state that (1) PrEP should be considered for HIV negative pregnant women who become and remain at substantial risk of HIV infection and are already taking PrEP (2) PrEP should be considered for HIV negative breastfeeding women who are at substantial risk of HIV or in serodiscordant relationships where there is no evidence of viral load suppression in the HIV positive partner and (3) pregnant women not on PrEP who are considered to be at substantial risk of HIV may be referred to a medical practitioner to discuss the potential risks and benefits of initiating PrEP during pregnancy (NDOH, 2020b).

While the importance of PrEP for safeguarding their health and that of their unborn child is acknowledged by pregnant women (Wyatt *et al*., 2023), barriers to PrEP use have been noted. For example, a study among pregnant women who initiated PrEP at baseline found that stigma was associated with lower odds of returning for their three-month study follow up and PrEP prescription (Moran et al., 2022). This stigma had its basis in the assumption that PrEP users are infected with HIV (Vazquez *et al*., 2019; Wyatt *et al*., 2023). Another study found that PrEP use was suboptimal throughout the peripartum period, and declined over time in the postpartum period. This was possibly due to less frequent contact with the health facility during the postnatal period as compared to during pregnancy (Davey *et al*., 2022). Other barriers to PrEP utilisation amongst pregnant and post-partum women include questions about PrEP effectiveness (Vazquez *et al*., 2019), forgetfulness, travelling or being away from home, and concerns about side effects (Beesham *et al*., 2022) and pill burden (Kinuthia *et al*., 2020). Further, some women felt that there was no need to continue taking PrEP during periods of separation from their sexual partners. Others indicated that feeling destabilised during the postpartum period made it difficult to adhere to PrEP (Wyatt *et al*., 2023).

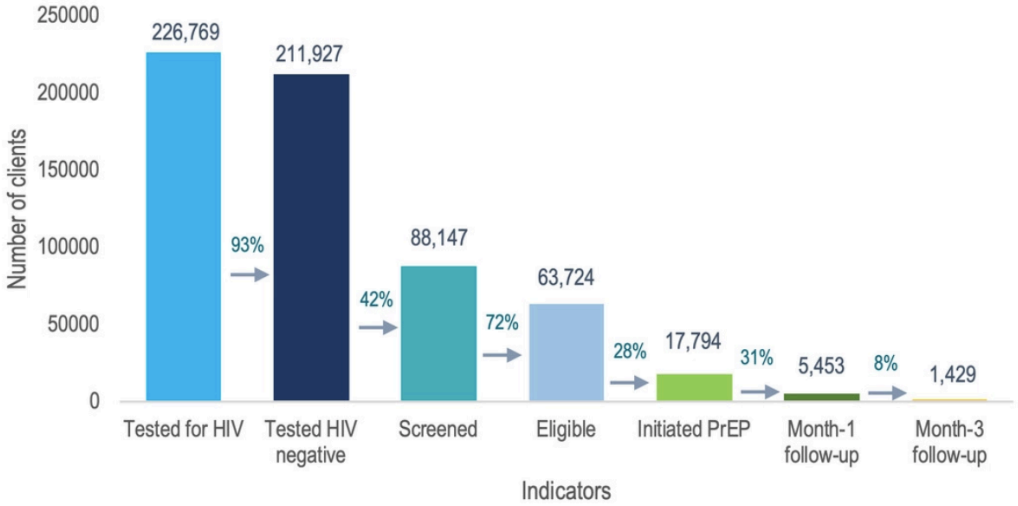
Existing evidence on PrEP acceptability by FSWs

The PrEP cascade examines simple proportions of people moving onto the next step in the PrEP continuum. The steps in the continuum are

1. **Tested HIV negative:** aggregate number of individuals whose HIV test results were negative as a proportion of the cumulative number of individuals who underwent an HIV test.
2. **Assessed/Screened:** the proportion of individuals who underwent behavioural risk screening among individuals whose HIV test results were negative.
3. **Eligible:** the proportion of individuals who met eligibility criteria for PrEP among individuals screened.
4. **Enrolled/Initiated PrEP:** the number of individuals who were prescribed and dispensed PrEP as a proportion of the cumulative number of individuals who were eligible for PrEP.
5. **Follow up visits (Month-1, Month-3, etc):** the number of individuals who had returned for a PrEP refill at a given follow-up month as a proportion of the number of individuals who enrolled/initiated PrEP.

While utilisation of PrEP by FSWs to date has varied from country to country, a high drop-out rate has been a common feature in many programmes, as evidenced by the Jilinde project, a 4-year demonstration project which was initiated in 2016 in 10 out of the 47 counties in Kenya (Were *et al*., 2020). Analysis of the Jilinde project revealed that there was a high attrition rate through the PrEP continuum, as show in Figure1.6 . Specifically, at Month 1 and Month 3, only 31% and 8% of initiators were still using PrEP, respectively.

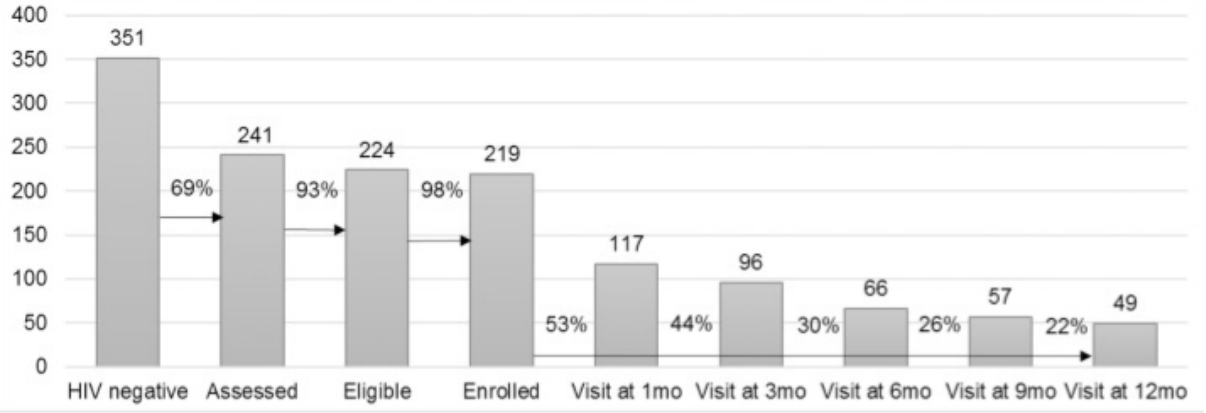
Figure 1.6:Jilinde (Bridge to Scale) FSWs PrEP Cascade



Source: (Were et al., 2020)

Similarly the TAPS demonstration project conducted in Johannesburg and Pretoria in South Africa, revealed a high attrition rate through the PrEP continuum with only 22% of PrEP initiators still using PrEP at their Month 12 visit.

Figure 1.7: TAPS Demonstration project PrEP Cascade



Source: (Eakle et al., 2017)

By 2020, there were a total of 20,754 PrEP initiation amongst FSWs in South Africa (Stone *et al*., 2023). In Kenya, there were a total of 14,324 PrEP initiations amongst FSWs by 2022 (MOH, 2023).

1.3.2 Prong 2: Pregnancy Prevention

Family planning refers to the information, means and methods that allow individuals to decide if and when to have children. It also includes information about how to become pregnant when it is desirable, as well as treatment of infertility (UNFPA, 2021). Benefits of family planning include prevention of unintended pregnancies and (often unsafe) TOPs (Darroch, 2013), healthier mothers and children when risky pregnancies are avoided, and more time and money for each child (WHO, 2012). A reduction in unintended pregnancies leads to a reduction in the number of infants born to HIV-infected mothers, thereby reducing the number of HIV-exposed infants (Mandala, 2012).

Family planning methods vary in their effectiveness, as shown in Table 1.6.

Table 1.6: Examples of Contraceptive Methods

Method	Success Rate with perfect use
Long-Acting Reversible Contraceptives (LARC)	
Contraceptive implant	>99%
Intrauterine system (IUS)	>99%
Intrauterine device (IUD)	>99%
Contraceptive injective (Subcutaneous Depo-Medroxyprogesteron Acetate, DMPA-SC)	>99%
Short-Acting Hormonal Methods	
Contraceptive patch	>99%
Vaginal ring	>99%
Combined contraceptive pill	>99%
Progestogen-only pill	99%
Barrier Methods	
Male Condom	98%
Female Condom	95%

Diaphragm/Cervical Cap	92 to 96%
Emergency Contraceptives	
Emergency Contraceptive Pills	95%
Copper IUD (within five days of unprotected sex)	>99%
Female and male sterilisation	
Female tubal ligation	>99%
Male vasectomy	~1 in 2,000 men can become fertile again in their lifetime

Source: (NHS, 2020; WHO, 2021c)

The WHO recommends that contraception services, safer conception management and links to antenatal care be integrated within HIV services, such as PrEP, when providing services for women and transgender men. Emergency contraception should be offered to girls and women as soon as possible and within five days of sexual exposure. All forms of contraception can be safely used by women who are at high risk of HIV, in the absence of any other medical or physiological contraindications, with the exception of spermicides. Further, dual method use, that is condoms plus another form of contraception, is recommended (WHO, 2022a).

Family planning implementation in Kenya and South Africa

The Kenyan National Guidelines For HIV/STI Programming with Key Populations (2014) called for targeted outreach for FSWs to increase knowledge of, and demand for, family planning (NASCOP, 2014). Despite setting up the first official nationwide family planning programme in sub-Saharan Africa in 1982, there are disparities in access to quality family planning services (MOH, 2016). For example, a 2016 study found that one in every four FSWs in Mombasa reported an unintended pregnancy in the last year (Luchters *et al*., 2016).

Goal 3 of the South African National HIV/TB/STI Strategic Plan 2017-2022 states that all key and vulnerable populations should be reached with customised and targeted interventions, including contraceptives (SANAC, 2016a). Similarly, the South African National Sex Worker Plan 2019-2022 calls for provision of SRH services for sex workers, including modern contraceptives (SANAC, 2019). However, FSWs in South Africa report obstacles when accessing the contraceptives they wanted including their first choice was not being available (38%), they were told they had to come back (30%), and being told they could not be given contraceptives because they are a sex worker (22%) (Ritshidze, 2023).

Existing Evidence on Family Planning Acceptability by FSWs in Kenya and South Africa

Contraceptive preference varied in the geographic areas chosen for this research (see Table 1.7). Injectables and condoms were consistently amongst the top three preferred contraceptive methods however, inconsistent and/or incorrect was of condoms common. In Kilifi, the oral pill was one of the top three methods chosen, however in Mombasa and Port Elizabeth the oral pill was one of the least preferred methods. Hormonal implants were frequently chosen in Mombasa, but less so in Port Elizabeth and Kilifi. The copper IUD was the least commonly chosen method in the three populations. Permanent methods (tubal ligation) were rarely used, but this was especially so in Mombasa and Kilifi. Methods used in Mombasa (though with low uptake) but not the other areas included emergency contraceptive, traditional methods, and the female condom (Rao *et al*., 2016; Ampt *et al*., 2019; ICRH, 2022).

Table 1.7: Contraceptive preferences of FSWs in Mombasa, Kilifi and Port Elizabeth (%)

	FSW in Mombasa	FSW in Kilifi[4]	FSW in Port Elizabeth
Male condoms	(any condoms) 96.3	22	32.2
Female condoms	1.6	-	-
IUD	1.6	<1	1.5
Tubal ligation	0.1	<1	3.8
Traditional methods	2.5		
Oral pill	8.3	31	1.5
Injectables	22.3	40	41.2
Hormonal implants	22.6	6	5.9
Emergency contraceptive	3.7	-	-

Source: (Rao et al., 2016; Ampt et al., 2019; ICRH, 2022)

As noted earlier, dual protection, that is use of a non-condom, modern method plus consistent condom use (Dulli *et al*., 2019) is recommended for high-risk populations for preventing both HIV and unintended pregnancy (Luchters *et al*., 2016). Unmet need for dual protection among FSWs is significant, for example, 41% of FSWs in Eastern Cape who felt it was important to avoid pregnancy were not using a family planning method other than condoms (Parmley *et al*., 2019b), while in Mombasa, only 10% of FSWs reported they were currently using dual protection for prevention of pregnancy and HIV/ STIs (Luchters *et al*., 2016).

1.3.3 Prong 3: Prevention of Vertical Transmission – The PMTCT Cascade

ART provision to expectant and breastfeeding mothers is the core intervention of the PMTCT service package (Gourlay et al., 2013). WHO first issued recommendations for the use of ARVs for PMTCT in the year 2000 recommending a single-dose and short-course ARV prophylaxis for PMTCT. Based on scientific evidence, the guidelines have evolved over time most recently to Option B+ which was first endorsed by the World Health Organisation (WHO) in 2012. The most recent guidelines were launched in 2021 (WHO, 2021b). Both Kenya and South Africa have their own guidelines around the PMTCT cascade in line with WHO recommendation which are included in Appendix 8.2 and 8.3, respectively (NDoH, 2019; NASCOP, 2022)

The PMTCT cascade is a series of essential steps to prevent vertical transmission, that is (1) at least one antenatal clinic (ANC) visit (2) HIV test performed (3) HIV test result received (4) initiation of lifetime ARV treatment for the mother (5) infant testing and initiation of infant ARV prophylaxis (6) mother follows safe infant feeding practices (Stringer *et al*., 2010) (see Figure 1.8).

ANC Visit and HIV Testing

The cascade begins with attendance at the ANC by a pregnant mother. The WHO recommends that, in high burden settings, HIV testing be offered to all populations and in all services, including antenatal care. In low burden settings, HIV testing should be offered to all pregnant

[4] The study was conducted in Kilifi township and Mtwapa township which are both located in Kilifi county.

women. Further, all pregnant women should be tested for syphilis and hepatitis B surface antigen (HBsAg) at least once and as early as possible. Dual HIV/syphilis rapid diagnostic tests can be the first test in HIV testing strategies and algorithms in antenatal care.

Testing is a critical step of PMTCT because, in knowing her status, an expectant mother can receive essential services to protect her health and the health of her baby. Should she test negative for HIV, the mother will be retested during labour and delivery. After delivery, she will be retested periodically at follow-up clinic visits.

Maternal treatment to prevent vertical transmission

Should a woman test positive during pregnancy or postpartum, she will be initiated on antiretroviral therapy (ART) immediately regardless of WHO clinical stage and at any CD4 cell count, even if they are identified late in pregnancy or postpartum. She will remain on ART for life, and will be checked for viral suppression during labour/delivery, and at follow-up clinic visits. The WHO also recommends utilisation of Benzathine penicillin G (BPG) for treatment of syphilis in pregnant women ideally before the second trimester to prevent vertical transmission (WHO, 2017a). WHO also recommends that pregnant women testing positive for HBV (HBsAg positive) with an HBV DNA ≥ 5.3 log10 IU/mL (≥ 200,000 IU/mL2) receive tenofovir prophylaxis from the 28th week of pregnancy until at least birth (WHO, 2020b).

Infant HIV testing and ARV prophylaxis

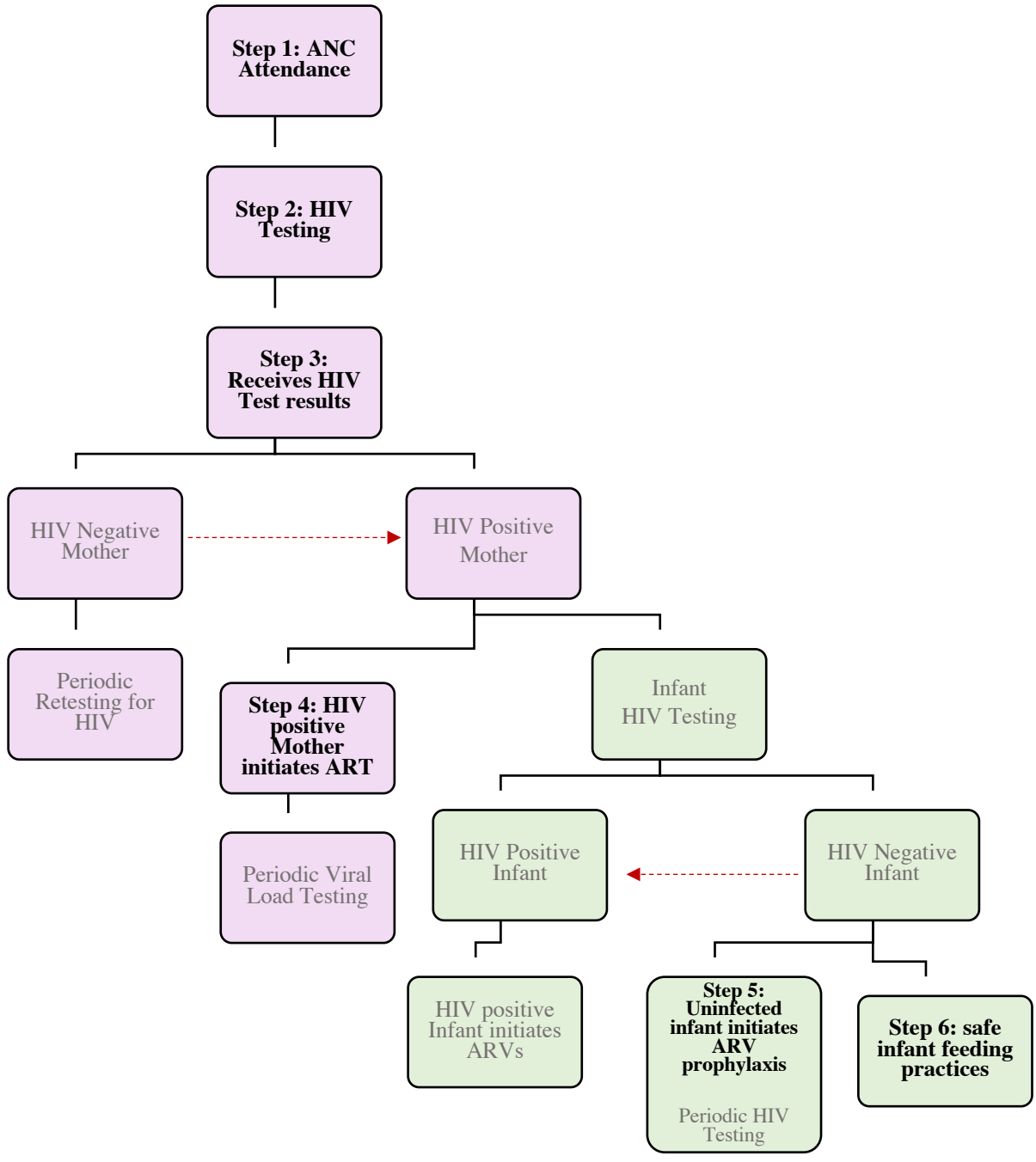
Child health visits are critical for the first few months of a new-born's life as they will be tested for HIV and will undergo routine check-ups to help identify any medical problems. Infants born to mothers with HIV who are at high risk of acquiring HIV should receive dual prophylaxis with daily zidovudine (AZT) and nevirapine (NVP) for the first six weeks of life, whether they are breastfed or formula fed. Breastfed infants who are at high risk of acquiring HIV, including those first identified as exposed to HIV during the postpartum period, should continue infant prophylaxis for an additional six weeks (total of 12 weeks of infant prophylaxis) using either AZT and NVP or NVP alone. Infants of mothers who are receiving ART and are breastfeeding should receive six weeks of infant prophylaxis with daily NVP. If infants are receiving replacement feeding, they should be given four to six weeks of infant prophylaxis with daily NVP (or twice-daily AZT).

Infant feeding

Mothers living with HIV should initiate breastfeeding within the first hour of life, and breastfeed for at least 12 months and may continue breastfeeding for up to 24 months or longer (similar to the general population) while being fully supported for ART adherence. It should be noted that shorter durations of breastfeeding (<12 months) are better than never initiating breastfeeding at all. Breastfeeding should be exclusive for the first six months' of life after which time appropriate complementary foods can be introduced while still breastfeeding. Breastfeeding should only stop once a nutritionally adequate and safe diet without breastmilk can be provided. Breastfeeding cessation should be gradual over a period of a month as abrupt cessation may increase the VL in breastmilk leaving the infant at increased risk of infection if subsequent intermittent breastfeeding should occur. Breastfed infants receiving ART prophylaxis should continue prophylaxis for four weeks after all breastfeeding has stopped. While exclusive breastfeeding is recommended, practising mixed feeding is not a reason to

stop breastfeeding in the presence of ARV drugs as ART reduces the risk of postnatal HIV transmission in the context of mixed feeding (WHO, 2021b).

Figure 1.8: Simplified PMTCT Cascade



Adapted from NDoH (2019)

Impact of PMTCT cascade on vertical transmission rates

PMTCT offers HIV testing for an expectant mother and, if required, prenatal treatment to reduce the risk of vertical transmission. A study estimating mortality in African children born to HIV-infected mothers found that an estimated 35.2% of HIV infected children will have died by their first birthday compared to 4.9% of uninfected children; and 52.5% and 7.6% will have died by their second birthday, respectively (Newell *et al*., 2004). Therefore, early diagnosis through HIV testing is essential (UNAIDS, 2014a) to identify infections and to put the child on the path to treatment and stronger health. Over time, point-of-care platforms have emerged that yield early infant diagnostic results on the same day a sample is collected (UNAIDS, 2021a). PMTCT also gives expectant women access to prenatal care, facilities for safe delivery, and essential health services to protect their own health (Elizabeth Glaser Pediatric AIDS Foundation, 2021).

As shown in Table 1.8 , in the absence of any intervention, the rate of vertical transmission can be as high as to 30-45% (De Cock *et al*., 2000). Without treatment 50% of infants infected with HIV will die by two years of age (UNAIDS, 2021a).

Table 1.8 : Estimated risk and timing of MTCT in the absence of interventions

Timing	Transmission rate
During pregnancy	5–10%
During labour and delivery	10–15%
During breastfeeding	5–20%
Overall, without breastfeeding	15–25%
Overall, with breastfeeding to six months	20–35%
Overall, with breastfeeding to 18–24 months	30–45%

(Adapted from (Kevin M. De Cock et al., 2000)

Since the rollout of PMTCT the rates of paediatric infections have dropped - between 1995 and 2015, an estimated 1.6 million new HIV infections among children were averted due to the provision of ART to women living with HIV during pregnancy or breastfeeding, with the vast majority of these infections (1.3 million) being averted between 2010 and 2015 (UNAIDS, 2016c). In South Africa and Kenya the number of new HIV infections amongst children reduced by 84% and 55%, respectively, between 2009 and 2015 (UNAIDS, 2016a).

Cascade completion rates

Cascade analysis has revealed “leaks” at each step as some mother–infant pairs drop off along the way (Hamilton *et al*., 2017). Challenges to completion of the PMTCT cascade remain including maintaining women with HIV in care and on ART throughout the breastfeeding period as well as reducing, detecting, and optimally managing incident cases of HIV in women during pregnancy and breastfeeding (UNAIDS, 2017c), getting exposed children tested for the virus within the recommended two months and, for those who test positive, getting access to ART (UNAIDS, 2016b). For example, analysis of data from the PEARL (PMTCT Effectiveness in Africa: Research and Linkages to Care) study, showed that cascade completion rates were just 51% across the four African countries in which the study was conducted, namely Zambia, Côte d’Ivoire, South Africa, and Cameroon (Dionne-Odom *et al*., 2016). Similarly, an observational cohort study of 300 pregnant women in South Africa found

that overall, 57.5% were lost between HIV testing and 6 months post-delivery (Clouse *et al*., 2013).

Evidence on completion/non-completion of the PMTCT cascade in Kenya and South Africa

In 2021, at least 94% of pregnant women in Kenya attended at least one ANC visit (NACC, 2021b); >95% of pregnant women presenting at ANC were tested for HIV or already knew their HIV positive status and 90.6% of pregnant women living with HIV received effective ARVs for PMTCT (excludes single-dose nevirapine). In all, 64.9% of infants born to pregnant women living with HIV received a virological test for HIV within 2 months of birth and 59% of children (aged 0-14 years) living with HIV received antiretroviral therapy (ART). In 2021, vertical transmission rate including during breastfeeding was 8.9%, down from 10.4% in 2015 (UNICEF, 2022).

In South Africa, the national antenatal 1st visit coverage was 83.1% in 2019/20 (Massyn *et al*., 2020). In 2021, 91.8% of pregnant women presenting at the ANC were tested for HIV or already knew their HIV positive status and >95% of pregnant women living with HIV received effective ARVs for PMTCT (excludes single dose nevirapine). 93.5% of infants born to pregnant women living with HIV received a virological test for HIV within 2 months of birth and 48.2% of children (aged 0-14 years) living with HIV received antiretroviral therapy (ART) (UNICEF, 2022). In 2021, vertical transmission rate including during breastfeeding was 3.5% in 2021, down from 5.1% in 2015 (UNAIDS, 2022).

Despite efforts to scale-up PMTCT programmes, little is known about PMTCT cascade engagement and outcomes among FSW populations in SSA. One study in Port Elizabeth, South Africa found that 192 of the 410 enrolled FSWs had children under five years. Of these, 95% (183/192) reported at least one ANC visit and 94% had been offered HIV testing services during ANC. Of the women who attended ANC, 63% (120/192) were found to be HIV positive. Majority of them ((101/120, 84%) already knew they were HIV positive prior to the study, with 65% (78/120) reporting being HIV positive at the time of their last delivery, and 35% (42/120) reporting that they acquired the infection in the post-natal period. Of those who knew they were living with HIV during pregnancy, 50% (39/78) had started ART by the time of delivery. Among all the mothers who knew they were positive prior to the study, 45% (45/101) were on ART, and 85% (86/101) had their children tested for HIV at least once after birth. Majority (85%) of the women who tested their children breastfed them, but only 36% (31/86) had their children retested after breastfeeding cessation (Rwema et al., 2019).

1.4 Research Question

What factors enable or constrain utilisation of HIV/SRH interventions by FSWs?

1.5 Aims and Objectives

The overall aim of the research was to investigate FSWs' experiences with utilisation of PMTCT Prong 1, 2 and 3 HIV/SRH interventions to prevent vertical transmission of HIV, and to ultimately provide recommendations to improve availability and accessibility of these interventions.

Objectives:

1. To determine rates of utilisation of PrEP and family planning by FSWs in Kilifi and Mombasa counties, Kenya.
2. To investigate factors that affect FSWs utilisation of PrEP and family planning by FSWs in Kilifi and Mombasa.
3. To investigate how peer education (PE) workload (that is, the number of FSWs served by each peer educator) affects utilisation of PrEP and family planning by FSWs in Kilifi and Mombasa.
4. To understand the barriers and facilitators experienced by FSWs' in Port Elizabeth, South Africa when passing through the PMTCT cascade to prevent vertical transmission.
5. To understand experiences of mentees and mentor mothers during the mentorship programme.
6. To identify strategies to reduce barriers to accessing PMTCT services by eligible FSWs in Port Elizabeth, South Africa.
7. To identify strategies to reduce barriers to accessing PrEP, family planning and interventions along the PMTCT cascade.

These objectives are summarised in Table 1.9 , along with the methods used to address each objective.

Table 1.9: Summary of Objectives and Methods

Objective	Method
Quantitative Component	
1 To determine rates of utilisation of PrEP and family planning by FSWs in Kilifi and Mombasa counties, Kenya.	Calculate proportion of FSWs who utilised PrEP and family planning and those who did not.
2 To investigate factors that affect FSWs utilisation of PrEP and family planning in Kilifi and Mombasa (specifically, self-reported sex acts).	Calculate odds of PrEP and family planning utilisation amongst FSWs with 5 or more self-reported sex acts per week relative to those with less than 5 sex acts per week.
3 To investigate how PE workload affects utilisation of PrEP and family planning by FSWs in Kilifi and Mombasa.	Calculate odds of PrEP and family planning utilisation amongst FSWs with peer educators with higher PE workloads (>80)

	relative to those with lower PE workloads (<80)[5].
Qualitative Component	
4 To understand the barriers and facilitators experienced by FSWs' in Port Elizabeth, South Africa when passing through the PMTCT cascade to prevent vertical transmission.	IDIs with FSW mentees and mentors
5 To understand experiences of mentees and mentors during the mentorship programme.	IDIs with FSW mentees and mentors
Recommendations	
6 To identify strategies to overcome challenges faced by mentor mothers in supporting FSW mentees with PMTCT cascade completion in Port Elizabeth to develop sustainable and scalable support programs.	The recommendations for strategies to overcome mentor challenges are based on the findings of the qualitative analysis as well as the literature review
7 To identify strategies to reduce barriers to accessing PrEP, family planning and interventions along the PMTCT cascade.	Recommendations for strategies to reduce FSWs' barriers to accessing PrEP, family planning and completing the PMTCT cascade are based on the results of both the qualitative and quantitative analysis, as well as the literature review.

1.5.1 Justifications

1.5.1.1 High risk of HIV infection and vertical transmission

Many FSWs continue to sell sex during pregnancy, for example, research amongst FSWs in Côte d'Ivoire found that approximately one-third had engaged in sex work while they were pregnant (Schwartz *et al*., 2015), while in Port Elizbeth, FSWs reported continuing sex work for a median of 5 months following pregnancy diagnosis (Rwema *et al*., 2019). A prospective study conducted amongst 2,751 HIV-uninfected women in seven African countries (Botswana, Kenya, Rwanda, South Africa, Tanzania, Uganda, and Zambia) found that the risk of female HIV acquisition per condom-less sex act was 3-fold and 4-fold higher during late pregnancy and the postpartum period, respectively, and remained significant after adjustment for factors known to effect HIV acquisition, suggesting that biological changes during pregnancy and the postpartum period increase HIV susceptibility among women (Thomson *et al*., 2018).Given their high pregnancy rates and barriers to the access and utilisation of SRH/HIV interventions (Schwartz, *et al*., 2015), FSWs have high and sustained risks of HIV infection and subsequently of vertical transmission of HIV (Moodley *et al*., 2011; Johnson *et al*., 2012). This research focuses on prevention of vertical transmission to HIV exposed infants (HEI). Following the 4 PMTCT prongs, HIV-uninfected FSWs at high risk of acquiring HIV infection need to be targeted for HIV prevention interventions (PMTCT prong 1) (UNAIDS, 2020b), while HIV-infected women need to be supported to ensure they have access to family planning (PMTCT

[5] The ideal peer educator to FSW ratio, as derived from program experience and community consultations, is set at a range of between 1:60–80 (1 PE for 60–80 FSWs) (NASCOP, 2014)

prong 2) and, for those who are pregnant, access to PMTCT cascade interventions and supported to complete the cascade (PMTCT prong 3).

1.5.1.2 Understand choices around service utilisation

Research has shown that FSWs have poor health seeking behaviour. For example, studies have shown that retention is a challenge for many PrEP efforts (Eakle *et al*., 2017); in Mombasa, Kenya just 34.4% of FSWs sought medical care after forced sex (Lafort *et al*., 2017), such as emergency contraceptives; and lastly limited data from other settings have documented poor utilisation of antenatal HIV testing and varying awareness of critical interventions, such as PMTCT (Becker *et al*., 2012; Cernigliaro *et al*., 2018; Parmley *et al*., 2019b). This study will help researchers understand barriers and facilitators to access, as well as characteristics of FSWs who opt to utilise services versus those who do not, and will provide recommendations to promote utilisation and retention (Fearon *et al*., 2019).

1.5.1.3 Limited Knowledge about FSWs' lived experiences

There is a considerable amount of research into FSWs experiences with HIV prevention (Warren, *et al*., 2017), unintended pregnancy, unsafe TOP (Warren, 2017), STIs (UCSF, *et al*., 2015) and violence (WHO *et al*., 2013), however, relatively little attention has been paid to their experiences as mothers in need of health services (Schwartz *et al*., 2015). This study will shed light on FSWs' lived experiences and on the attributes of FSWs who opt to utilise services versus those who do not (Fearon *et al*., 2019).

1.5.1.4 Determine ideal peer educator workload

Research to date has considered the impact of peer educator (PE) workload on STI Screening, HIV testing, and condom distribution (Bhattacharjee *et al*., 2018), however the impact on broader SRH interventions has not been considered. This study will shed light on how different PE workloads affect utilisation of PrEP and family planning which has not been considered in the past.

1.5.1.5 Geography

With respect to choice of geographic location, I opted to carry out my research in the East and Southern Africa region as it has been hardest hit by HIV – despite being home to approximately 7% of the world's population, 54% of the total number of people living with HIV are in this region (UNAIDS, 2020c). In 2018, South Africa had the biggest and most high-profile HIV epidemic, with an estimated 7.7 million people living with HIV, while Kenya had 1.6 million people living with HIV (UNAIDS, 2019b). Secondly, an estimated 15% of HIV infections worldwide may be due to sex work, with sub-Saharan Africa having the highest attributable fraction (17.8%) (Hladik *et al*., 2017). Lastly, the rate of paediatric HIV infections in sub-Saharan Africa remains high, with over 1,000 new-borns infected with HIV per day (Hampanda, 2016; UNAIDS, 2017c; Kabapy, *et al*., 2020). The region was also chosen due to the sociocultural context which may heighten vulnerability, such as gender roles (MacPherson *et al*., 2014).

1.5.1.6 Datasets

Quantitative

The quantitative dataset was obtained from the International Centre for Reproductive Health, Kenya (ICRH-K). The data was collected as part of SRH/HIV routine service delivery programmatic data between 2016 and 2018. The study dataset was a combination of data collected in a Contact form completed by peer educators at sex work hotspots, and an Enrolment form and Clinic Visit form which are completed by medical doctors at the DICEs. The Contact form was filled during the first meeting between the peer educator and sex worker, and included demographic data, and information on sex work history, substance use and interactions with peer educators. The Enrolment Form was filled during the first visit to the clinic. It included data about contact with peer educators, non-paying sexual partners, sex work history, violence, HIV testing history, and HIV care for those who were HIV-infected. The Clinic Visit Form was filled by clinicians at quarterly visits or sooner if the FSW had a medical condition that needed attention before the next quarterly visit. It included data on ongoing screenings, results, treatment, and referrals for STIs, TB, Hepatitis B, Hepatitis C, overdose management, abscesses, substance use, cervical cancer, PrEP, violence, risk reduction counselling, family planning and mental health. The form also collected information on HIV testing (such as self-reported status, whether counselling and testing were done, results for tests done at the DICE and linkage to ART), information on HIV self-testing, HIV care and treatment as well as other services such as post-abortion care, condom education/demonstration, provision of condoms and lubricants, PEP and linkage to psychosocial support. The collected data gave insight into the characteristics of the FSW population, including their choices around PrEP and family planning utilisation, and the effect of peer education.

Data on peer educator workload (number of FSWs reached) was recorded in a planner by peer educators during outreach. This information was later transferred to an outreach calendar which was used by peer supervisors to track peer educator performance. This data was later entered into the contact dataset to allow for it to be included in analyses.

Qualitative

The qualitative data was collected through in-depth interviews carried out amongst mentor and mentee mothers participating in the *Masifundisane* Sex Worker Mentor Mother Programme at TB/HIV Care (THC) in Port Elizabeth, South Africa. The IDIs were conducted between December 2017 and November 2018 as part of an evaluation of the mentor mother programme. Participants were asked about motherhood, their experiences accessing PMTCT interventions, as well as their experiences participating in the mentorship programme. Information collected during the IDIs allowed me to get insight into the experiences of mothers who sell sex accessing PMTCT interventions to prevent vertical transmission. I could not find any other PMTCT mentor mother support programs that target FSWs specifically.

Overall, the two datasets provided evidence that could be used to inform health service delivery programmes and policies for FSWs.

1.6 Project Background and Research Settings

The research used data from two countries in sub-Saharan Africa, namely Kenya and South Africa.

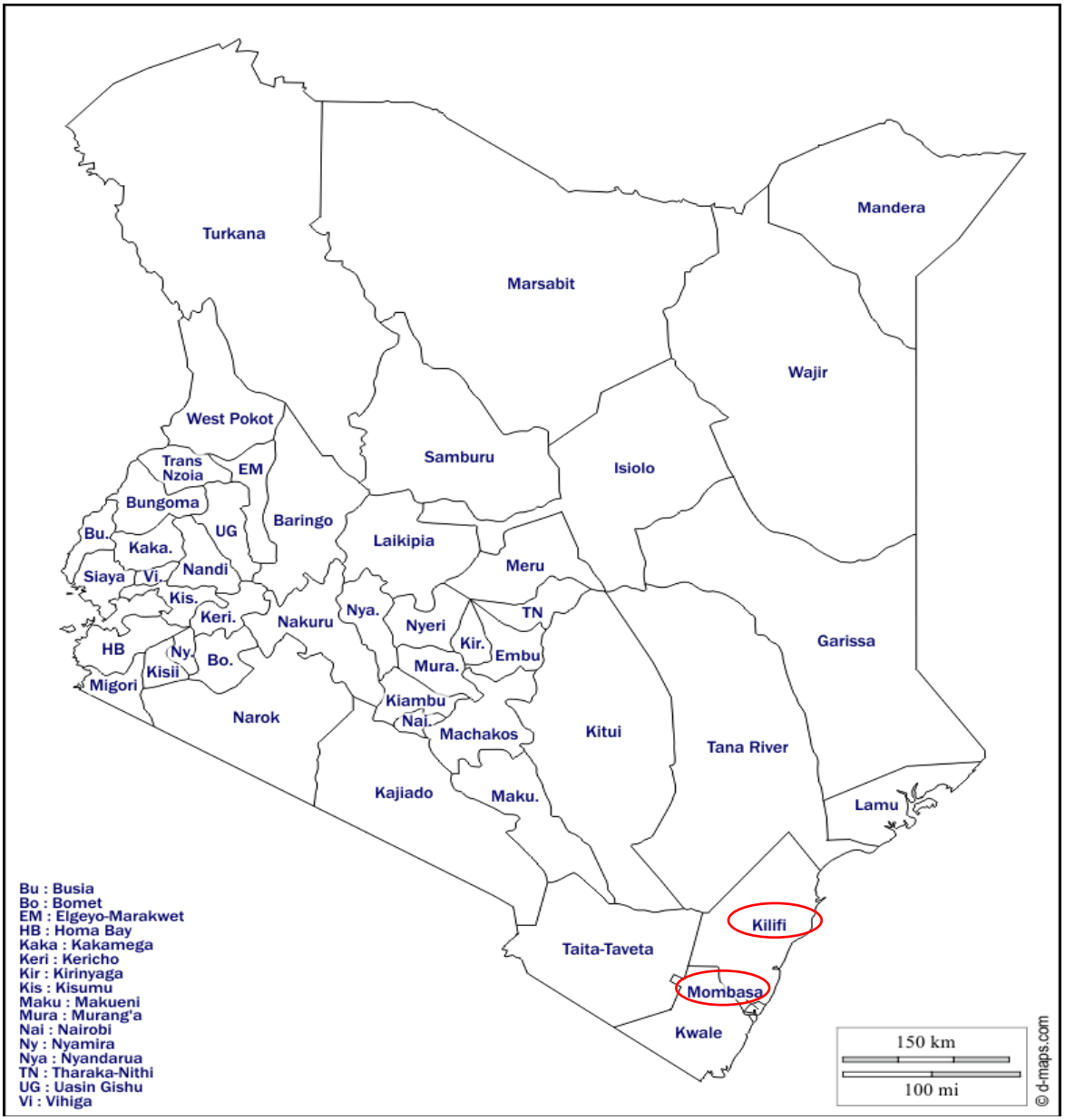
Figure 1.9: Research setting

Source: (Wikipedia, 2022)

1.6.1 Kenya

The quantitative data was collected from clinics (known as drop-in centres) in Kilifi and Mombasa counties. The two counties are part of six counties in the Coastal Region of Kenya, namely, Mombasa, Kilifi, Kwale, Taita Taveta, Lamu and Tana River.

Figure 1.10: Kilifi and Mombasa Counties in Kenya



Source: (D-maps, 2020)

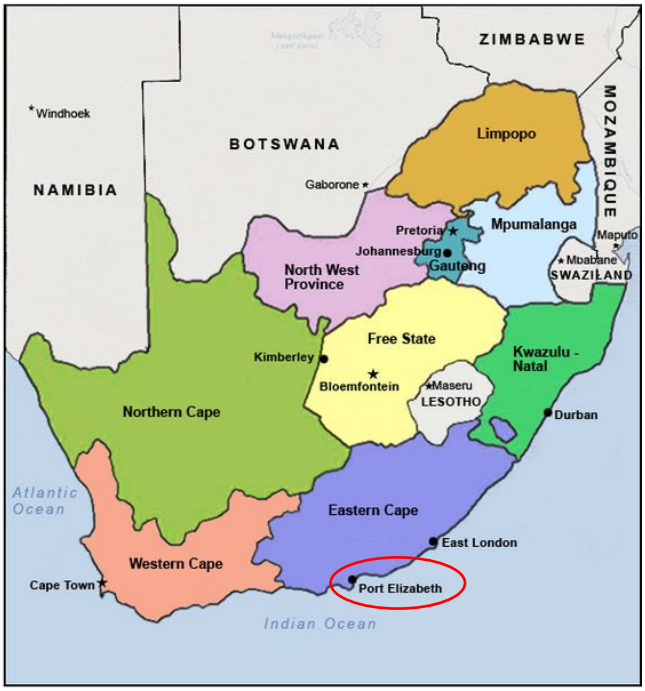
In 2018, it was estimated that there were 167,940 FSWs in Kenya (NASCOP, 2019)..
As noted earlier, HIV prevalence amongst FSWs in Kenya is 29.3% as compared to 6.2% amongst females in the general population aged 15-49 years (NACC, 2018). They also have higher rates of unintended pregnancy, for example, in Mombasa, FSWs were reported to have a 52% lifetime rate of unintended pregnancy (Sutherland *et al*., 2011) compared to 40% in the general population (Hussain, 2012). Their use of SRH commodities and services is often low, for example, a study by Long *et al*., (2019) found that 63.9% of FSWs in Mombasa had unmet contraceptive needs.

1.6.2 South Africa

The qualitative component of the research utilised data collected as part of an evaluation of the *Masifundisane* Sex Worker Mentor Mother Programme. This programme sought to support the

motherhood needs of FSW mothers and their children to improve PMTCT outcomes, their overall health and that of their children. The programme was implemented in Port Elizabeth, a major port city located in the Eastern Cape province.

Figure 1.11: Port Elizabeth, South Africa

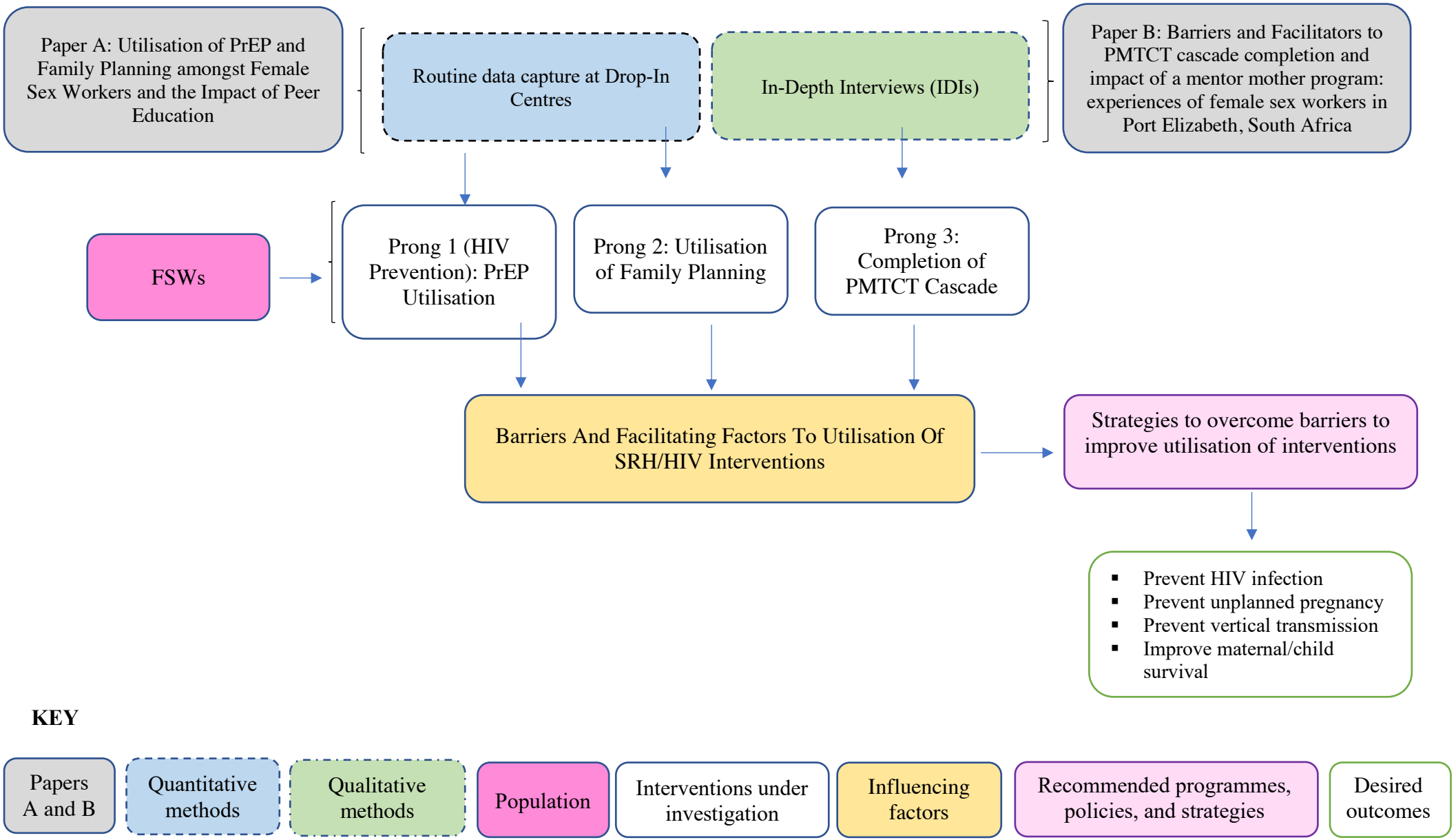


Source: (Michigan State University, no date)

In 2015, it was estimated that there were between 131,000 and 182,000 FSWs in South Africa (Konstant *et al.*, 2015).

HIV prevalence amongst FSWs in South Africa was 57.7% in 2016 as compared to 23.8% amongst females in the general population aged 15-49 years (UNAIDS, 2017d). Similarly, HIV prevalence amongst FSWs in Port Elizabeth is considerably higher than women in the general population - a study found that, amongst the 410 participants, 63.7% were infected with HIV. In all, 75% of the FSWs in the same study had at least one living child and therefore majority would have at some point been eligible for PMTCT interventions, however, when assessing the knowledge of HIV prevention strategies, the study found that a large percentage of respondents did not know about PMTCT services. Specifically, 51.9% of respondents were unaware of HIV treatment to prevent vertical transmission during pregnancy (65.2% of HIV infected participants and 64.1% HIV-uninfected participants) (Rao *et al.*, 2016).

Figure 1.12: Schematic of Elements Covered in the Thesis



1.7 Role of the Candidate

Quantitative Component

My DrPH research was embedded in a wider ICRH-K research project looking at service utilisation and costing. I worked alongside ICRH-K staff members, including the director and various clinicians and data management staff, in development of the overall concept, framing of the research questions, and design of this study. I prepared the local ethics applications, and I was included as a co-investigator. I carried out data cleaning and analysis in STATA 17.0 (StataCorp LP, Texas, USA), and wrote and revised the quantitative paper (Paper A).

Qualitative Component

I was remotely engaged by JHSPH in a project entitled *'Evaluation of a peer mentor mother model for women at high risk for HIV infection and mother to child transmission'* and was added as an investigator to the JHSPH Institutional Review Board (IRB) protocol. In addition to visiting the research site in Port Elizabeth and meeting the staff and mentor mothers involved in the mentorship program, I contributed to the development of the IDI questionnaires. Along with a staff member from JHSPH, I listened to the audio recordings of the interviews, transcribed the information, compared the transcripts with the audio recordings to ensure that there were no errors and updated missing information in the transcripts. Following transcription, I familiarised myself with the data and used thematic coding to analyse the data. Together with the JHSPH staff member, I generated a coding framework, identified themes, constructed thematic networks, and integrated and interpreted the data. I used Atlas.ti software to organise the data. I wrote and revised the qualitative paper (Paper B).

1.8 Ethical Clearance

The IDI questionnaires and related protocol were reviewed and approved by the JHSPH Institutional Review Board and the South African Human Sciences Research Council (HSRC) on 11 April 2018 and on 10 October 2018, respectively.

Initial ethics approval from the LSHTM was obtained on 11 February 2019. In May 2020, I submitted an amendment to the quantitative component which was approved on 19 June 2020.

Local approval for use of ICRH-K data was granted by the Africa Medical and Research Foundation (AMREF) on 16 April 2021.

1.9 Funding

No funding was received for this research.

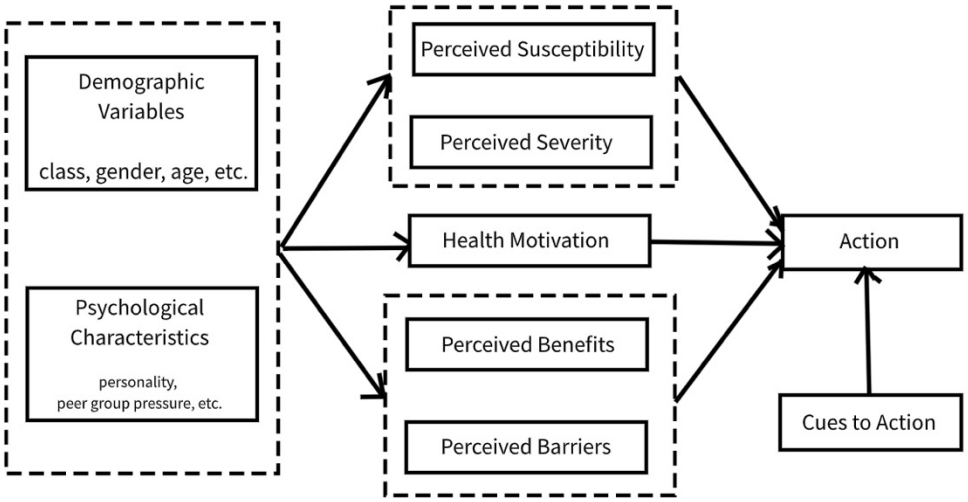
1.10 Conceptual Framework

The Modified Social Ecological Model (MSEM) was found to be most relevant conceptual framework for this research. Prior to deciding on the MSEM a number of other frameworks were considered for this research namely the Health Belief Model (HBM), Kroeger's framework for health seeking behaviour, Theory of planned behaviour (previously Theory of Reasoned Action), and the Gelberg-Andersen Behavioural model for vulnerable populations.

1.10.1 Health Belief Model (HBM)

The Health Belief Model (HBM) was first conceived by the United States Public Health Service (USPHS) in the 1950s when social psychologists were attempting to explain why people chose not to participate in TB screening programmes.

Figure 1.13: Elements of the Health Belief Model



Source: (Rosenstock, 1974)

The model states that individuals are guided by their beliefs about the impact and consequences of illness which are dependent on their perception of the risk of acquiring an illness or disease (perceived susceptibility), their perception of the severity and consequences of the illness (perceived severity), their perception about the effectiveness of health interventions (perceived benefits) and material and psychological obstacles to utilisation (perceived barriers), such as cost, side effects, discomfort/pain, etc. They are also guided by their health motivation or readiness to be concerned about health matters (health motivation). Further, modifying factors including demographic variables (e.g. age, race, gender, education level, etc), psychosocial characteristics (e.g. personality, social class, etc) and structural variables (e.g. knowledge about a given disease and prior contact with the disease) affect perceived seriousness, susceptibility, benefits, and barriers thereby indirectly affecting health-related behaviours. According to the model, internal or external stimuli, referred to as cues to action, are needed to cause one to begin the decision-making process to take on the recommended health action, such as feeling unwell (internal stimuli) or receiving advice from others (external). In 1988, an additional element, namely self-efficacy, was added into the model. It refers to an individual's confidence in their ability to perform a behaviour (Rosenstock, 1974).

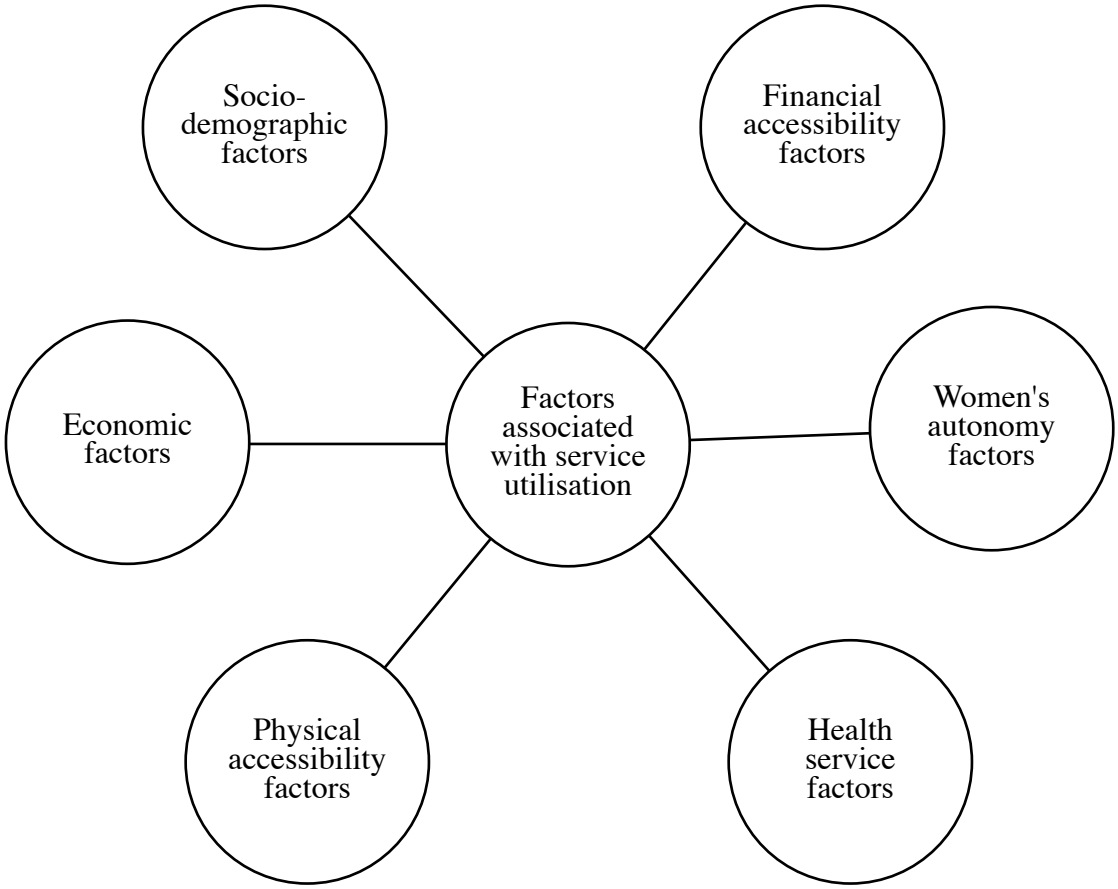
While this model considers individual differences in beliefs and attitudes, it does not consider other factors that may impact decision making around health seeking, for example, habitual health-related behaviours (such as substance use) or external environmental factors outside an individual's control (such as policy environment) (Janz, 1984).

1.10.2 Kroeger's framework for health seeking behaviour

The Kroeger framework was designed to examine, analyse and interpret factors and determinants of health-seeking behaviour and health service utilisation. These factors fall into

six categories, namely, socio-demographic factors, economic factors, financial accessibility factors, physical accessibility factors, factors related to women's autonomy and health service factors (Kroeger, 1983).

Figure 1.14: Elements of Kroeger's framework for health seeking behaviour



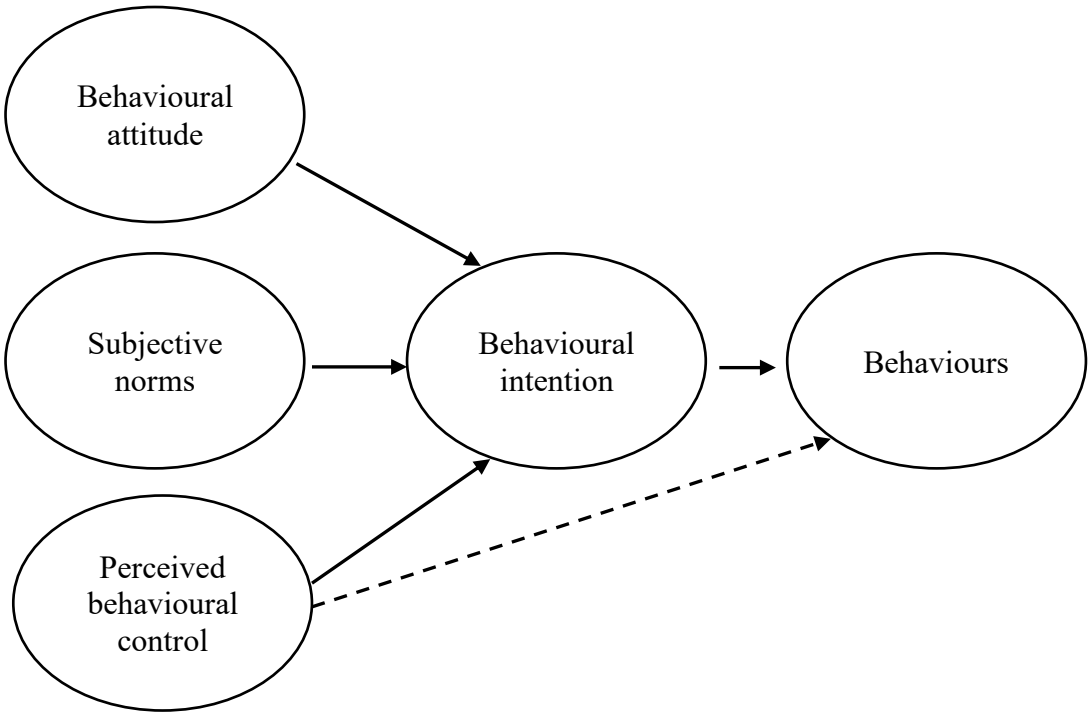
Socio-demographic factors include family size, education status, occupation of the head of the household and cultural beliefs. Economic and financial accessibility factors include varying levels of livelihood that may impact health inequalities, for example, out of pocket expenditure and transport costs. Physical accessibility factors include distance from facilities, time taken to reach facilities, and transport availability. Health service factors include attitude of health care workers and experiences with health service delivery, including satisfaction with treatment/services. Factors related to women's autonomy include decision making power, such as freedom to visit health facilities alone and decision to spend money on health care (Shaikh *et al*., 2008).

While this model considers a myriad of factors that may influence health seeking behaviour, it does not take into consideration policy factors, such as punitive legislation and restrictive international policies, all of which may greatly impact health seeking behaviour, particularly amongst key populations.

1.10.3 Theory of Planned Behaviour

Proposed in 1985, the Theory of Planned Behaviour (TPB) is an extension of the Theory of Reasoned Action. The TPB states that attitude, subjective norms, and perceived behavioural control, together shape an individual's behavioural intentions and behaviours.

Figure 1.15: Elements of the Theory of Planned Behaviour



Behavioural attitude refers to the individual's belief that a certain act makes a positive or negative contribution to their life. Subjective norm focuses on the individual's social networks, cultural norms, group beliefs, etc – in other words, an individual's behaviour is influenced by what others think. Lastly, perceived behavioural control reflects the ease or difficulty associated with performance - an individual is much more likely to intend to enact certain behaviours when they feel that they can enact them successfully (Ajzen, 1991). According to the TPB, individuals would have higher intention to engage in a behaviour if the overall evaluation of the behaviour is positive (attitudes), if they believe that people they value think they should perform the behaviour (subjective norm), and if they feel that they have the necessary control in performing the anticipated behaviour (perceived behavioural control) (Mo *et al*., 2019).

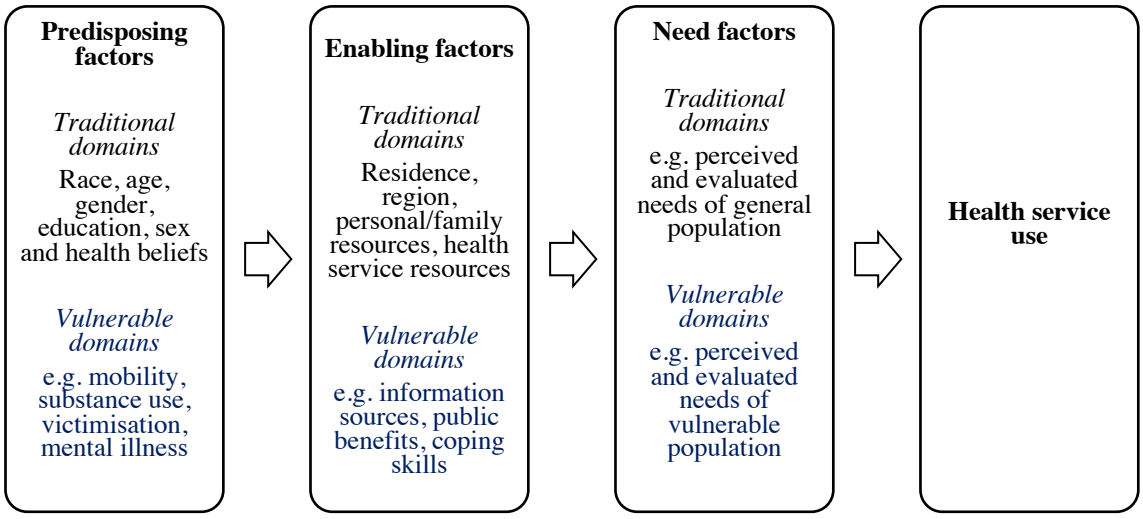
There are several limitation to the TPB, for example, it does not account for other variables that may affect intention and motivation, such as fear and past experience (LaMorte, 2019), as well as other structural and contextual barriers might exert an influence in one's decision making (Mo *et al*., 2019).

1.10.4 Gelberg-Andersen Behavioural Model for Vulnerable Populations

The Gelberg-Andersen Behavioural Model for Vulnerable Populations is a revision of the 1968 Andersen health care utilisation model (Andersen, 1995) which sought to demonstrate the

factors that lead to utilisation of health services. The model states that utilisation of services is determined by three dynamics, namely predisposing factors, enabling factors and need factors. Predisposing factors describe the "propensity" of individuals to use services and exist prior to the onset of illness. Examples include characteristics such as race, age, gender, education, sex, and health beliefs. Enabling factors describes the "means" individuals have available to them for the use of services. These may include family support, financial resources, and attributes of the community, such as distance to health facility and availability of services. Need factors refers to the illness level which is the immediate cause for health service utilisation. This need may be perceived by the individual or by persons in the health service delivery system. In addition to the traditional domains in the Andersen Health Service Utilisation Model, the Behavioural Model for Vulnerable Populations considers additional factors that make populations vulnerable and might also affect their use of health services and their health status (Gelberg, 2000).

Figure 1.16: Elements of the Gelberg-Andersen Behavioural model for vulnerable populations

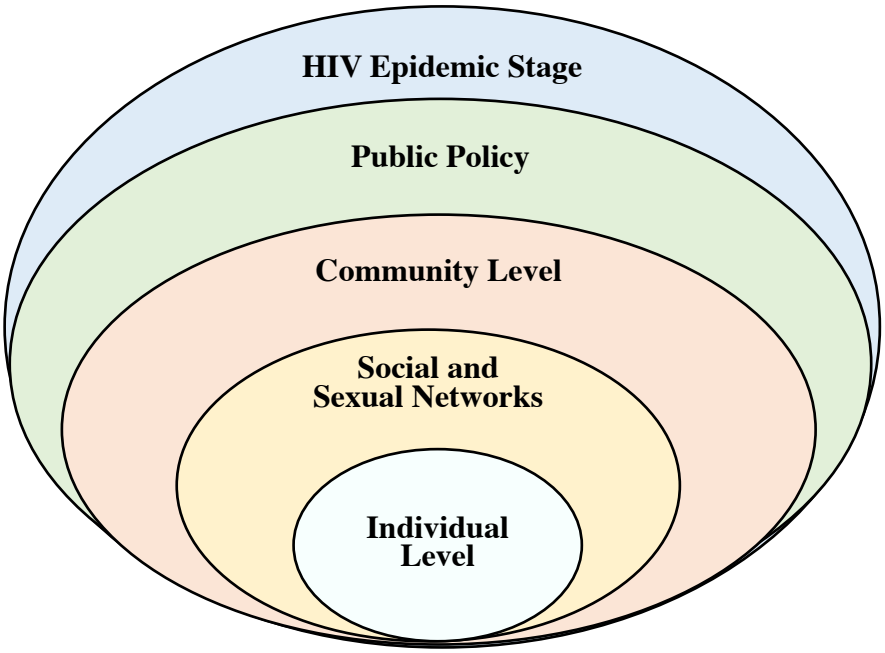


The Andersen model has been criticized for not considering cultural norms, social networks, and interactions (Kabir, 2021).

1.10.5 The Modified Social Ecological Model (MSEM)

The conceptual framework for this research draws from the Modified Social Ecological Model (MSEM) which was developed to guide the assessment of the risks and risk contexts of HIV epidemics. The model is useful to inform research amongst key populations who are at substantial risk of HIV. According to MSEM, individuals are part of their community and health-systems around them, which in turn are part of the wider health-policy environment.

Figure 1.17: Elements of the Modified Social Ecological Model (MSEM)



The MSEM is composed of five levels of risk for HIV infection: individual, social and sexual networks, community, policy, and stage of the HIV epidemic.

Individual factors are biologic or behavioural characteristics associated with vulnerability to acquire or transmit illness or infection. These include belonging to marginalised groups, sexual risk factors, coinfections and drug use.

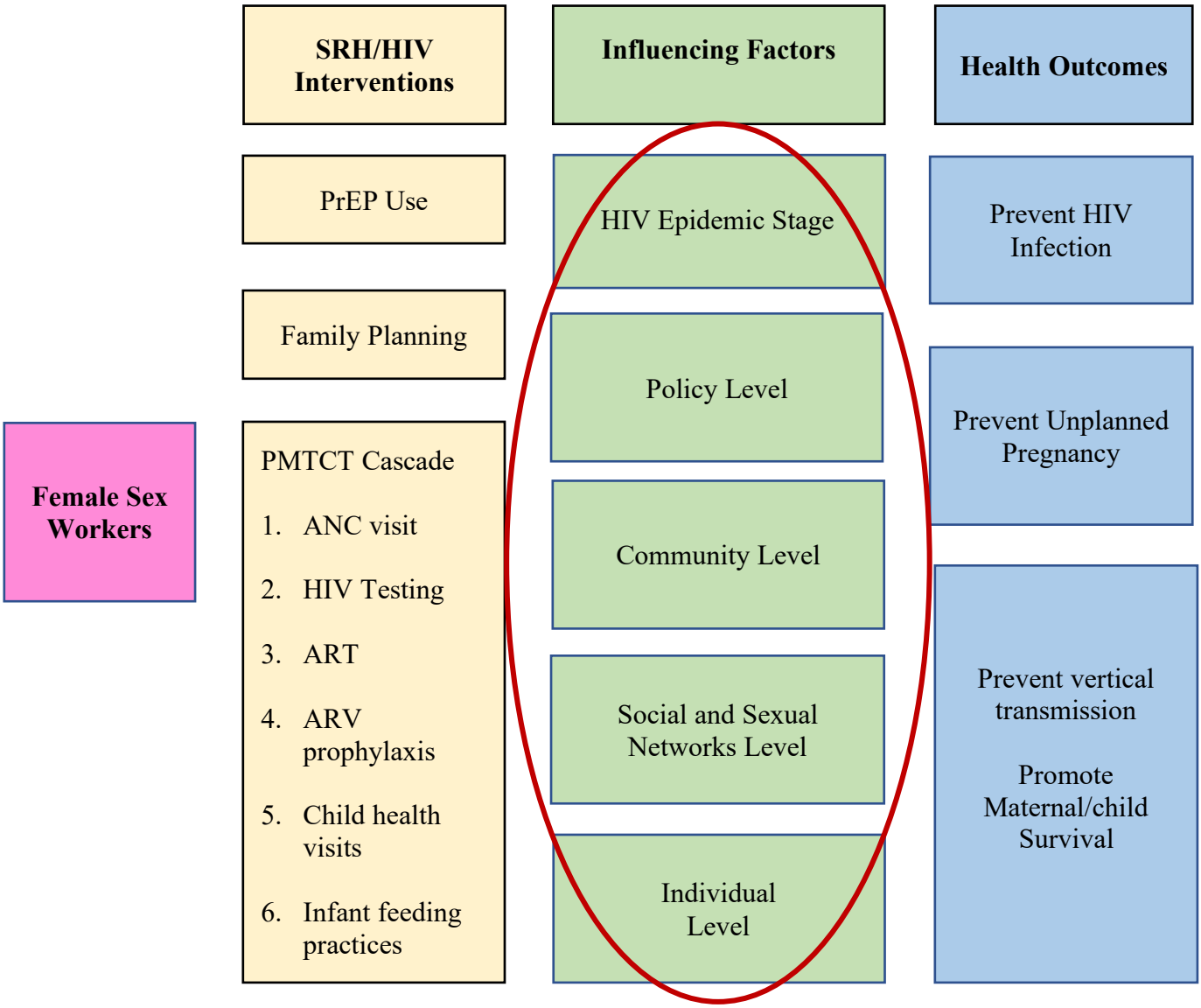
Network, community, policy, and stage of epidemic represent factors outside of the control of the individual.

Social and sexual networks are comprised of interpersonal relationships, including sexual partners, family, friends, neighbours, and others that directly influence health and health behaviours. *Community environments* generally include network ties; relationships between organisations and groups; and geographical/political regions. Communities may be cultural, economic, religious, geographic lines, or any combination of the above may that bind communities. Community factors include access to evidence-based harm reduction strategies, including access to peer initiatives. Conversely HIV risk is exacerbated by stigma, discrimination, marginalisation and inequitable social norm, such as unbalanced power relations with male partners. *Laws and policies* provide the general framework for shaping the risk of marginalised populations and the general population. Policies determine a range of risk exposures for FSWs, including coverage of HIV testing and counselling, sexual health education, condom availability, and ARV access. Punitive laws around sex work result in police harassment and frequent incarceration and diminish access to health services. *HIV epidemic stage* includes HIV incidence and HIV prevalence and other measures of risk that determine an individual's risk of HIV infection. An individual's risk should be interpreted within the context of the stage of the epidemic, for example, risk should be considered high in contexts with a high burden of HIV infection and viral load (Baral *et al*., 2013).

The MSEM was selected as a conceptual framework for this research as it is a flexible model for guiding studies among key populations at risk for HIV in diverse sociocultural contexts (Baral *et al*., 2013). While the MSEM is useful to understand a range of factors contributing to HIV risk it does not give insight into how much each factor contributes to risk.

As noted earlier, this research draws from the MSEM framework it is expected that there is a complex interplay of different factors at the individual, social and sexual networks, community, policy and epidemic stage that would impact FSWs' utilisation of PrEP and family planning, and completion of the PMTCT cascade (see Figure 1.18). This research asserts that barriers at each of these levels may restrict utilisation of interventions, while other factors may facilitate utilisation of services thereby impacting efforts around maternal infection and survival, unplanned pregnancy, vertical transmission and child survival**.**

Figure 1.18: Conceptual framework adapted from the MSEM representing multilevel factors affecting utilisation of PrEP, family planning and completion of the PMTCT cascade



2 Reviewing The Evidence

2.1 Overview

This literature review starts with a breakdown of the search strategy. It them moves on to introduce global guidelines around ending AIDS as a public health threat, and global plans and targets to reduce new infections amongst children. It goes on to give details about the 4-prong approach to reduce new infections amongst children, including a breakdown of interventions that fall under in each of the prongs, impact of the interventions, existing evidence around acceptability of the interventions and local guidelines for implementation of the interventions.

The review then summarises the published literature on engagement in the first three PMTCT prongs, identifying barriers and facilitators of engagement, and giving posited reasons for the identified barriers and facilitators.

2.2 Search Strategy

This review was undertaken by searching the Global Health database for literature on barriers and facilitators to utilisation of PrEP, Family Planning and PMTCT by FSWs. This database was chosen as it is an important resource covering public health issues on an international scale. This search was not intended to be an exhaustive or systematic review but rather to present key aspects of published literature that are important to understand FSWs engagement in the three PMTCT prongs. After developing my research question and objectives, I identified the most important terms that represent my topic. Six key concepts and accompanying key terms were identified as important to the literature review (Table 2.1). I then developed a list of different terms in which my key concepts could be expressed. To do this, I considered synonyms, related words, tenses, and word variants. I also identified additional key words from titles and abstracts previously read.

Table 2.1: Key search terms used in the literature review

Key Concept	Key Terms
(1) HIV	HIV or AIDS
(2) Sex workers	Sex work or Sex worker or Prostitute or Prostitution or Commercial sex work or Commercial sex worker or CSW or FSW or Female sex worker or FSW
(3) Barriers and facilitators	Barriers or Facilitators or Factors associated or Factors or Barriers and facilitators or Acceptability

(4) PrEP	PrEP or Pre-exposure prophylaxis or Pre exposure prophylaxis
(5) Family Planning	Family planning or Contraception or Contraceptive or LARC or Long-Acting Reversible Contraception or Barrier method or Non-barrier method or Condoms
(6) PMTCT	Prevention-of-mother-to-child-transmission or PMTCT or Vertical transmission or Mother-to-child-transmission or Elimination-of-mother-to-child-transmission or EMTCT

The search was conducted in June 2021. When searching for abstracts, I used Boolean operators to create different query combinations, linking the identified search terms using 'OR' to search for abstracts that include key terms individually and 'AND' to search for abstracts that include different concepts together (Table 2.2). .

Table 2.2: Key concept combinations

1.	'HIV' AND 'Sex workers' AND 'Barriers and facilitators' AND 'PrEP'
2.	'Sex workers' AND 'Barriers and facilitators' AND 'Family Planning'
3.	'HIV' AND 'Sex workers' AND 'Barriers and facilitators' AND 'PMTCT'

A total of 777 studies were identified through the database search. 13 duplicates were removed. Titles and abstracts were reviewed to identify studies that were conducted among FSWs in any sub-Saharan African country from 2011 onwards leaving 119 articles that were eligible for inclusion (645 removed). A review of the remaining studies resulted in removal of a further 67 articles for various reasons including studies being outside stipulated period and/or stipulated area, populations other than FSWs, and not being related to impact, among other reasons. This left 52 articles that warranted further investigation. A search of the reference list of each of the studies resulted in inclusion of a further 8.

Figure 2.1: Flow diagram of the search and assessment for inclusion and exclusion

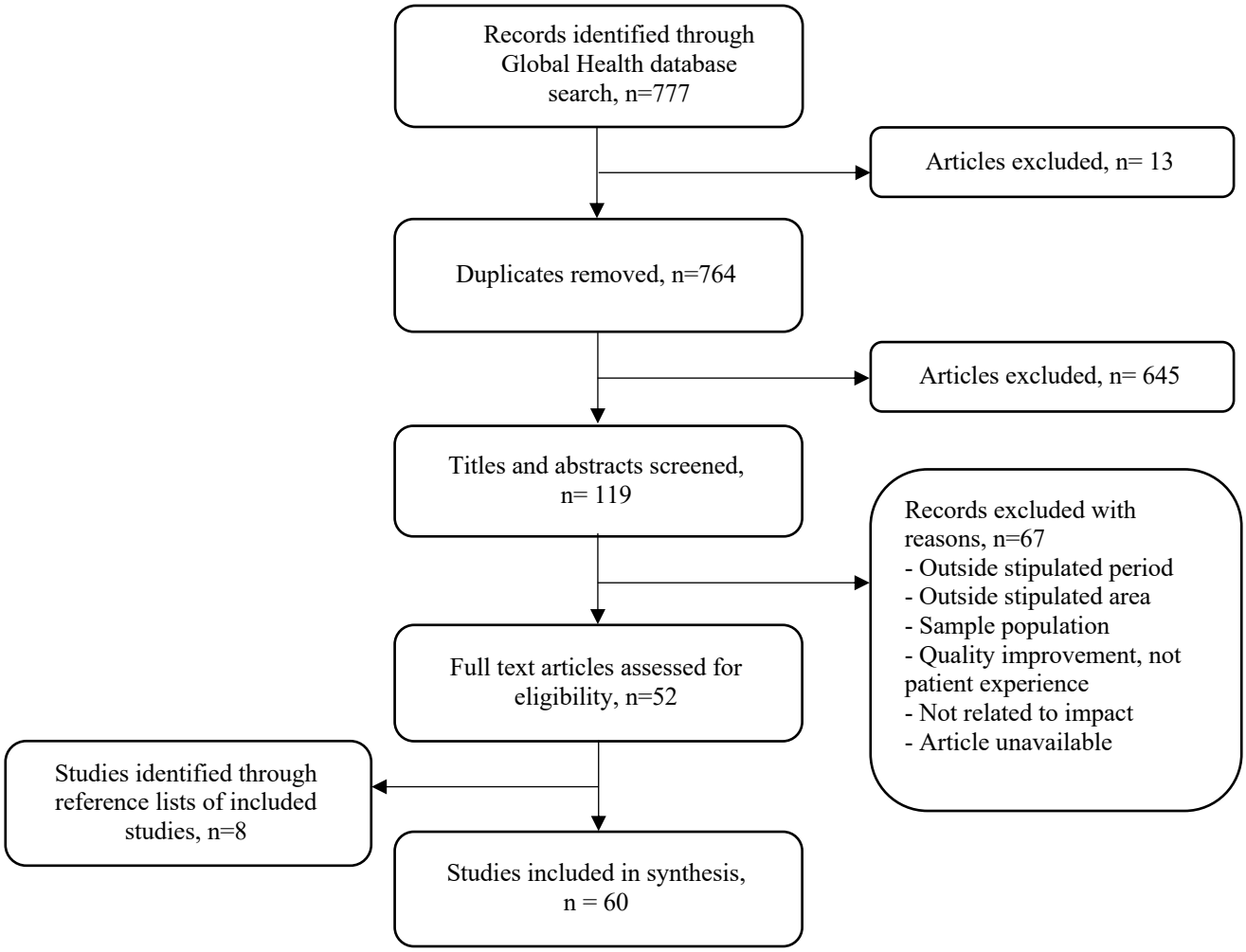


Table 2.3: Summary of Characteristics of the Included Articles

Items	Characteristic	Number (n)	Percentage (%)
Publication date	Prior to 2013	3	5.0
	2013 onwards	57	95.0
Countries represented in studies	1. Burkina Faso	3	4.7
	2. Cameroon	3	6.3
	3. Côte d'Ivoire	1	1.6
	4. Ethiopia	3	4.7
	5. Ghana	1	1.6
	6. Guinea	1	1.6
	7. Kenya	9	14.1
	8. Malawi	3	4.7
	9. Mali	2	3.1
	10. Nigeria	4	6.3
	11. South Africa	5	7.8
	12. Swaziland	4	6.3
	13. Tanzania	5	7.8
	14. The Gambia	1	1.6
	15. Togo	3	4.7
	16. Uganda	3	4.7
	17. Zambia	1	1.6
	18. Zimbabwe	5	7.8
	19. SSA	1	1.6
	20. Global	1	1.6
	21. n/a	4	6.3
Research design	Systematic/Literature Review	5	8.3
	Qualitative	15	26.7
	Quantitative	29	50.0
	Mix methodology	7	11.7
	Field notes	1	1.7
	Review article	1	1.7

A literature review summary table of identified barriers and facilitators to utilisation of interventions is included in Appendix 8.4 .

Critical appraisal of selected articles

Sixty articles were selected for critical appraisal for eligibility. In total 58 studies were appraised, that is, 28 questionnaires/surveys, 15 qualitative studies, seven mixed method studies, five systematic reviews, two cohort studies, and one randomized control trial. Two of the articles were not appraised as they were not studies - one was researcher field notes and the other was a review of HIV prevention programming for FSWs.

Critical appraisal checklists from the National Institute for Health and Care Excellence (NICE) and the Critical Appraisal Skills Programme (CASP) were used to assess the quality of the studies. Each question in the checklists represented a methodology quality criterion, and responses to questions were either Yes, No or Unsure (Y/N/U). A response of 'Yes' equates to one point indicating that the criterion was fulfilled. The total number of questions for which

the response was ‘Yes’ was tallied, and a final percentage score determined. A score of 80-100% represents a high-quality study, 50-79% represents a moderate quality study, and less than 50% represents unsatisfactory quality study.

The overall quality of the articles ranged from 24% to 100%. Majority of them are moderate to high quality: 30 scored between 80-100% (high quality); 27 scored 50-79% (moderate quality); and one scored below 50% (low quality) but the findings are referred to in the text. The assessment result of each article for each critical appraisal criterion is detailed in Appendix 8.5.

2.3 Barriers And Facilitators To Utilisation Of Interventions

A review of existing literature revealed multiple barriers and facilitators to utilisation of PrEP, various forms of family planning and PMTCT interventions. These factors can be summarised into eight themes namely demographics, knowledge, socioeconomic status, psychological factors, intersecting stigma, support systems (or lack thereof), health system factors and legislation.

2.3.1 Knowledge

In the literature it emerged that there was awareness about PrEP, barrier methods and non-barrier family planning methods amongst some but not all FSWs (Sutherland *et al*., 2011; Vandenhoudt *et al*., 2013; Onyango *et al*., 2015; Schwartz *et al*., 2015; Broel *et al*., 2017; Emmanuel *et al*., 2020; Mudzviti *et al*., 2020; Ortblad *et al*., 2020; Packel *et al*., 2021). This knowledge was gained through engagement with healthcare providers, community education and knowledge promotion programmes (Luchters *et al*., 2016; Emmanuel *et al*., 2020) Knowledge around the PMTCT cascade did not emerge.

Lack of knowledge included where to obtain non-barrier family planning (Misganaw, 2013) and FSWs, clients and long-term partners not knowing how to properly use condoms (Onyango *et al*., 2015; Luchters *et al*., 2016; Sekoni *et al*., 2016; Workie, *et al*., 2019) resulting in condom breakage (Sekoni *et al*., 2016). Further, religious beliefs such as fatalism, predestination, and faith-based invulnerability were cited as a reason for avoiding PrEP use. For example, some FSWs viewed utilisation of HIV prevention interventions as futile as they believed that God was the only reliable source of protection from infection while others believed that each individuals' health status and survival is ordained by God (Muula, 2015a).

Lastly, FSWs' use of interventions was impacted by lack of knowledge amongst people surrounding them . For example, some health providers' questioned the safety of modern day versions of the IUD and were reluctant to prescribe them due to adverse events associated with older versions, such as pelvic infection, infertility, and death from sepsis (Black *et al*., 2012; Ampt *et al*., 2019). Misperceptions that PrEP is prescribed for HIV-infected persons (Shea *et al*., 2019; Emmanuel *et al*., 2020; Were *et al*., 2020) led their friends to discourage FSWs from using it (Were *et al*., 2020). Further, FSWs feared that clients would be violent should they be found using PrEP (Emmanuel *et al*., 2020) and that emotional partners would suspect them of infidelity (Syvertsen *et al*., 2014).

It emerged that having knowledge about interventions did not always translate to utilisation as the perception of their risk level often guides people's behaviour. A high risk perception resulted in FSWs testing for STIs, including HIV (Vandenhoudt *et al*., 2013; Grosso, *et al*., 2015; Broel *et al*., 2017; Ortblad *et al*., 2020; Packel *et al*., 2021) and utilisation of PrEP (Mudzviti, 2020) to prevent HIV infection. FSWs were also more likely to use condoms if they were aware of their HIV negative status (Ortblad *et al*., 2020) and if they were aware of their risk of HIV, STIs and unwanted pregnancy (Pitche, 2013). Condom use was also lower amongst FSWs who intended to conceive (Rashed, 2013; Schwartz *et al*., 2014).

Use of non-barrier contraceptive methods was more likely amongst those who were not using condoms and therefore knew they were at risk of unintended pregnancy. It was also more likely amongst those who had previously experienced condom failure (Yam *et al*., 2014), had at least one previous pregnancy (Schwartz *et al*., 2017; Ampt *et al*., 2019), had a history of being raped

(Schwartz *et al*., 2017) or desired to plan the size of their family and comfortably provide for their dependents (Luchters *et al*., 2016). If they knew they were pregnant and infected with HIV they felt motivated to attend the ANC (Parmley *et al*., 2019b) and to test their children for HIV (Rao *et al*., 2019) possibly to initiate the necessary steps to prevent vertical transmission.

FSWs who underestimated their risk of HIV were more likely to default on hospital visits (Emmanuel *et al*., 2020). They were also less likely to use PrEP and condoms (Muula, 2015; Were *et al*., 2020). For example, having other sources of income outside of sex work was associated with lower condom use which was suggested to be due to lower-perceived vulnerability with reduced sexual intensity (Bukenya, *et al*. 2013). In addition, belief that one could not get pregnant due to consistent condom use or irregular periods (Parmley *et al*., 2019b) resulted in lower likelihood of using non-barrier contraceptives. Some FSWs also felt it was unnecessary to use condoms in trusting relationships (Musyoki *et al*., 2018).

Not knowing that one was pregnant or HIV infected led to late ANC presentation (Parmley *et al*., 2019b). Similarly, not knowing one's status prevented ART utilisation amongst those in need (Schwartz *et al*., 2014; UCSF, *et al*., 2015).

2.3.1 Posited Reasons for level of knowledge

Health literacy

Lack of knowledge may reflect poor health literacy. According to the WHO, health literacy implies the "achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing lifestyles and living conditions" (WHO, 1998). A lack of health literacy may disempower FSWs ability to make decision to take care of not only their own health but also the health of their children (Nutbeam, 2000; Shieh, 2009).

Education

Research suggests that people with more education are likely to have greater health literacy (Raghupathi, 2020) as a lack of education may potentially influence one's ability to understand and communicate with providers and thus influence utilisation of interventions. Limited data is available on FSWs educational attainment in Mombasa, Kilifi and Port Elizabeth, however the South African Health Monitoring Study (SAHMS) found that FSWs with more than secondary education attainment stood at just 16.5% in Cape town, 19% in Johannesburg and 34.3% in Durban (UCSF, 2015). Looking at the population as a whole, in 2014, just 23.6% and 8.5% of women in Mombasa and Kilifi, respectively, had completed secondary school (KNBS, 2015).

Patient-provider dynamics

Low health literacy may also reflect imbalanced patient-provider relationships. The ideal patient-provider relationship will include a mutual respect between both parties that leads to a healthy partnership. However, the traditional patient-provider relationship is paternalistic, with the provider directing the patient and the patient taking on a subordinate role. This has been shown to lead to patient reluctance to speak up during encounters, including hesitancy around asking questions or voicing their concerns about confusing information (Heath, 2018). Further, an inefficient health system will have frustrated overburdened staff and resultant compromised

quality of care, including inadequate sharing of information about health interventions (Valiani, 2019).

2.3.2 Socioeconomic Factors

Poverty led some FSWs not to use interventions. For example, even when offered free of charge, inability to afford transport costs impacted utilisation of PrEP (Emmanuel *et al*., 2020), access to ANC services and ART use (Parmley *et al*., 2019b). Some FSWs opted not to use condoms with long term partners due to their dependence on them (Musyoki *et al*., 2018) and fear of withdrawal of financial support and marriage prospects (Luchters *et al*., 2016) should they insist on condom use.

Income precarity results in unpredictable work schedules. FSWs met clients unexpectedly (Syvertsen *et al*., 2014; Shea *et al*., 2019) or had to travel to meet them (Emmanuel *et al*., 2020) which resulted in poor PrEP adherence if pills were left at home. Further, the opportunity cost of accessing PMTCT care was a barrier to cascade completion (hIarlaithe *et al*., 2014).

Opportunities to make more money led FSWs to acquiesce to sex without condoms (Parmley *et al*., 2019a). This was particularly if they were desperate for money (Misganaw, 2013; Packel *et al*., 2021), had dependents (Muula, 2015; Parmley *et al*., 2019a) had fewer clients in the past month (Bukenya, 2013), charged less per sex act (Vandenhoudt, 2013), and had to buy their own condoms (Grosso, 2015).

Use of interventions was higher amongst FSWs who had a higher income (Yam, 2014). For example, FSWs were more likely to use contraceptives if they had greater income including from cash incentives for sexual behaviour change (Packel, 2021), more paying clients (Bukenya *et al*., 2013; Yam *et al*., 2014) and more money paid by their last client (Vandenhoudt, 2013).

Uptake was also higher amongst FSWs who were concerned about the negative economic consequences of not using interventions. For example, PrEP use was motivated by the anticipated negative economic effects associated with HIV acquisition (Shea *et al*., 2019). FSWs were also more likely to use contraceptives if they were a parent as additional children would add to the financial burden they faced (Luchters *et al*., 2016; Parmley *et al*., 2019a)

2.3.2.1 Posited Reasons for socioeconomic factors

Multiple definitions of poverty exist. One definition of poverty is “a condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to services” (United Nations, 1995).

While data was unavailable on poverty rates amongst FSWs, it was noted that in Mombasa, 4% of the entire population lives below the poverty line (USD 1.90 a day) while in Kilifi, 21% live below the poverty line (KNBS, 2013). The poverty rate in the Nelson Mandela Bay Metropolitan Municipality (within which Port Elizabeth city falls) stands at 28.3% (Ngumbela,

2021). Kilifi and Nelson Mandela Bay have severe income gaps with Gini coefficients[6] of 0.57 and 0.67, respectively (KNBS, 2013; COGTA, 2020).

Some feminists have suggested sex work is indivisible from human trafficking based on the assumption that no person would voluntarily agree to sell sex (Loff, 2013). However, for some women, entering the sex industry offers some financial independence (Choudhury, 2013) as poverty is a reality for many women as highlighted below.

Feminisation of Poverty

Poverty is more pronounced among females compared to males, for example, research in South Africa revealed that women are more likely to be poor and go hungry compared to men and, as age increases poverty incidence is higher for women compared to men (Sulla, 2018). The higher rates of poverty amongst women exist for various reasons:

- *Sexual division of labour*

In many African societies, gender roles are characterised by inequality and economic marginalisation of women. Specifically, sexual division of labour includes practices that favour male educational attainment as well as unequal allocation of labour (Cornish, 2009) with women having a harder time finding a job and earning substantially less than men when they do (Sulla, 2018).

In pre-colonial times women held positions of power, and were active in production, and in political and religious spheres. They had a voice, controlled their bodies, owned their labour, and determined their destinies. This diminished with the onslaught of colonialism. Women lost their rights and other privileges as the divide and rule policy was heavily applied to divide indigenous people's labour according to gender. Men negotiated with European administrations on tax and governance matters while women were pushed into the informal economy. Further, the European education system favoured boys over girls (Meier Zu Selhausen, 2016; Montgomery, 2017; Moagi, 2020; Kilonzo, 2021).

There has been progress in gender equality[7], for example, in both Kenya and South Africa the gender gap for educational attainment is 93.9% and 99.8%, respectively, while health and survival stand at 97.5% and 97.9%, respectively. However, large gaps persist in some subindexes, for example, for Kenya and South Africa the gap in wage equality for similar work stands at 49.8% and 68.5%, while economic participation and opportunity stands at 81.1% and 64.9, respectively (World Economic Forum, 2022). Further, while education enrolment and retention may be at par in Kenya and South Africa (World Economic Forum, 2022), disparities in academic performance persist (Muhwezi, 2023). For example, a study in Kenya found that there is a significant difference in academic achievement between boys and girls, with boys outperforming girls (Mwihia, 2020). The burden of unpaid care is partly responsible for these disparities, as discussed below.

[6] Gini coefficient is a measure of income inequality that ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality. The lower the Gini value, the more equal a society is. Economies with Gini values above 0.5 are considered very unequal (Trapeznikova, 2019).

[7] The Global Gender Gap Index measures scores on a 0 to 100 scale. The scores can be interpreted as the percentage of the gender gap that has been closed (World Economic Forum, 2022).

- *Unpaid Care Work*

Unpaid care work refers to all unpaid services provided within a household for its members, including care of persons, housework and voluntary community work (UNIFEM, 2000). Around the world, women spend two to ten times more time on unpaid care work than men (Ferrant, 2014). This unequal burden of unpaid care undermines women and girls' rights to decent work, education, health, rest and leisure. It hinders them from seeking employment and income, which in turn holds them back economically (Institute of Development Studies, no date).

- *Sexual division of power*

Sexual division of power refers to the inequalities in power between the sexes which may be manifested in dependence on male partners for sustenance and protection. Power may be exerted in different ways including denying access to resources. For example, in many African societies, male dominance and female subordination often extends to access to inheritance, as well as property being grabbed from widows with no children or widows who do not have sons as they are often considered worthless and undeserving of property (Izumi, 2007).

- *Climate change and food insecurity*

Much of SSA is grappling with extreme weather patterns largely shaped by human-induced climate change. This has resulted in persistent droughts in some areas which are expected to worsen in the coming decades. Women are especially vulnerable to climate change. For example, in South Africa 60-80% of the agricultural labour force is comprised of women whose livelihoods depend on farming. They experience crop failure, poor harvests and loss of livelihoods which limit the availability of food and income. The loss of livelihoods has led to an increase in the number of people participating in survival sex and altered migration patterns (Care International, 2016). Language barriers following migration have been linked to poor access to healthcare services (Feinberg *et al*., 2002).

- *Criminalisation of sex work*

In addition to the feminisation of poverty, FSWs find themselves in poverty due to punitive legislation. Specifically, interactions with law enforcement and the criminal justice system can results in fines, fees and penalties following arrest as well as family and community rejection leading to financial hardship (NSWP, 2017). Further, unless they have formal employment elsewhere, sex workers often struggle to access to financial benefits including bank accounts, loans and legal forms of credit, insurance, pensions, and other basic employment benefits (NSWP, 2020)

2.3.3 Psychological

Fatigue

Fatigue was noted as a barrier to utilisation of interventions. For example, FSWs felt tired of having to attend multiple screening appointments before initiating PrEP (Busza *et al*., 2019), taking PrEP daily, and attending numerous follow-up clinic visits (Shea *et al*., 2019; Emmanuel *et al*., 2020; Were *et al*., 2020). A preference for methods that did not require daily use was noted (Sutherland *et al*., 2011).

Fear

Fear of interventions prevented utilisation. For example, some feared that they would have adverse effects if they used PrEP including drug interactions, exhaustion, stomach pain, nausea and vomiting, and even death (Pillay *et al*., 2018; Busza *et al*., 2019; Shea *et al*., 2019; Emmanuel *et al*., 2020; Mudzviti *et al*., 2020; Were *et al*., 2020). Similarly they also feared that family planning would result in heavy bleeding, weight loss, infertility, deformed babies, and dwindling libido, among other side effects (Misganaw, 2013; Luchters *et al*., 2016; Ampt *et al*., 2019; Parmley *et al*., 2019b). Others did not attend ANC visits due to fear of needles (Parmley *et al*., 2019b). Utilisation of interventions was promoted by positive attitudes including belief in how safe they were, how well they work and how long they work for (Ampt, 2019).

Common mental health disorders

Common mental disorders (CMDs) are comprised of different types of depression and anxiety (Chabata *et al*., 2020). While they do not usually affect insight or cognition, and are usually less disabling than major psychiatric disorders, they do cause marked emotional distress and interfere with daily function (Stansfeld *et al*., 2016). Previous research has shown that depression can lead to poor utilisation of health interventions, for examples, FSWs with severe depression showed almost twice the risk of inconsistent condom use compared to FSWs without depression (Abelson *et al*., 2019).

Substance use

Drinking excessively was cited as a reason for poor PrEP adherence (Syvertsen *et al*., 2014; Shea *et al*., 2019). FSWs who were not using modern contraceptives were likely to report harmful or dependent alcohol use (Luchters *et al*,. 2016). Further, inconsistent condom use was associated with daily alcohol use (Bukenya *et al*., 2013; Vandenhoudt *et al*., 2013; Pitpitan *et al*., 2014; Onyango *et al*., 2015; Workie, *et al*., 2019). FSWs either directly or indirectly linked their limited ANC engagement or late ANC presentation to their drug use (Parmley *et al*. 2019b). Further, FSWs who were hazardous drinkers or harmful drinkers were more likely to be unaware of their HIV infection when compared to abstinent or non-hazardous drinkers (Lancaster *et al*., 2016). Lastly, excessive alcohol use was found to be an important impediment ART adherence (Vandenhoudt *et al*., 2013). Unexpectedly, Ochonye *et al*. (2019) found that FSWs using psychoactive substances were more likely to utilise condoms.

Power imbalances

Use of interventions was also impacted by power imbalances. For example, condom negotiation with non-paying partners was difficult due to patriarchy and a perceived attack on masculinity (Luchters *et al*., 2016), living with their partner and being afraid to seek care (Grosso, 2015), Requests for condom use presented a risk of verbal, physical and/or sexual violence (Grosso, *et al*., 2015; Onyango *et al*., 2015; Luchters *et al*., 2016; Musyoki *et al*., 2018; Parmley *et al*., 2019; Chabata *et al*., 2020). Condom use with clients was also hampered by rough sex and intentional damage of condoms by clients, staying alone overnight at a client's or stranger's home (Onyango *et al*., 2015), and purposeful removal of condoms before completion of sex acts (Grosso, *et al*., 2015). FSWs who had the self-efficacy to negotiate use had higher utilisation of condoms and LARCs (Ampt *et al*., 2019; Ochonye *et al*., 2019).

Desire to protect themselves and their children

Lastly, while FSWs used interventions such as HIV and STI testing to protect their own health (Mudzviti, *et al*., 2020), desire to protect their children also resulted in utilisation of interventions. For example, FSWs who had future pregnancy intentions were more likely to use PrEP and to test their children for HIV (Rao *et al*., 2019; Emmanuel *et al*., 2020). Further, FSWs were more likely to test for HIV if they were pregnant or postpartum (Parmley *et al*., 2019a).

2.3.3.1 Posited reasons for psychological factors

Treatment fatigue

Treatment regimen fatigue is a decreased desire and motivation to maintain vigilance in adhering to treatment. For example, having to take a pill on a daily basis has been described as burdensome and a barrier to PrEP use (Pillay *et al*., 2020), as was frequency of HIV counselling and treatment services required (Emmanuel et al., 2020).

Fear

Community mistrust and resistance to medical interventions is not uncommon in many societies in Africa, for example, in Cameroon a PrEP trial amongst women with multiple sex partners (including but not limited to sex workers) was stopped in 2005 due to concerns about trial ethics and standard of care available to participants which was fuelled by rampant misinformation in the media (McGrory, 2009). There are concerns that researchers from developed countries may conduct experiments in low and middle income countries (LMICs) that would not be acceptable in developed countries (Ana *et al*., 2013). Research suggests this fear and mistrust is rooted in the colonial past and the neo-colonial present. It is also driven by unethical and poorly conducted research that has taken place in the past (McGrory, 2009; Lenzer, 2011).

Fear of death has also impacted utilisation of services. For example, a study in Kenya found that participants were reluctant to initiate antiretroviral therapy as it they perceived it to signify that they were at the final stages of their life (Curran *et al*., 2014)

Power imbalances

As noted earlier, sexual division of power refers to the inequalities in power between the sexes. Power may be exerted by denying access to health interventions (Willis 2016), including condoms, and threats of and actual sexual and physical violence (Alexander, 2001).

Common mental health disorders

FSWs have been found to suffer from high levels of depression and post-traumatic stress disorder (Jung *et al*., 2008; Gu *et al*., 2014). Working in a profession that is highly stigmatised and not regarded positively by society, as well as living in an unstable environment fraught with danger and disease can result in high levels of stress (Wojcicki, 2001). Stress and mood disturbances can act as a distraction and make it difficult to focus which can lead to forgetfulness (Piccione, 2022).

Substance use

Trading sex is linked to higher alcohol and drug use (Pitpitan *et al*., 2014) as FSWs use substances to cope with their everyday stressors (Wanjiru *et al*., 2022) . For example, an overwhelming majority of FSWs in Johannesburg (81.5%) can be classified as hazardous drinkers (UCSF, *et al*., 2015) as compared to 5% of women in the general population (STATSSA, 2019). Similarly, a study in Mombasa found that 98% of FSWs reported current drug use including alcohol (71%), heroin (28%) and marijuana (21%) (Phyllys *et al*., 2022).

Desire to protect baby and self

Maternal-foetal attachment (MFA) is a term used to describe the relationship between a pregnant woman and her foetus. It is manifested in behaviours that demonstrate care and commitment to the foetus and includes comforting (such as stroking the pregnant belly) and physical preparation for the baby's arrival (Salisbury *et al*., 2003). A desire to protect her unborn baby from harm and increase her health practices is another attribute of MFA (Suryaningsih, *et al*., 2020). After birth, most women continue to have an innate maternal desire to protect their children, as exhibited in the utilisation of PrEP, HIV testing for themselves and HIV testing for their children observed in the literature. It should be noted that defaulting on care after the baby is confirmed to be healthy has been observed, especially after the baby receives a negative HIV result. This has been attributed to the belief that HIV care for the mother's own health is unimportant once the infant is born (Clouse *et al*., 2014).

2.3.4 Intersecting Stigma

Individuals experience various intersecting stigmas related to their occupation, identity and behaviours. Stigma may be in the form of internalised stigma, that is, endorsing negative feelings and beliefs and applying them to themselves (Link, 1987); enacted stigma, that is, overt acts of discrimination and humiliation directed at a person because of their stigmatised status (Scambler, 1986); anticipated, that is anticipation of being rejected or discriminated against (Quinn, 2009); and secondary or 'associative' stigma, that is, the experience of stigma by family or friends of members (Holzemer *et al*., 2009).

Stigma from the community

FSWs using PrEP reported experiencing stigma from the community, including from friends and family which made utilisation of interventions difficult. For example, friends/family belief that PrEP would increase risky sexual behaviour led to them discouraging use (Syvertsen *et al*., 2014; Emmanuel *et al*., 2020; Were *et al*., 2020). FSWs also have a fear of testing, obtaining or disclosing test results (Parmley *et al*., 2019b). A status disclosure could lead to loss of income should clients find out an FSWs HIV positive status (Ficht *et al*., 2018). Fear of community stigma also promoted utilisation of interventions. For example, FSWs with children were more likely to use family planning to avoid community ridicule for bearing (more) children as FSWs (Luchters *et al*., 2016).

Stigma from health care workers

HIV stigma from health care workers was pervasive and impacted utilisation of interventions. For example, FSWs feared testing for HIV as they were afraid of health care workers' responses should they test positive (Ficht *et al*., 2018; Parmley *et al*., 2019b) as HIV-infected

FSWs are more likely than HIV-negative FSWs to experience discrimination in the health care setting (King *et al*., 2013). There was also reluctance to test children as a positive test may result in judgement and accusations by child protective services (Ficht *et al*., 2018).

FSWs were also stigmatised and treated poorly due to their occupation. For example, health care workers questioned the authenticity of FSWs who reported sexual violence resulting in reluctance to access emergency contraceptives (Fick, 2006; Worku, 2013). Health care workers also halted provision of ANC services and isolated FSW from other patients until they sought care from an HIV clinic due to the assumption that they were infected with HIV (Beckham *et al*., 2015). FSWs were also denied access to ANC services if they did not have a male partner present (Beckham *et al*., 2015; Rwema *et al*., 2019). Stigma from health care workers resulted in FSWs' avoiding health care facilities, for example, some only attended the initial ANC visit to access a clinic card[8] (Parmley *et al,* 2019b) as having the correct documentation helped reduce the extent of poor treatment from staff when delivering their child (Jinga, *et al*., 2019). Stigma around selling sex also resulted in some FSW attempting to keep their occupation hidden, however these women were found to be less confident when accessing and utilising condoms correctly compared to those who self-identified as FSWs (Chabata *et al*., 2020).

The inability to produce proof of identity was frequently associated with hostile attitudes in clinics (Overs, 2013). Such undocumented FSWs were more likely to have unmet needs for highly effective non-barrier contraceptive methods (Schwartz, 2015) and were found to avoid treatment that could both save their own lives and prevent vertical transmission (Overs, 2013).

2.3.4.1 Posited reasons for stigma

Sex Work Stigma

The concept of structure of cathexis from the integrative theory of gender and power refers to what is seen as socially appropriate sexual behaviour for women, and manifests as constraints in expectations around female sexuality (Connell, 1987). Women who do not abide by the prevailing moral code are stigmatized. Many societies promote the stigmatisation of FSW by casting them as vectors of disease at odds with social mores (Fick, 2006), as is evident from criminalisation of sex work. For example, SWs in Kenya report facing experiences of stigma and discrimination in many settings (Cahill, 2019), including health care facilities.

HIV Stigma

Stigma from the community (family and friends) is driven by lack of knowledge about HIV, fear of contracting HIV, negative social perceptions about HIV and persons living with HIV (PLHIV), moral judgement about PLHIV, social influence within families and communities and religious thoughts about extramarital sex, multiple sex partners and HIV (Fauk *et al*., 2021).

HIV stigma from health care workers is driven by transmission-related fears and misconceptions, limited experience working with PLHIV and blame and negative feelings leading to endorsement of coercive measures and intent to discriminate against PLHIV in personal and professional contexts (Ekstrand *et al*., 2013).

[8] A tool that allows for recording and passage of medical information at all levels of care.

Migrant stigma

Migrant access to health services is guaranteed under multiple international and local policies as highlighted in Appendix 8.6. Despite this, migrants often face challenges when accessing health services. For example, in Kenya, barriers to access to healthcare including being charged higher rates than Kenyan clients, threats of harassment, real or perceived discrimination; documentation requirements and language barriers (Arnold, 2014). Migrants are also blamed for job scarcity (Jemutai *et al*., 2021) and increases in rental prices which leads to poor treatment. Somali people, in particular, have been targeted with increased harassment following recent waves of terrorist activities led by of Al-Shabab, the Somalia-based insurgent group (D'Orsi, 2021).

In South Africa, negative stereotypes about migrants have led to periodic waves of xenophobic attacks across the country. Migrants report continually experiencing negative treatment in hospitals and in other public spheres (Munyaneza, 2019) due to beliefs that they are responsible for the spread of communicable diseases, that they overuse the public healthcare system and that they are generally detrimental to South African society. This results in healthcare workers failing to implement legal service obligations for them. The knock-on effect is that migrants sometimes take on added expenses to rather travel to further away clinics with friendlier services or use more expensive private health services (White, 2021). Secondly, there are inconsistencies in legislation around non-South Africans' access to healthcare. The Immigration Act states that, except in the case of an emergency, clinics and hospitals must confirm a patient's legal status before providing care, and that they should report illegal foreigners or anyone whose status is not clear to the Director General of Home Affairs. On the contrary, the Constitution of South Africa, the National Health Act and the Refugees Act all state that all persons have a right to access health care in South Africa; both HIV and TB treatment are accessible free of charge to everyone regardless of immigration status; and any pregnant or nursing woman, and child under six years can access services free of charge regardless of immigration status. For other services, the means-test fees (see Appendix 8.7) are applied to non-South Africans who have permanent or temporary residency in a passport, as well as undocumented migrants[9] (such as refugees[10] and asylum seekers[11]) and foreigners from the Southern African Development Community (SADC) [12] region. Undocumented migrants from outside the SADC region as well as persons on a tourist/visitor's visa are subject to the highest fees (they are considered self-funded under the means-test-fees). Confusion around legislation leads some heath care providers to insist on proof of identification prior to service delivery, and others simply refuse care to refugees and asylum seekers altogether (White, 2021). Further, a lack of understanding of fee schedules results in misclassification of

[9] Migrants are individuals who have moved across an international border away from their place of residence, regardless of their legal status, the voluntary nature of movement and/or the causes for the movement (International Organisation for Migration (IOM), 2019)

[10] A refugee is defined as 'someone who is unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion' (UN General Assembly, 1951). They have formal refugee status documentation granted by the host country.

[11] An asylum seeker is someone whose claim has not yet been decided upon by the country in which he or she has submitted it. Not every asylum seeker will ultimately be recognised as a refugee, but every recognised refugee is initially an asylum seeker (UNHCR, 2006)

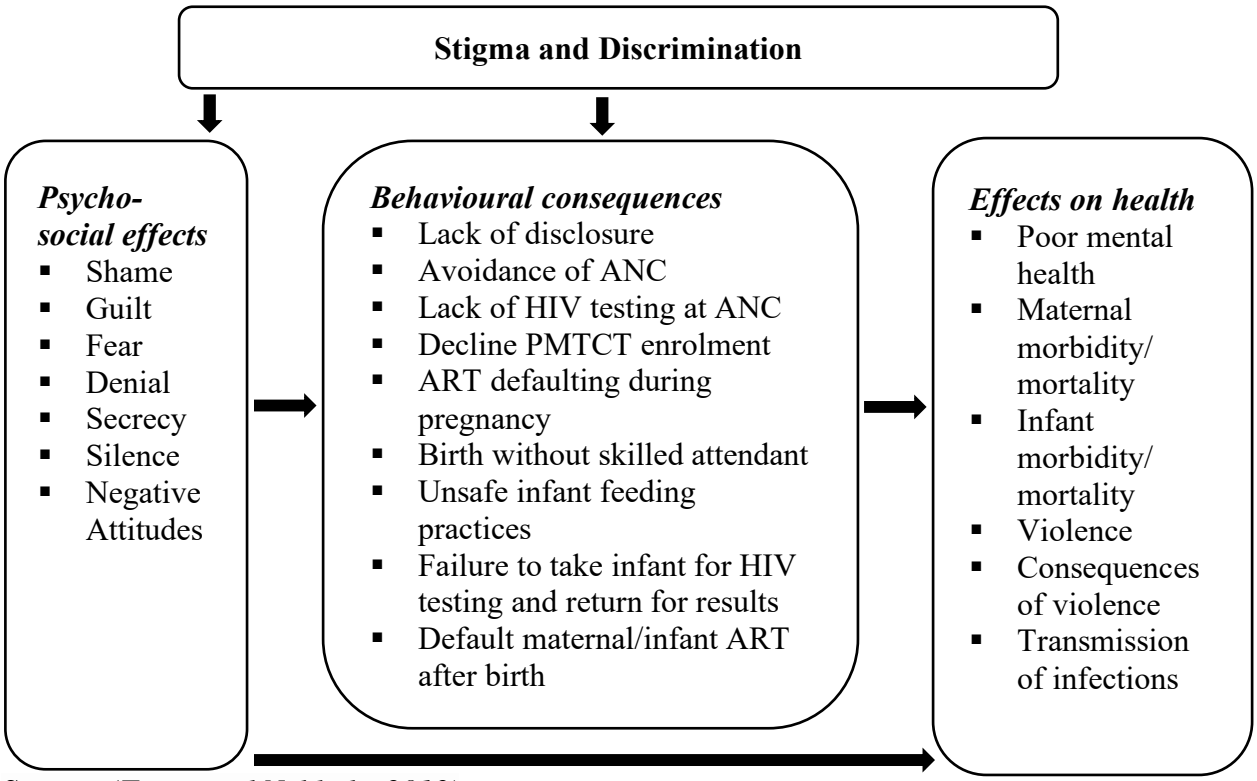
[12] SADC is a Regional Economic Community comprising 16 Member States: Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia and Zimbabwe.

refugees and asylum seekers resulting in their having to pay higher user fees than stated in the fee schedule (JHB-MHF, 2017; Sonke Gender Justice, 2021).

Effect of Stigma and discrimination

As per the Social Identity Theory (Murray *et al*., 2010), stigma results in individuals having difficulty constructing positive identities for themselves (Campbell, 2001) and being burdened with negative emotions leading to poor health seeking behaviour and ultimately negative effects on health (Turan, 2013).

Figure 2.2: Effect of stigma and discrimination



Source: (Turan and Nyblade, 2013)

2.3.5 Legislation

Kenya

The Kenyan Penal Code does not criminalise sex work; however, it criminalises third parties who live off the earnings of prostitution [sic]. It defines two types of offences with respect to sex work, namely "living on the earnings of prostitution" and "soliciting or importuning for immoral purposes". Across Kenya many local authorities address sex work under their own subsidiary legislation or by-laws. For example, Sections 258 (m) and (n) of the Mombasa Municipal Council By-laws (2003) state that "Any person who shall in any street or public place- (m) Loiter or importune for the purpose of prostitution (n) Procure or attempt to procure a female or male for the purpose of prostitution or homosexuality … shall be guilty of an offence" (FIDA, 2008). SWs in Kenya report facing arrest and extrajudicial abuse from city council police and general police. They are reluctant to report crimes which makes them vulnerable to violence from clients and the general public (Cahill, 2019).

South Africa

Criminalisation of sex work has existed in under various laws in South Africa, the first of which being the Immorality Act, 1927 (Act No. 5 of 1927) which prohibited extra-marital carnal intercourse between Europeans and Africans, and the "procuring" of women for interracial intercourse (Republic of South Africa, 1927). In 1950, the Immorality Amendment Act (Act No. 21 of 1950) was passed. This amended the original act to prohibit relations between Whites and any non-Whites (e.g. mixed race and Asian persons) (Republic of South Africa, 1950). The Immorality Act, 1957 (Act No. 23 of 1957) repealed the 1927 and 1950 acts. This Act prohibited prostitution, brothel-keeping and procuring, and other activities related to prostitution (Republic of South Africa, 1957). The Immorality Amendment Act, 1967 (Act No. 68 of 1967) amended the 1957 Immorality Act to include prohibition of escort services and the like (Republic of South Africa, 1967). In 1988, under the Immorality Amendment Act (Act No. 2 of 1988) the Immorality Act, 1927 (Act No. 5 of 1927) was renamed Sexual Offences Act, 1957 (Act No. 23 of 1957) (Republic of South Africa, 1988). Under this amendment it became a crime to prostitute, where previously only certain acts related to prostitution had been illegal. The Criminal Law (Sexual Offences and Related Matters) Amendment Act 32, 2007 (Act No. 32 of 2007) repealed and replaced many provisions, leaving only those related to prostitution and brothel-keeping. Further, under section 11, it is a sexual offence to engage the sexual services of persons 18 years or older (Republic of South Africa, 2007).

At the time of writing this thesis, sex work continued to be criminalised in South Africa by way of two statutes, namely the Sexual Offences Act, 1957 (Act No. 23 of 1957) and the Criminal Law (Sexual Offences and Related Matters) Amendment Act 32, 2007 (Act No. 32 of 2007). The act of receiving or giving money or goods for sex is banned and can result in arrest, prosecution and imprisonment. SWs can also be charged with other offences, including loitering and public indecency. Brothel keeping, soliciting and pimping are also illegal under this framework. Further, individuals who are found to be working with SWs or living off their pay (Peters, 2015) are also criminalised. These may include family members and friends, but can also include criminal elements, such as human traffickers.

Effect of criminalisation of sex work

Criminalisation of sex work limited FSW engagement in services (Rwema *et al*., 2019). For example, police harassment was common (Onyango *et al*., 2015), and resulted in FSWs' choosing not to carry condoms as they could be used as "evidence" of law-breaking. Further, FSWs avoided interaction with service providers due to fear of prosecution and unfair treatment (Peters, 2015).

2.3.5.1 Posited reasons for criminalisation of sex work

The philosophy behind criminalisation of sex work is largely of an abolitionist nature and starts from a strong moral rejection of sex-for-pay. Arguments for criminalisation have included the need to uphold morality in society and that SWs are at heightened risk of physical, psychological and emotional abuse. It is also argued that criminalisation of sex work will limit social ills, such as human trafficking by deterring potential traffickers and pimps who would fear arrest (Vanwesenbeeck, 2017).
Over the years, in both Kenya and South Africa, there have been calls to consider alternative legislation.

Alternative legislative frameworks

Partial criminalisation

Under partial criminalisation, also known as the Swedish model, selling sex is legal however buying sex is illegal. This model grew from feminist movements in the 1970s which believed that sex work is a form of violence against women (who make up the majority of SWs) because women often are of lower economic independence; that sex work is a result of men's sense of entitlement to women's bodies and that no woman voluntarily enters the sex industry. It is also based on the premise that criminalising the act of buying sex would reduce demand for sex work; SWs would be able to report crimes without fear of arrest; clients would be less likely to behave inappropriately as they are already under threat of arrest and that there would be a reduction in human trafficking as the number of potential clients drops. Under this model, SWs would be put into diversion programmes to help them exit the sex industry (Coy, 2016). Partial criminalisation, however, has been shown to further shift the sex industry to hidden and isolated locations to avoid client arrest which makes it even more difficult for SWs to access health services. It has also been shown to put SWs at increased risk of violence and police harassment (for example, SWs being forced to report clients), heightens risk taking by SWs as their power to negotiate drops due to there being fewer clients, reduces the likelihood of clients reporting assaults that they may witness as they could be arrested, and increases the likelihood of client blackmail by SWs (NSWP, 2016).

Legalisation

Under legalisation, the act of selling and buying sex is legal, however there are regulations around where, when, and how it can be carried out, and as such the industry continues to be surveilled by law enforcement. Often, SWs may also be required to register or to go for regular health checks (NSWP, 2014).

Decriminalisation

Decriminalisation eliminates all laws around sex work and prohibits the state and law-enforcement officials from intervening in any sex work-related activities or transactions unless other laws apply. Further, under this model, laws protecting SWs from risks may be put in place (Peters, 2015). Health and human rights organisations, such as the WHO and Amnesty International, have argued that all aspects of adult consensual sex work should be decriminalised (Amnesty International, 2016a). So far, only Belgium, New Zealand, the Australian state of New South Wales and the Northern Territory of Australia have decriminalised sex work.

In 2017, at its 54th national elective conference, the African National Congress resolved to decriminalise sex work. Following the discovery of six murdered FSWs in Cape Town, in October 2022, South Africa's Deputy Minister of Social Development stated that the decriminalisation bill would be tabled before parliament by the end of 2022 (Gcwabe, 2022). In November 2022, cabinet approved the publishing of the Criminal Law (Sexual Offences and Related Matters) Amendment Bill of 2022 for public comments. The proposed law would repeal the Sexual Offences Act, 1957 (Act No. 23 of 1957) and Section 11 of the Criminal Law (Sexual Offenses and Related Matters) Amendment Act, 2007 (Act No. 32 of 2007) thereby decriminalising the sale and purchase of adult sexual services. The deadline for public

comments on this draft amendment bill was 31 January 2023. At the time of writing, the revised bill had been introduced to Parliament to be voted on.

2.3.6 Support Systems

Emotional and physical support from their family members, including their children, emerged as an important facilitator for ART adherence and clinic attendance (Parmley *et al*., 2019a). Positive influence from their friends was also beneficial, for example, the odds of LARC use was nearly double amongst FSWs whose friends were also using family planning compared to those whose friends were not (Ampt *et al*., 2019). Support from peer educators also facilitated utilisation of interventions, for example, peer educators provided key information on PrEP and referred clients to clinics (Emmanuel *et al*., 2020). Lack of or inadequate support was detrimental, for example, FSWs who lacked support were less likely to utilise ANC services (Parmley, 2019b).

2.3.6.1 Posited reasons for the impact of support systems

Support from family and friends

While studies of social support among FSWs in sub-Saharan Africa are limited, existing literature suggests that FSWs' health behaviours are often dependent upon perceived support from individuals in their lives (Witte *et al*., 2022). Family and friends may provide practical support (such as, reminders to take medication) (Trivedi, 2019) or may buffer the stresses of living with illness (Miller, 2013). Felt emotional support likely decreases negative affect associated with illness and increases self-esteem and adaptive coping. On the other hand, individuals with families with low attachment or frequent negative interactions may not have family members who are willing to support them, for example to accept an HIV diagnosis, initiate treatment or maintain consistent adherence (Poudel *et al*., 2015).

Peer Education

Peer education engages members of a 'target' community, such as SWs, and trains them in health-related information and communication skills, to promote healthy behaviour. Successful programmes are ones that, in addition to education on biomedical interventions (such as, disease prevention, diagnosis and treatment and clinic referrals), also focus on building a sense of agency, for example in their ability to negotiate condom use and empowering FSWs to foster relationships of respect and solidarity with each other to work collectively to address a range of issues including social, political and economic vulnerabilities that result in lack of power and are risk factors for poor health. Successful programmes also seek buy-in and support from influential external actors in the community to allow for a less hostile environment (Cornish and Campbell, 2009; Bhattacharjee *et al*., 2013; George *et al*., 2014; Cornwall, 2016).

Peer interventions directed at FSWs have been shown to improve various SRH/HIV service utilisation indicators including clinic attendance (Awungafac, Delvaux and Vuylsteke, 2017; Chingono *et al*., 2022), HIV testing and syphilis testing (Muhindo *et al*., 2021), and use of non-condom modern contraceptive methods (Dulli *et al*., 2019). Peer interventions have also been shown to positively impact HIV incidence (Kerrigan et al., 2019) and prevalence (Luchters *et al*., 2008). However, contradictory findings have been noted for other indicators. For example, while some studies found that peer interventions can improve condom negotiation skills (Sikhosana, 2021), likelihood of refusing clients who were unwilling to use

condoms (Luchters *et al*., 2008) and consistent condom use (Awungafac, *et al*., 2017; Kerrigan *et al*., 2019) one study found that even with peer education, negotiating condom use with paying partners was somewhat or very difficult. This study also showed peer interventions did not have any significant effect on dual protection use (Dulli *et al*., 2019). Contradictory findings with respect to STI outcomes have also been noted, specifically, one study found that peer interventions led to a reduction in HIV, chlamydia and gonorrhoea prevalence (Awungafac, *et al*., 2017) while another found that there were no significant differences in rates of STI infection following introduction of peer interventions (Luchters *et al*., 2008). Similarly, one study found that recent and repeat HIV self-testing were significantly greater when self-testing kits were directly provided by peer educators (as opposed to standard of care or collection of self-kits from facilities using coupons) (Ortblad et al., 2017), while another study found that direct provision of HIV self-test kits by peer educators did not substantially increase HIV testing (Chanda *et al*., 2017). Lastly while peer interventions improved some HIV care continuum outcomes, such as HIV prevalence (Luchters *et al*., 2008) and incidence, there were not always improvements to viral suppression (Kerrigan *et al*., 2019).

Exposure to a mentor mother programme and cognitive behavioural intervention led to an increase in HIV and PMTCT knowledge scores amongst HIV positive women (Futterman *et al*., 2010). Similarly, exposure to a mentor mother programme resulted in an increase in knowledge of PMTCT and retention in PMTCT continuum of care (Shroufi *et al*., 2013). Peer interventions were found to have a positive impact on ANC attendance (Onono *et al*., 2021), and ART retention amongst pregnant women (Lyatuu et al., 2022), and HIV positive mothers (Igumbor *et al*., 2019), including those who were breastfeeding women (Phiri *et al*., 2017). On the other hand, one study found that neither community-based mentor mother programme nor text-messaging had any impact on ART adherence amongst post-partum women (Abuogi *et al*., 2022). With respect to viral suppression, mentor mother support amongst pregnant women was found to be associated with higher odds of viral suppression among pregnant women (Lyatuu *et al*., 2022), including those who were previously ART naive (Sam-Agudu et al., 2017) and post-partum women (Carlucci *et al*., 2022). On the contrary, another study found that exposure to community and facility-based peers had no impact on viral suppression (Phiri *et al*., 2017). With respect to HIV testing of exposed infants, one study found that women were more likely to have their children tested following exposure to Lay Health Workers (LHWs) including mentor mothers (Schmitz *et al*., 2019), while another found that women who were exposed to a combination of a mentor mother programme and cognitive-behavioural intervention were less likely to have their have them tested though they were more likely to take them for follow-up clinic visits (Futterman *et al*., 2010). No change in infant testing was observed amongst women engaged by community and facility-based peers (Phiri *et al*., 2017). With respect to retention, one study found that there was no improvement following peer interventions (Abuogi *et al*., 2022) while others observed higher retention (Shroufi *et al*., 2013; Phiri *et al*., 2017; Sam-Agudu *et al*., 2017; Igumbor *et al*., 2019; Schmitz *et al*., 2019; Carlucci *et al*., 2022). Neither mentor mother support (Lyatuu et al., 2022) nor community and facility-based peers (Phiri *et al*., 2017) had any impact on vertical transmission rate. A summary of these studies is presented in Appendix 8.8.

There are various reasons why peer education programmes may not be successful for FSWS. For example, where there is competition between FSWs that results in relationships that are characterised by tension, conflict and jealousy, making it difficult to build solidarity (Campbell, 2001; Wojcicki, 2001; Cornish, 2009) and adopt safe sex practices regardless of how trusted peer educators are or how accessible biomedical interventions are (George *et al*.,

2014). FSWs may be unwilling to accept support due to jealousy around peer educators' stipends and status.

Some women who sell sex desire to distance themselves from the label "sex worker" due to a sense of shame making them difficult to reach (Zalwango *et al*., 2010). Other FSWs do not have the time to participate in peer support programmes or freedom to participate as they are surrounded by "gatekeepers" (such as intimate partners, owners of sex work establishments and managers) who have control over their daily lives and may exert control through restricting their movement, emotional manipulation, violence, and forced drug and alcohol use (Alexander, 2001). Further, high FSW mobility gives little opportunity to build stable social relationships (Cornish and Campbell, 2009). Peer education impact may also be affected by resistance to the biomedical product in question, for example due to concerns about safety, efficacy and stigma as was observed with PrEP amongst heterosexual women (van der Straten *et al*., 2014; Corneli *et al*., 2016).

There also may be weaknesses in design and implementation of programmes, for example weak peer educator recruitment processes, unstandardised health promotion messages and incomplete implementation of the intervention (Abuogi *et al*., 2022). The intervention itself may be problematic, for example, where there is an information overload (Onono *et al*., 2021) and Further, there may be poor peer educator behaviour, for example, if peer educators use forceful measures to ensure FSWs conform (for example, around condom use), would be detrimental to programmes (Campbell and Mzaidume, 2001). Programmes may also not provide peer educators with the necessary support to carry out their role, such as counselling to deal with the emotional toll of their work.

Further, most programmes are donor supported with each donor defining their own package of services and implementation standards, including the number of peer educators and outreach sessions. This sometimes leads to insufficient time and personnel to conduct outreach activities for the population size (Semini *et al*., 2013). Also, to comply with donor requirements, many peer educator programs do not consider a more transformative approach to peer education but rather focus on achieving pre-determined targets, such as number of FSWs contacted, number who utilise clinical services and the number of condoms distributed.

Lastly, a positive impact may not be possible in contexts in which promotion of health, welfare and protection of SWs is not realistic or feasible due to community resistance (Cornish 2009).

2.3.7 Health System

Health facility weaknesses impacted quality leading to long waiting times, arduous referral networks, and provider resistance due to potential increased workload and belief that FSWs would not adhere (Were *et al*., 2020). For example, utilisation of ANC services was impacted by long waiting times and maltreatment by providers even when patients were not known to be FSWs (Parmley, *et al*., 2019b), while PrEP stock-outs led to poor PrEP utilisation (Emmanuel *et al*., 2020).

The convenience of accessing care led to increased use. For example, FSWs were more likely to utilise PrEP if it was offered at one-stop-shop facilities offering multiple services and good referral systems (Emmanuel *et al*., 2020) while they were less likely to use PrEP if clinics had unfavourable operating hours and if they were charged for PrEP use (Mudzviti *et al*., 2020).

They were more likely to use condoms if they were made available at their workplace (Chanda *et al*., 2017).

2.3.7.1 Posited reasons for health system factors

Cost of care

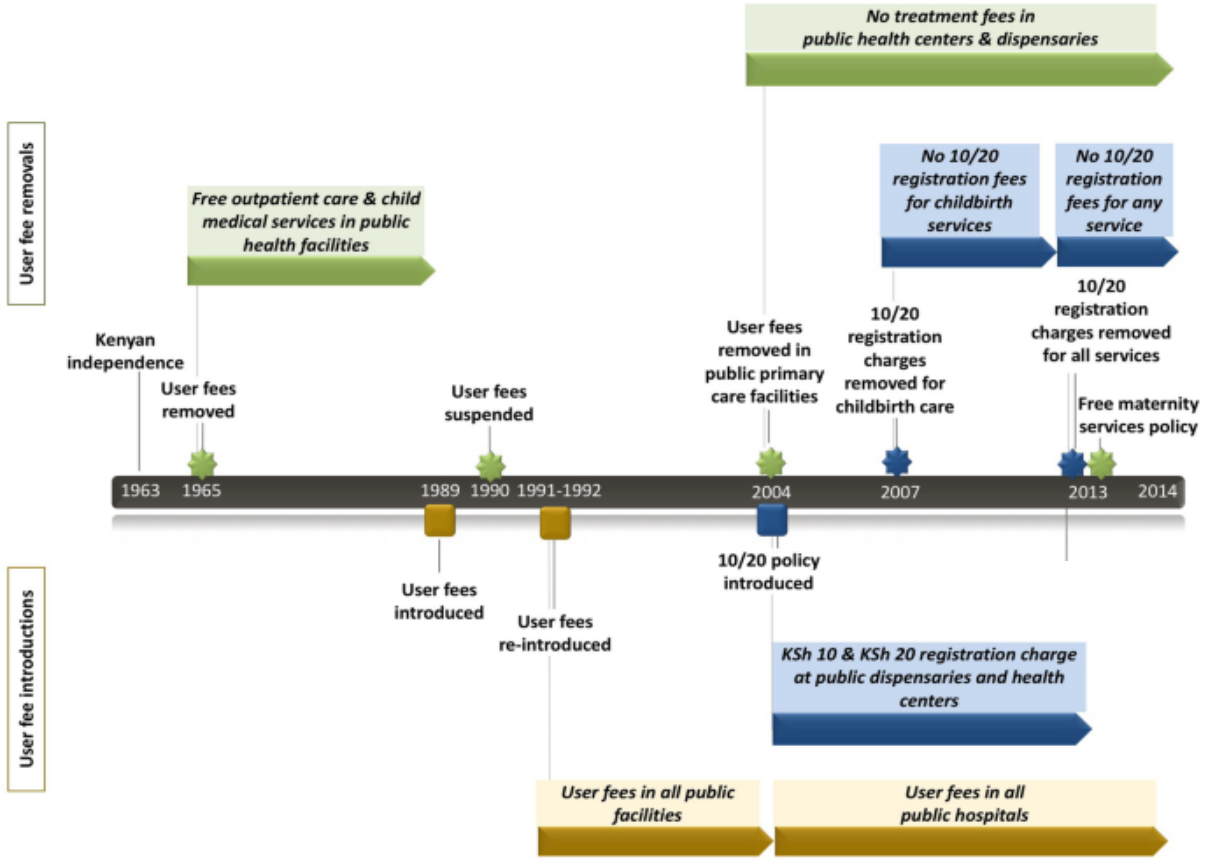
Kenya

Kenya's healthcare system is made up of several systems: public, private and faith-based or non-governmental organisation (NGOs). About 48% of facilities are public and operate under the Ministry of Health, 41% are in the private sector, 8% are faith-based health services, and 3% are run by NGOs (Mohiddin, 2020).

Though generally of higher quality, the private healthcare in Kenya can be prohibitively expensive without the assistance of a comprehensive health insurance policy. The majority of the population lacks access to private health insurance, and are either ineligible or cannot afford the premiums for the national health insurance provided by the government resulting in people avoiding accessing private care until they are in the late stages of disease (Ouma, 2020). As such, majority of the population accesses care through public health system as it is the most affordable option.

PrEP and family planning are available across Kenya free of charge at all public health facilities, however patients often encounter hidden user fees and registration fees that had previously existed following the implementation of Structural Adjustment Programmes (SAPs). SAPs consist of loans (Structural Adjustment Loans, SALs) provided to countries in dire fiscal or macroeconomic straits by the International Monetary Fund (IMF) and the World Bank. In return, recipient countries are required to reform various macroeconomic and fiscal policies. For example, in 1989 the World Bank mandated Kenya to impose a USD 0.33 user fee for outpatient health centre visits (Munge, 2014; Obare *et al*., 2015). Under the '10/20 policy' introduced in 2004, patients paid a registration fee of Kenya Shillings (KES) 10.00 (USD 0.13) at government dispensaries or KES 20.00 (USD 0.25) at government health centres with the poor, children below 5 years, and those seeking treatment for malaria and tuberculosis exempted from payment (Kairu, 2021).

Figure 2.3: Timeline for user fee reforms in public health facilities in Kenya prior to UHC



Source: (Dennis et al., 2020)

In 2007, registration fees for childbirth services were removed. Despite this, many patients in government facilities reported paying additional 'hidden fees' for consultation, medical tests or equipment and commodities (Health Policy Initative, 2010). For example, a survey conducted in 2010 found that 70% of government facilities charged user fees (NCAPD *et al.*, 2011) and knowledge of the 10/20 policy remained low in communities (Chuma *et al.*, 2009). In June 2013, all user fees were abolished at dispensaries and health centres, and family planning and maternity services were to be offered free of charge. Despite this, a study carried out in 2014 found that patients were still paying for services in one way or another (Radovich *et al.*, 2019).

Implementation of fees negatively affects vulnerable populations (Thomson, 2017). For example, the 1989 USD 0.33 user fee for outpatient health care led to a 52% reduction in outpatient visits, while suspension of the fee in 2004 led to a 41% rise in outpatient visits (Munge, 2014; Obare *et al.*, 2015). In February 2022, the national roll-out of Universal Healthcare Coverage (UHC) across the 47 counties in Kenya was launched. The hope is that this will ensure that health services can be accessed across the country without financial hardship.

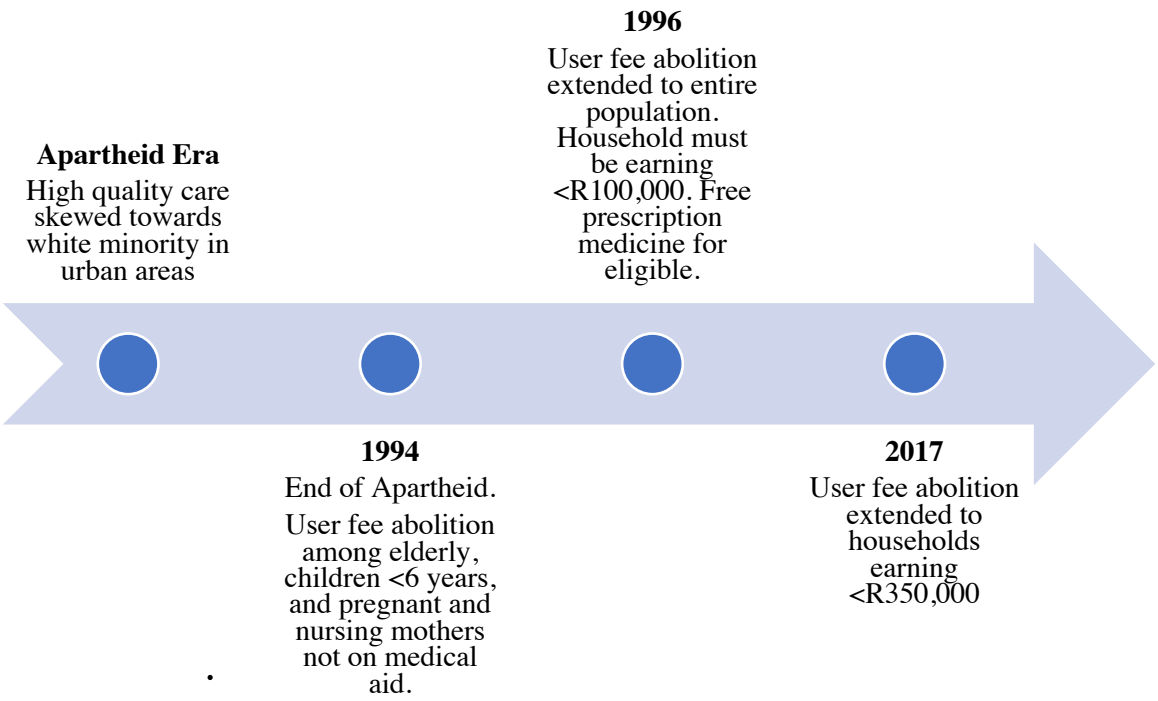
South Africa

In South Africa, private and public health systems exist in parallel. Until 1970, the private health system excluded black South Africans, however, racial disparities in private coverage

persist due to cost (Columbia Health Policy Library, 2019). As such, majority of the population relies on the public health system.

As with Kenya, user fees existed in the South African public health system, however, following the end of apartheid in 1994, all user fees were abolished for the elderly, children under six years, and pregnant and nursing mothers not on medical aid. In 1996, the abolition of user fees was extended to all persons in households earning less than ZAR100,000 a year. This included free prescription medicine for those who are eligible. This was adjusted to ZAR350,000 a year in 2017 (Sonke Gender Justice, 2021). Persons earning above the stipulated threshold may be charged for services received based on household income (see Appendix 8.7 Uniform Patient Fee Schedule (UPFS)).

Figure 2.4: Timeline for user fee reforms in public health facilities in South Africa



Research has shown that South Africans do not generally face exorbitant out-of-pocket expenses when they receive health care and that only a low percentage of households potentially face catastrophic health expenditures. However, public health care can be unaffordable due to travel costs (Koch, 2020). For Example, austerity measures have resulted in increases in fuel levies thereby increasing cost of travel (Sibeko, 2019). Healthcare may also be unaffordable due to reduced earnings for those with limited access to sick leave or family leave to take care of sick family members (Koch, 2020).

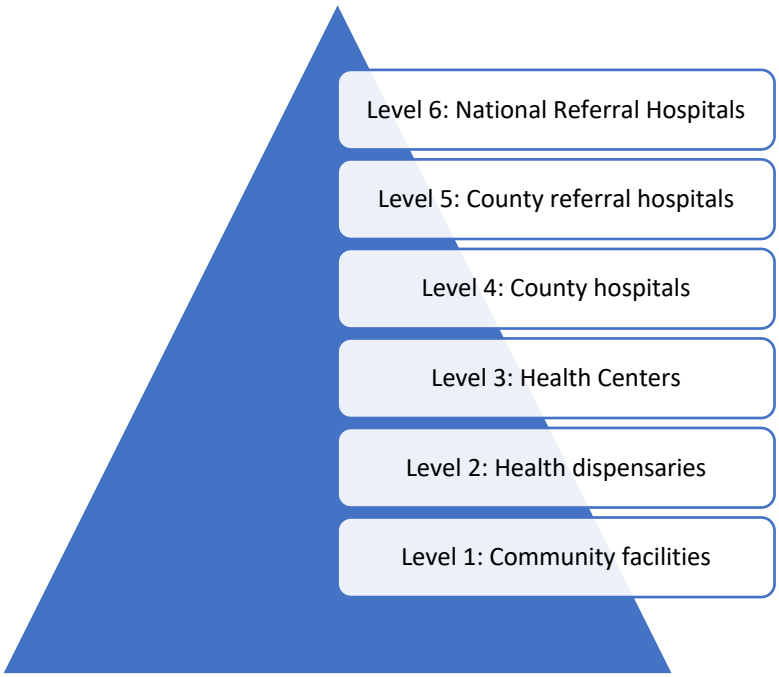
Quality and accessibility of care

Kenya

In 2013, Kenya transitioned into a devolved system of governance comprising two levels: the national government and 47 semiautonomous county governments. The county governments are responsible for essential public health service delivery at levels 1 through 5 of public health

facilities while the national government retains health policy, technical assistance, and management of national referral health facilities (Kimathi, 2017).

Figure 2.5: Structure of the Public Health System in Kenya



The rationale for devolution included improving service delivery efficiency and an increased citizen voice in the decision-making process. However, challenges have been noted in the post-devolution era within the health sector, for example, health facilities are unequally distributed across the 47 counties (Kimathi, 2017). There are delays and disruptions in payments of staff salaries (Tsofa *et al*., 2017) and health facilities are understaffed which results in long waiting times, long working hours and compromised quality of care (Masaba *et al*., 2020). For example, a pilot of the UHC programme carried out in 2018 revealed that heavy workloads led staff to avoid sending patients for investigations needed for diagnosis so as to avoid larger queues if they came back with results (Guyo, 2020).

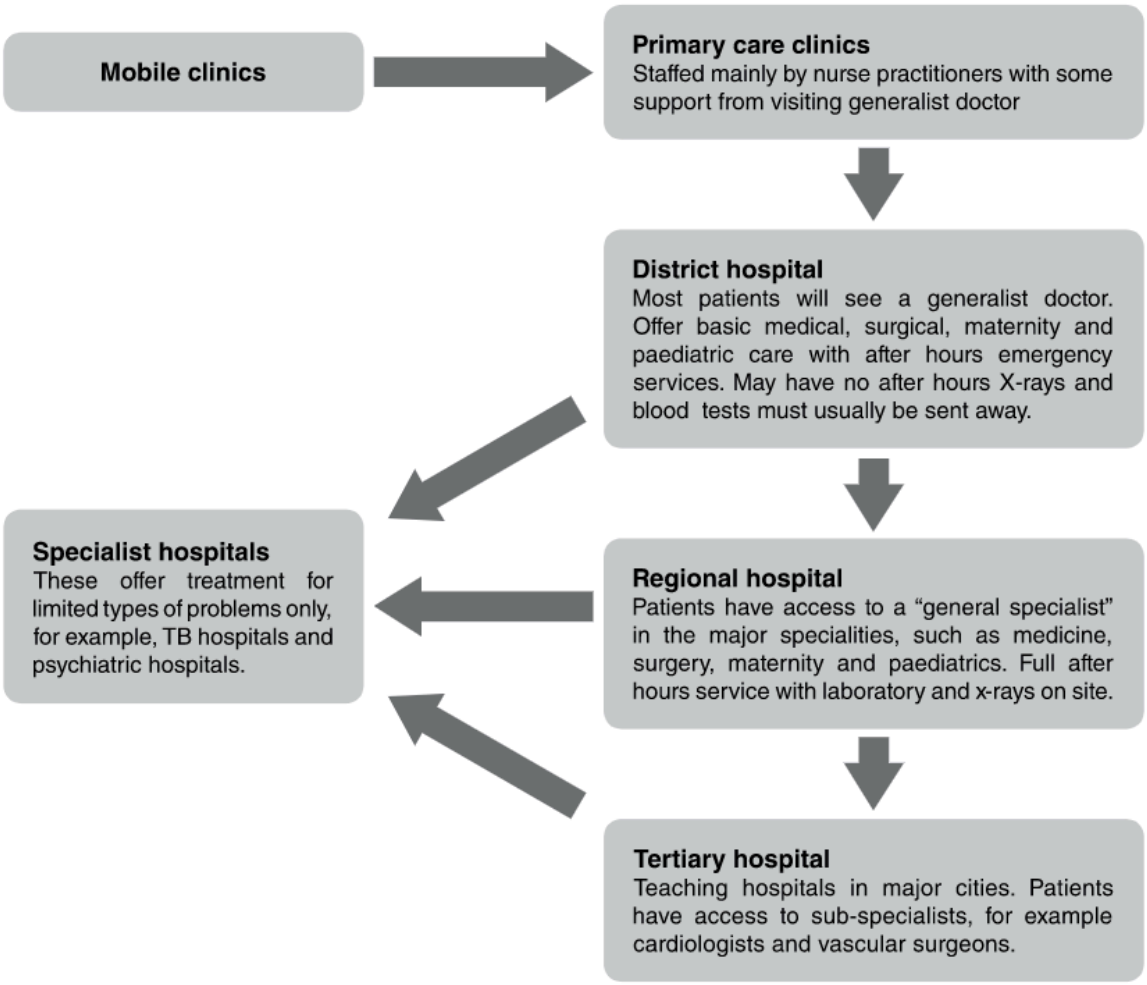
Such challenges are due to inadequate resources/funds from the national government. In 2001, the Kenyan government committed to allocate 15% of the government budget to health as part of the Abuja declaration (OAU, 2001). However, in 2019 the government spent only 4.6% of the budget on healthcare which limited funds available at the county level. Further, a large percentage of the national budget is spent on debt servicing thereby reducing the money that could be spent on ensuring delivery of quality care to her citizens. For example, in 2019 a staggering 36 per cent of the national budget was spent on debt servicing (Simeoni, 2020).

South Africa

In South Africa, each of the nine provinces has its own Provincial Department of Health which participates in health delivery along with the local Departments of Health which are responsible for health promotion and preventative services. Public facilities are divided into primary facilities (also known as level 1 hospitals, and include clinics, mobile clinics and district hospitals), secondary facilities (also known as regional hospitals or level 2 hospitals), and tertiary facilities (also known as teaching hospitals, central hospitals or level 3 hospitals) as

shown in Figure 2.6. There are also specialised hospitals which provide services for a single specialised area and can receive referrals from the different levels of care. Patients start off at primary facilities and are referred to higher levels as necessary.

Figure 2.6: Facilities and Referral Pathways in the South African Public Health System



Source: (Voss, 2019)

There is a shortage of health care workers. For example, medical schools have an annual output of graduates ranging between 1200 and 1300, which is inadequate for the population size (Columbia Health Policy Library, 2019). A 2020 report by the South African National Department of Health estimated a shortage of between 26,000 and 62,000 professional nurses, and that by 2030 the demand for nurses in will increase to between 305,000 and 340,000 (NDOH, 2020a). Further, rural areas suffer from limited skills mix, for example, in the Eastern Cape nurses make up 63.9% of the public-sector work force but only a limited number are specialist nurses (RHAP, 2023).

Secondly, most providers work in urban areas, for example, there is also a disproportionate distribution of health care providers across the provinces (majority are in Gauteng and Western Cape). This results in difficulties accessing care in rural areas. Further, health care allocations are based on each province's relative share of the population. Considering the vast area covered by the Eastern Cape, it is clear the current arrangements do not address inequality of access.

Thirdly, while public health spending has increased significantly since 1994 and the government has made progress in improving access to healthcare, recent years have seen significant budget cuts due to austerity measures[13] . Spending per person has fallen undermining the provision of essential social services. The chronic underfunding has contributed to staffing shortages and declining standards of care in many parts of the public health system (Sibeko, 2019). Fourth, auditor general reports show worsening trends in corruption which negatively affects the health system, for example compromised patient care through supply of inadequate or sub-standard equipment through tenders and worsening healthcare workers' morale (Rispel, 2016).

The resultant under-resourced and overburdened public health system suffers poor staff attitudes, long waiting times, uncleanliness, drug stock outs, poor infection control, and compromised safety and security of staff and patients. Further, weak accountability mechanisms leads to difficulties with managing performance (NDoH, 2017).

In 2011, the South African health minister, proposed a national health insurance (NHI) for South Africa with the aim to deliver high quality universal health care to all South African residential citizens. However, questions remain about the true cost and feasibility of implementation of the NHI. Further, there is resistance from the private sector due to the threat to the existence of medical aid schemes (Sibeko, 2019).

Stock outs

Stock-outs are defined by the WHO as the complete absence of a required medicine for at least one day at a storage or delivery point (WHO, 2005). Stock-outs result in patients being turned away or given incomplete regimens, financial burden for patients due to added transport costs and time to access treatment (Hwang *et al*., 2019), increased risk for opportunistic infections, virologic failure and drug resistance (Kaufmann *et al*., 2011; WHO, 2011; Mori, 2014) and can negatively impact adherence (Ullah *et al*., 2021) retention in care and survival.

Kenya

A study by Ganatra *et. al*. (2020) found that all facilities in Nairobi County experienced drug shortages in the previous quarter, with 75% of them having an order rate of 50-70% and 25% having an average order fill rate of 70-90%.

Corruption has been cited as one of the reasons for stock-outs in Kenya. The Kenya Medical Supplies Authority (KEMSA), the state corporation responsible for procurement and storage and delivering medical products to county governments or directly to health facilities has been plagued with allegations of corruption. In mid-January 2021, allegations of corruption led USAID to refuse to work with KEMSA on distribution of drugs, a decision that led to an impasse as Kenyan tax and revenue officials asked USAID to pay tax on these donated drugs. This resulted in a shipment of ARVs and other donated health supplies, including HIV test kits for infants, being stranded at the Port of Mombasa, Kenya (Jerving, 2021; Muniu, 2021).

Stock-outs also occur due to delays with procurement, for example, an audit reported an average gap of 345 days between procurement and delivery of Malaria, TB, and HIV

[13] Fiscal policies (such as, increasing taxes and spending cuts) to solve debt and growth problems during a period of economic stagnation.

commodities (GFATM, 2022; Kelin Kenya, 2022). These delays occur due to funding challenges at facilities and late payments. Further, there is insufficient coordination among the many stakeholders involved in distribution, and limited planning and oversight by KEMSA. Further, weak inventory management including poor warehousing, distribution controls and tracking systems all impact commodity traceability and accountability. At facilities, there are also reports of inadequate pharmacy and finance staff and subsequent human errors. Insufficient training in supply chain management impacts drug quantification and forecasting leading to drug shortages and in some cases wastage due to overstocking (Kelin Kenya, 2022).

Lastly, as the counties took up the Essential Medicines and Medical Supplies (EMMS) management function under the devolved structure of service delivery, some county leaders pushed for the procurement of commodities which were perceived to be more politically visible in the eyes of voters (such as, ambulances), at the expense of procuring essential drugs for their health facilities (Tsofa *et al*., 2017).

South Africa

A study looking at stock outs of ARVs and TB medication in South Africa found that 20% of facilities reported a stock-out on the day of contact and 36% reported at least one ARV stock-out during the three months prior to contact, ranging from 74% in Mpumalanga province to 12% in the Western Cape province. All medicines reported to be out of stock were available in country which indicates that there is a deficiency with downstream flow of commodities (Hwang *et al*., 2019).

Reasons for stock outs include challenges with suppliers, including delays with fulfilling orders, delivery of incomplete orders, sharing of incorrect information on stock availability, lack of capacity and shortage of active pharmaceutical ingredients (APIs). Non-payment of suppliers was also a contributing factor to stock outs; however, suppliers also did not communicate to inform pharmacists that their accounts were on hold due to non-payment. Further, some staff found the integrated computerised inventory management system difficult to use while others simply failed to regularly update the system upon receipt and issuing of stock resulting in incorrect consumption data making it difficult to forecast. Stock outs were found to stretch on for long periods which may reflect a lack of visibility and mitigation mechanisms to alert and solve them (Modisakeng *et al*., 2020).

2.3.8 Demographic Factors

Age, age of sex work debut, highest level of education attained, and marital status emerged as factors impacting utilisation of interventions.

For example, it was found that, compared to younger women, older women were more likely to test for HIV (Sekoni *et al*., 2016), use PrEP (Mudzviti *et al*., 2020) and use barrier contraceptive methods (Vandenhoudt *et al*., 2013; Schwartz *et al*., 2015). On the contrary, younger women were more likely to use non-barrier methods than older women (Schwartz *et al*., 2015; Ampt *et al*., 2019), including post-coital contraception (Yam *et al*., 2014).

FSWs with a higher level of education were more likely to use contraceptives (Yam *et al*., 2014; Luchters *et al*., 2016; Ampt *et al*., 2019), test their children for HIV (Rao *et al*., 2019), and more likely to utilise HIV treatment and prevention interventions for themselves and their children (Cornell, 2018).

Although condom use with long-term partners was low amongst currently married, separated, divorced or widowed women (Broel *et al*., 2017), it was noted that, as compared to single women, married were more likely to report consistent condom use with paying clients (Bukenya *et al*., 2013). On the other hand, single women were more likely to report using ECP than married women (Yam *et al*., 2014).

FSWs with early sexual debut were less likely to have been tested for HIV more than once or to have attended HIV-related talks or meetings (Grosso, 2015) and they struggled to negotiate condom use with both clients and non-paying partners (Eluwa *et al*., 2012; Bukenya *et al*., 2013; Vandenhoudt *et al*., 2013; Trout *et al*., 2015; Grosso, *et al*., 2015; Muula , 2015; Onyango *et al*., 2015; Sekoni *et al*., 2016; Luchters *et al*., 2016; Broel *et al*., 2017; Schwartz *et al*., 2017; Musyoki *et al*., 2018; Workie, 2019; Dulli *et al*., 2019; Packel *et al*., 2021).

2.3.8.1 Posited reasons

Older women were more likely to use PrEP and to test for HIV possibly due to higher HIV risk perception from being in the industry longer. Older women were also more likely to use barrier contraceptive methods than younger women possibly due to having better negotiating skills.

Younger women are more likely to use non-barrier methods possibly due to difficulty negotiating use of barrier methods especially due to having less money. Younger women may also not be able to frequently attend clinics so may opt for longer lasting forms of contraception. On the contrary, older women may have pregnancy intentions so would prefer not to use long-acting contraceptives.

A higher level of education was associated with greater contraception use, HIV testing for children and utilisation of HIV prevention and treatment interventions for themselves and their children. This may reflect higher health literacy.

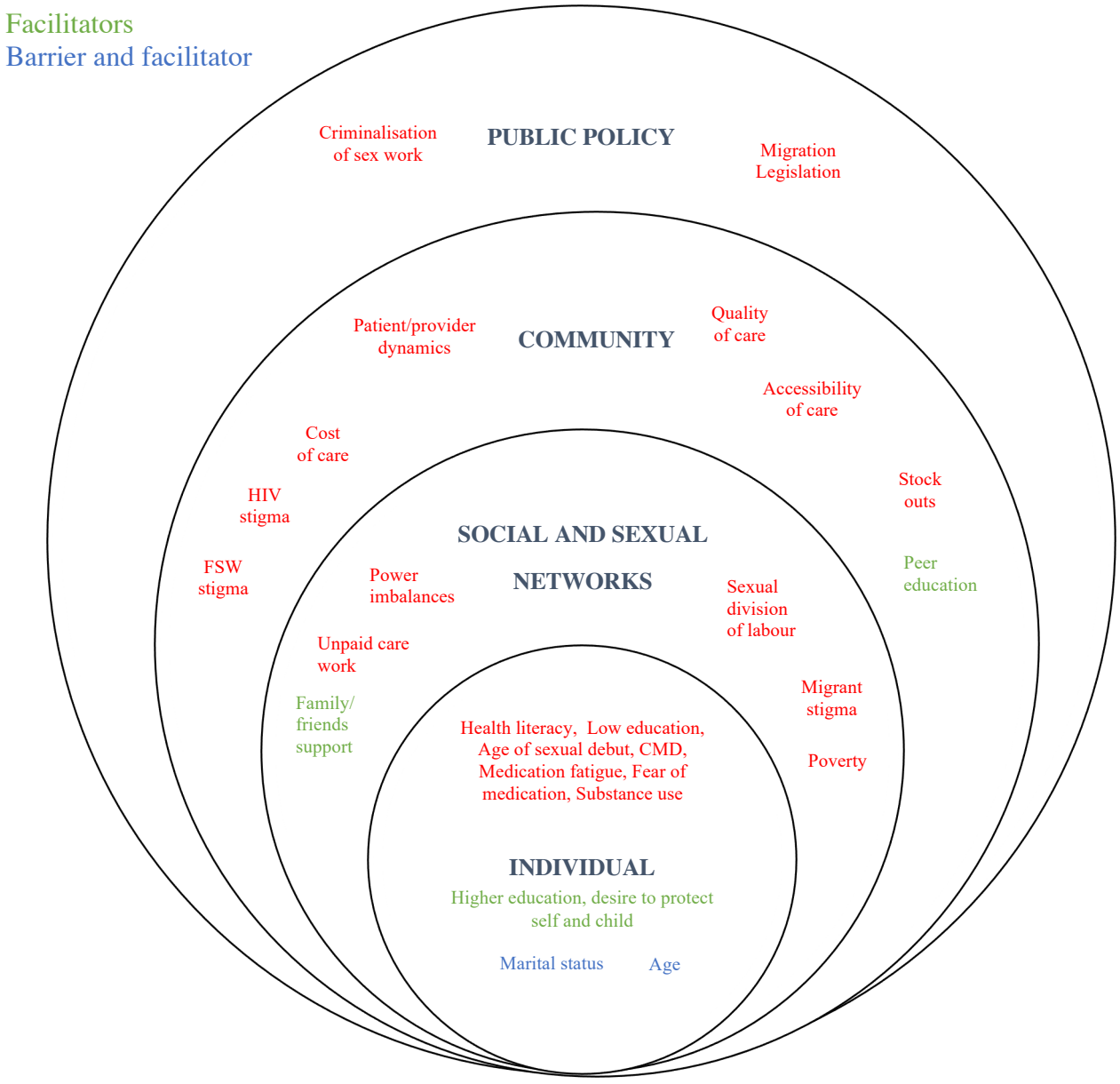
Early sexual debut was associated with lower condom use and lower HIV testing. An explanation could be that FSWs who started sex work at a younger age may not have been exposed to prevention messages (Bukenya *et al*., 2013).

A sense of trust or having a fear of repercussions of negotiating condom use with a long-term partner may be the reason why FSWs who were currently or formerly married may be less likely to utilise condoms. These women may also find it easier to negotiate condom use with passing clients than with a long-term partner who they depend on. They may also ensure condom use with clients to protect their long-term partner from HIV or any other STIs, as well as to prevent the possibility of unwanted pregnancy from a client. Married women may be less likely to utilise ECP due to pregnancy intentions with their long-term partners.

2.4 Summary of Findings from Literature Review

Below is a summary of findings of the literature review populated in the MSEM framework.

Figure 2.7: Summary of Barriers and Facilitators populated in the MSEM Framework



3 Methodology

3.1 Quantitative Research Methods

This section provides an overview of the aims of the quantitative component of the thesis, methods used, including recruitment and training, data collection, preparation, and analysis.

3.1.1 Aims and Overview

The overall aim of the quantitative component of this thesis was to explore how utilisation of oral PrEP and family planning changes with differing self-reported weekly sex acts which was considered to be a proxy for risk of HIV and unintended pregnancy, respectively.

As noted in Section 1.5 (Thesis Aims And Objectives), the overall aim of the research was to investigate FSWs' experiences with utilisation of PMTCT Prong 1, 2 and 3 HIV/SRH interventions to prevent vertical transmission of HIV. The Quantitative component focused on Prong 1 and 2, that is HIV Prevention (PrEP) and Family Planning. 'Risk' (self-reported weekly sex acts) was selected as the main exposure of interest given FSWs' high risk for HIV and unintended pregnancy, and subsequently high and sustained risk of vertical transmission. Changes in utilisation of PrEP and family planning was of interest to explore FSWs perception of risk for HIV infection and pregnancy.

I was also interested in determining how utilisation differs geographically and with differing peer load (peer educator: FSW ratios). The data was collected between 2016 and 2018.

3.1.2 Health Services Overview

Between 2016 and 2018, ICRH-K implemented an HIV/SRH and GBV service delivery programme for FSWs in Kilifi, Kwale and Mombasa counties. FSWs identified at hotspots were approached by peer educators to attend the drop-in centres (DICEs) for care. DICEs, also known as "safe spaces ", are premises rented by programme implementing partners where key population community members can go for SRH/HIV services, and to get referrals for services not offered at the DICE. They also act as spaces where key populations can gather to rest, relax, socialise, and attend events and capacity building activities (NASCOP, 2016). The DICEs offered services for HIV, STIs, TB, Hepatitis B, Hepatitis C, substance use, cervical cancer, violence, risk reduction, family planning, mental health, and post-abortion care. Staff carried out condom education/demonstrations, and provided condoms and lubricants, PEP and linkage to psychosocial support. In Kilifi county there are two DICEs, namely Mtwapa DICE and Kilifi town DICE. In Mombasa county there are 3 DICEs, namely Mvita DICE, Kisauni DICE and Likoni DICE. Each DICE serves multiple hotspots, for example, the Kisauni DICE has 370 hotspots with 60-65 peer educators each serving a cohort of 80 FSWs. In total, 10,361 FSWs were enrolled in the SRH service delivery programme at the five DICEs. In addition to services being offered at the various DICEs, services were also offered through mobile clinics 5-6 times in a month (depending on available funding). On mobile clinic days, clinicians visited hotspots where they requested a room at a sex work venue (such as a guest house or lodge). Peer educators then mobilised FSWs to the room where they are offered the same services that are offered at the DICEs. Two times a month the mobile clinic was based at the same hotspot while on the other four mobile clinic days the clinic was offered at different hotspots each time.

HIV uninfected participants who attended the programme were offered PrEP as part of the HIV prevention package. Should they agree to participate, they are co-enrolled in the Jilinde (Bridge to Scale) project. Launched in August 2016, Jilinde was a four-year project designed as a "learning laboratory" to generate evidence around PrEP uptake, including the barriers and enablers to scale-up so as to understand how best to move oral PrEP from research and demonstration settings into a large- scale public health response (Were et al., 2021). It targeted key populations, and AGYW through integration into 89 sites (34 DICEs, 42 public health facilities and 13 private health facilities) in 10 of the 47 counties across Kenya. For FSW and MSM, oral PrEP was provided as part of combination prevention package, as outlined in the Kenya National AIDS and STI Control Program (NASCOP) guidelines (ICRH-K, no date). ICRH-K was Jilinde's lead partner in the coast region, providing oral PrEP to FSW, MSM and transgender people through DICEs. In total, Jilinde aimed to enrol 15,500 FSW, 3300 MSM and 2000 AGYW. In the entire project, a total of 316,928 HIV tests were performed, of which 299,798 (95%) were HIV negative. Of these, 123,480 HIV-negative individuals (41%) were screened for PrEP and 86,550 (70%) were eligible for PrEP. It should be noted that these figures include repeat testers. Among PrEP-eligible individuals, 25,542 (30%) were initiated on oral PrEP. Of these initiators, 17,794 (70%) were FSW, 4,848 (19%) MSM and 2,900 (11%) AGYW exceeding the project targets (Were et al., 2021).

3.1.2.1 Recruitment and training of programme staff

Outreach team

Peer education refers to the process of engaging members of a 'target' community, such as sex workers, and training them in health-related information and communication skills to equip them to promote healthy behaviour amongst their peers (Cornish, 2009). The outreach team is comprised of peer educators, peer supervisors and community mobilisers, all of whom are involved in the peer education process.

Peer educators are FSWs engaged on short term contracts to support recruitment activities. They were recruited from sex work hotspots based on their ability to connect with other FSWs and their good model behaviour, for example, being non-violent and able to maintain confidentiality, as well as their availability. Each peer educators worked across 2-3 hotspots.

Peer supervisors are also FSWs engaged on short term contracts. They were charged with overseeing and supporting the work of peer educators across multiple hotspots. Each peer supervisor supervised between 5-10 peer educators.

Community mobilisers are hired on a full-time basis by ICRH-K to provide overall support to all peer supervisors and peer educators in a given area. They are usually FSWs or previous FSWs who have some level of education (for example, high school diploma or certificate) to ensure they can fulfil programmatic obligations, such as setting up community activities. Over time peer educators may rise through the ranks to become peer supervisors and later community mobilisers.

All peer educators are taken through a one-week training by the National AIDS And STI Control Programme (NASCOP) to prepare them for their role. NASCOPs Manual for Training Peer Educators for Programmes with Female Sex Workers was used for peer educator training so as to ensure standardized content and quality of outreach sessions. Topics covered in the training were as follows:

- Module 1: Peer Educators: Who We Are and What We Do
- Module 2: HIV, AIDS, and Sexually Transmitted Infections
- Module 3: Reproductive Health
- Module 4: Preventing HIV and Sexually Transmitted Infections
- Module 5: Knowing Our HIV Status: Promoting HIV Testing and Counselling
- Module 6: Behaviour Change
- Module 7: Alcohol and Substance Abuse
- Module 8: Creating an Enabling Environment for Behaviour Change
- Module 9: Peer-Led Outreach and Micro-Planning (NASCOP, 2017).

The training was carried out by existing peer educators who were selected based on their ability to conduct trainings. Previously, these trainers had participated in a Training of Trainers (TOT) programme by NASCOP to prepare them to train new peer educators. They periodically attend refresher courses if there were any updates to the curriculum. Peer educator trainings and trainer refreshers were carried out at local hotels and all participants received KES 1000 for transport reimbursement.

Clinicians

The selection criteria for clinicians were based on their past work at Comprehensive Care Centres (CCC), that is health care centres where people living with HIV/AIDS go for holistic care and management. At the start of each new project, clinicians are trained on the various project specific SOPs that pertain to them, such as the data collection and reporting SOP to ensure they adhere to the required clinical procedures and correctly complete the relevant forms, such as the Clinic Enrolment Form and Clinic Visit forms. They were trained on the National Guidelines for HIV/STI programming with Key Populations and the 2018 Guidelines on the use of Antiretroviral drugs for Treating and Preventing HIV in Kenya, and taken through a stigma reduction training to ensure they were able to offer services in a non-judgemental manner and to always maintain patient dignity.

3.1.2.2 Outreach activities

At the start of the service delivery programme, the ICRH-K team mapped out all the known sex work hot spots which included bars, night clubs, casinos, strip clubs, hotels, parks, and beaches, as well as home-based and internet-based sex work venues and websites. This was done as part of a national size estimation exercise carried out by NASCOP and implementing partners to determine the total FSW population in these areas. The exercise was carried out in line with the monitoring and evaluation component of the Kenya AIDS Strategic Framework 2014/15–2018/19 which recommends that key population size estimations be done every five years. The size estimation occurred in two phases. The first phase was implemented in 2017/2018 in 34 counties where Key Population (KP) programmes already existed. The second phase took place in 2020 in counties where there was no KP programming. Kilifi and Mombasa counties were included in Phase 1.

A programmatic validation approach was used to remap and document the hotspots identified in the size estimation carried out in 2012. Next, peer educators and outreach workers were engaged to help identify any new hotspots that were not already covered by ongoing programmes. Lastly, through group discussions with KPs, the hotspots were characterised and the number of KPs who use each hotspot estimated. In all, 14,760 hotspots were mapped across the 34 counties in Phase I, of which 10,987 hotspots were frequented by FSWs. A total of

167,940 FSWs were mapped at these hotspots. There were 290 hotspots in Kilifi with a total of 6696 FSWs, and 439 hotspots in Mombasa and with a total of 8187 FSWs (NASCOP, 2019).

Peer educators

Peer educators conducted individual and small-group sessions, providing education on module topics covered in the peer educator training discussed in section 3.1.2.1. These outreach activities were carried out at the hotspots where the peer educators carried out sex work, and a total of 15,770 contact forms were completed (although contact with individual FSWs could have occurred on more than one occasion). A NASCOP training tool was used as a guide to ensure consistency and quality of outreach activities. Additional outreach activities included condom promotion, distribution, and demonstration, and a community-based response to sexual and gender-based violence. This response involves a coordinated effort by the Violence Response Team, which is comprised of selected clinicians, paralegals, outreach workers, peer educators and FSWs from hotspots. In the event of an incidence of violence the survivor would notify the outreach worker at their hotspot or call the 24-hour violence response hotline. The team would then ensure the survivor obtain the necessary medical care and would help them pursue legal action. All outreach activities were recorded in a planner. This includes details about each FSW they came into contact with including average sex acts per week, needle/syringe requirements, condom and lubrication requirements per months among other details. This information is later transferred to an outreach calendar.

Peer educators invited FSWs to the DICEs for clinical services. They received a transport reimbursement of Kenya shilling 500 for their outreach activities in the community, as well as for in-reach (bringing FSWs to the clinic). Transport allowances were also provided to FSWs who were unable to afford transport to the clinic.

Peer supervisors

In addition to supporting condom distribution, peer supervisors helped peer educators with scheduling outreach to hotspots as well as in-reaches. Other peer supervisor duties included summarizing peer educators outreach calendars ; carrying out gap analyses to identify reasons why peer educators were unable to meet outreach/in-reach targets and providing needed support; peer planning to ensure condom supply for each FSW is adequate as per sex acts reported in previous months; contact listing to replace/reassign peer educators as needed; and mobilising peer educators to attend monthly meetings. Those who are trained as paralegals are also responsible for following up/responding to cases of GBV, completing a GBV reporting tool with support from a clinician and referring GBV survivors to Violence and Recovery Centres (VRCs).

Community mobiliser

Community mobilisers oversee peer supervisors and peer educators. Their activities include setting up monthly meetings with peer supervisors and peer educators to evaluate their performance; carrying out condom distribution and completing commodity registers for condoms and lubrication; coordinating with the ICRH-K data team to carry out analysis of outreach activities, identifying overall gaps to determine focus areas for each month; and working with the data team and clinicians to take findings back to the community. Lastly, those who are trained paralegals support GBV survivors by completing a violence reporting tool with support from clinician and referring them to the VRCs.

3.1.3 Data collection tools

Outreach

While at hotspots peer educators filled in a contact form for each FSW (see Appendix 8.9.1.1).

Enrolment visit

During the enrolment visit at the DICE, a Unique Identifier Code (UIC) was generated by a member of the data team for each new patient to ensure proper record keeping and individualized tracking. The UIC is comprised of 8 variables as described in Figure 3.1 and Table 3.1.

Figure 3.1: Sample Unique Identifier Code (UIC), 03/01/ICR/106/01/JUMU/85/03696

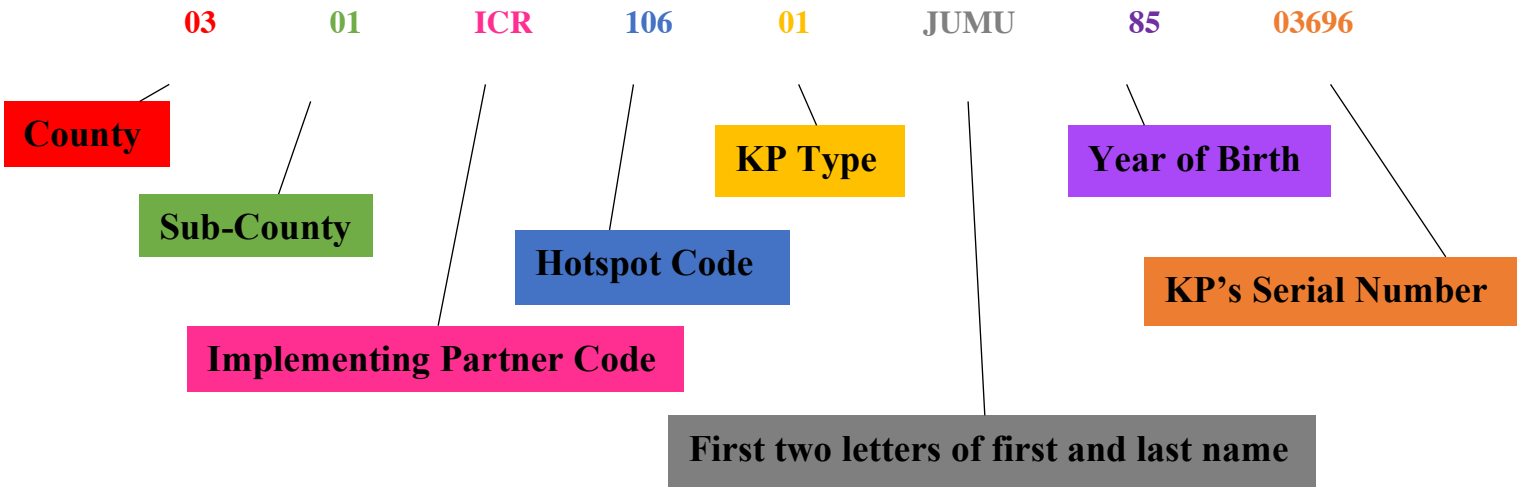


Table 3.1: List of Variables in Unique Identifier Code (UIC)

Variable	Description
County	A two-digit alphanumeric code identifying the specific county.
Sub-county	A two-digit alphanumeric code identifying the sub-county.
Implementing partner code	A three-character code representing the implementing partner participating in data exchange, in this case ICRH.
Hot Spot	A three-digit number representing the hotspot where the FSW reported as their favourite during enrolment. If the individual operated at multiple hotspots, the most frequented spot was utilised.
Key population type	A two-digit code representing the type of key population. "01" for FSW, "02" for men who have sex with men (MSM) and "03" for people who inject drugs (PWID).
First two letters of first and last name	A preferred name that was used consistently throughout the programme life cycle. It did not have to be their official name as captured in government documents.
Year of birth	A two-digit number indicating the year in which the individual was born.
Incremental/serial number	A numeric value that increased in respect to the number of individuals enrolled in the program.

Source: Adapted from the UIC Allocation SOPC

A Clinic Enrolment Form (see Appendix 8.9.1.2) was completed for each FSW by a clinical officer or a member of the data team. In this form baseline data was collected including marital status, pregnancy history, health seeking behaviour, GBV history, HIV/STI knowledge and sex work history, among other variables.

Follow-up Visits

A Clinic Visit Form (see Appendix 8.9.1.3) was completed by a medical doctor at every clinic visit (every 3 months). During these visits, data on ongoing screenings, results, treatment, and referrals were collected for STIs, substance use, PrEP use, and family planning among other variables.

Clinical team members and peer educators were provided with a list of FSWs who had failed to attend their clinic visits and who needed to be followed up. They called them up to 3 times and findings from phone calls were recorded, such as wrong number, phone did not go through, when the FSW was traced and whether they had relocated. Team members would also try to trace patients by calling the facilities at which FSWs collected their ARVs.

3.1.4 Data entry and quality assurance

A review of all completed source documents was carried out to check for correctness and completeness. Further, cross-referencing with source documents was carried out to ensure consistency. Data from the various source documents was entered into Microsoft Access by a data assistant based at each DICE.

To check for quality, the data was exported to MS Excel for visual proofing to be carried out on the computer screen. All fields were checked (for example, UIC code, visit date, etc), and any blank fields and discrepancies addressed. Monthly data review meetings were held to address data quality concerns. Reports were submitted to the Monitoring, Evaluation, Research and Learning (MERL) advisor who checked for any errors.

3.1.5 Data preparation and Analysis

Data cleaning was carried out to remove any major errors and inconsistencies to ensure the data was correct, complete, and usable. This included removal of patients with unusable UIC formats, correcting components of incorrect UIC formats, removal of male patients, and deleting FSWs with improbable values, for example for number of weekly sex acts.

Records from the Contact Form and the Clinic Visit Form were linked using the UICs. Logistic regression was used to calculate unadjusted odds ratios (ORs) and 95% confidence intervals (CIs) to assess the crude association between PrEP utilisation and number of weekly sex acts, as well as family planning utilisation and number of weekly sex acts. Multivariate logistic regression was used to calculate adjusted ORs and 95% CIs. Covariates were included in the model one at a time to determine if confounding was present. Further analysis was performed to determine associations by county. PE workload was included as an effect modifier and was categorised as ‘80 or less’ and ‘Over 80’. All analyses were performed using STATA version 17.0 (StataCorp, College Station, TX).

3.2 Qualitative Research Methods

This section provides an overview of the aims of the qualitative component of the thesis, background of the programme from which the data was obtained, methods used, design of the data collection tools, recruitment and training of interviewers, participant sampling and recruitment, data collection and analysis.

3.2.1 Aims and Overview

The overall aim of the qualitative component of this thesis was to understand FSWs' experiences as they passed through the PMTCT cascade.

3.2.2 About the Masifundisane Sex Worker Mentor Mother Programme

The *Masifundisane* Sex Worker Mentor Mother Programme was a peer-based programme implemented by JHSPH. The programme targeted pregnant women, postpartum women, and women with children under 5 years of age. Using a detailed FSW-tailored mentor mother curriculum developed by JHSPH, the programme provided education, community outreach and support from one mother to another related to prevention of vertical transmission of HIV in utero, during delivery or post-partum, as well as general parenting support and education, and adherence counselling for mothers living with HIV. The topics covered were counselling, family planning, safer conception, HIV, ART adherence, pregnancy, reproductive health nutrition, stress management, postpartum depression, stigma, HIV disclosure, infant feeding, early childhood development, safe home spaces, and paediatric HIV care.

At the start of the programme, four mentors affiliated with the implementing organisation, THC, were hired and trained using the mentor mother curriculum. The four mentors were selected based on their knowledge of the FSWs and their perceived ability to serve as mentor mothers. Each of the four mentor mothers were assigned 75 mentee mothers based on programmatic feasibility and budgetary constraints. FSWs were recruited by mentors at THC-identified sex work venues. The programme used word of mouth and coupons to invite mothers to engage in services. Mentors gave FSWs coupons to recruit other FSWs in their networks into the programme. There was no financial incentive attached to coupons. Mentors conducted health education talks, support groups, and 1-on-1 mentoring sessions providing education, emotional support, and clinic engagement support. Between December 2017 and November 2018, mentors served 318 FSWs.

3.2.3 Research Approach

As part of an evaluation of the *Masifundisane* Sex Worker Mentor Mother Programme, semi-structured IDIs were conducted amongst mentees and mentors. Given the multiple, discursive elements of acceptability and the need to understand individual perceptions and experiences a qualitative methodology was deemed most appropriate. In particular, semi-structured IDIs were chosen because they allow researchers to explore the views, experiences, beliefs and motivations of individual interviewees (Gill *et al*., 2008). Unlike unstructured interviews, semi-structured interviews provide guidance on what to talk about, take less time and are easier to manage. At the same time, as compared to structured interviews which, due to their inflexibility, may hinder the depth and richness of interview responses (Bryman, 2008), semi-structured interviews elicit more in-depth information from study participants (Green, 2005) because they allow for the discovery or elaboration of information that is important to the

interviewees but may not have previously been thought of as pertinent to the researcher (Gill *et al*., 2008). Further, as compared to group settings, such as Focus Group Discussions (FGDs), one-on-one interviews allowed for detailed and private discussion of personal experiences.

3.2.4 Interviewer recruitment and training

The interviews were conducted by two individuals – one English speaking staff member from JHSPH and one individual who was hired and trained by THC specifically for the interviews. The criterion for selection for the THC hired interviewer was that, in addition to being able to speak English, they must be fluent in the local language, isiXhosa. JHSPH staff carried out a 4-day training for the interviewers prior to the start of data collection. All personnel involved with research activities were trained in Good Clinical Practice (GCP) and Human Subjects Protection.

3.2.5 Participant recruitment

As noted earlier, the mentor mothers had been hired as part of the *Masifundisane* Sex Worker Mentor Mother Programme.

Recruitment of mentees to participate in the IDIs began 12 months after the initiation of the *Masifundisane* Sex Worker Mentor Mother Programme, to allow for enough mentees to have joined the programme. They were recruited primarily via word of mouth. They were eligible if they had had at least three one-on-one interactions with their mentor mothers as determined from programmatic logs, however, a few mentee mothers were recruited even if they had fewer contacts to ensure a range of experiences were captured. Mentees were purposively sampled to ensure that an array of geographic areas covered by the programme were represented, as well as different ages of participants.

3.2.5.1 Sample Description

The IDIs were carried out with all the 4 mentor mothers and amongst a total of 36 IDI mentee mothers, of whom 23 were living with HIV and the remaining 13 were HIV negative. This DrPH research utilised data collected from all four mentors. Data from 32 mentees (21 living with HIV and 11 uninfected) were used for this research due to missing data for four mentees. It was determined that a sample size of 32 would be sufficient to allow for saturation of themes among the mentees. It should be noted that while only 8 of the 32 mentees could have been actively engaged in PMTCT interventions during the study (those with children one year and below), the study sought to learn about experience of the other 24 women with older children who had experience with PMTCT cascade completion in the past.

The number of interactions with mentors by interviewed mentees ranged from 2 to 25, and the median number of interactions was 4. Average age of IDI participants was 28.3 years (minimum 19 years, maximum 41 years). Average number of mentee children was 1.6. Nine interviewed mentees were pregnant or postpartum during the programme.

Table 3.2: Summary of Mentee Data

Mentee Code	Age	Number of children	Ages of children
HIV-uninfected			
1. M-001-01	27	1	3 years
2. M-004-01*	35	2	3 years, 2 months
3. M-006-01	24	2	2 years, 4 years
4. M-007-01	30	1	4 years
5. M-009-01	24	1	4 years
6. M-010-01	29	1	4 years
7. M-011-01	36	3	15 years, 9 years, 2 years
8. M-018-01*	30	4	10 years, 8 years, 6 years, 1 year
9. M-019-01	28	1	2 years
10. M-020-01*	31	1	1 year
11. M-031-01	28	1	3 years
HIV-infected			
12. M-002-02*	23	2	11 months and 6 years
13. M-003-02	34	2	4 years and 8 years
14. M-005-02	32	2	3 years and 6 years
15. M-008-02	22	1	4 years
16. M-012-02	37	4	3 years, 5 years, 12 years and 15 years
17. M-013-02	23	2	8 months and 2 years
18. M-014-02	22	1	3 years
19. M-015-02	28	2	2 years and 4 years
20. M-016-02	18	1	3 years
21. M-017-02*	41	1	1 year
22. M-021-02	40	1	2 years
23. M-022-02	26	1	2 years
24. M-023-02	19	1	3 years
25. M-024-02	25	1	2 years
26. M-025-02	38	1	3 years
27. M-026-02	23	1	4 years
28. M-027-02*	23	1	1 year
29. M-028-02*	37	3	1 year, 5 years and 7 years
30. M-029-02*	28	2	8 months and 7 years
31. M-030-02*	26	1	6 weeks
32. M-032-02	21	1	2 years

*Pregnant or postpartum during programme

3.2.6 Research process

3.2.6.1 Interview schedule

This section describes how the interview schedules were developed, provides a description of the questions that were asked and the reasoning behind the various aspects of the interview schedules.

3.2.6.2 Development of interview schedules

JHSPH developed an interview guide for the IDIs as part of an evaluation of the *Masifundisane* Sex Worker Mentor Mother Programme. The interview guide was translated into isiXhosa by a member of the THC site staff.

In addition to questions on motherhood challenges, the initial interview questions primarily focused on the mentees' relationships with the mentors and their experiences during health education talks, support groups, and one-on-one sessions.

To capture their experiences when accessing interventions to prevent vertical transmission, I added additional questions on knowledge of HIV status during pregnancy, experiences (if any) with utilisation of PMTCT interventions, including ARVs during pregnancy and/or breastfeeding, any concerns or challenges with using ARVs during pregnancy and/or breastfeeding, adherence to ARVs during pregnancy and/or breastfeeding, and lastly, information received from mentors about prevention of vertical transmission during pregnancy and/or breastfeeding.

Questions were open-ended to allow participants to broadly articulate their experiences. Appropriate probes were developed to be used where natural dialogue was not forthcoming and to guide the discussion. The JHSPH team and I reviewed and discussed the schedule of questions prior to commencement of interviews.

Both the mentee and mentor interview guides begin with an introductory statement in which the interviewer explained the purpose of the interviews, informed the interviewee that notes will be taken and that the session will be audio-recorded. The interviewer confirmed that any information shared will not be discussed outside the interview and allowed the interviewee to ask questions should they have had any.

During the IDIs, both mentees and mentors were asked to share their experiences participating in the mentor mother programme with the overall aim of helping to better orient the programme to serve their needs.

3.2.6.3 Mentor questionnaire

The mentor questionnaire (Appendix 8.9.2.1) covered various topics as highlighted below.

Mentor experiences as mothers who sell sex

Mentors were asked about their experiences with engagement in sex work during pregnancy or when raising children, challenges in accessing HIV treatment, breastfeeding and infant feeding, accessing healthcare for their children including HIV testing, and with childcare.

Mentee challenges

Mentors were asked about mentees' challenges including with breastfeeding or infant feeding, and with accessing healthcare for themselves or their children, including HIV testing and treatment. They were also asked about mentees experiences with adherence to ART, substance use, and nutrition for themselves and their children.

Addressing challenges through mentorship

Mentors were asked about whether mentees' challenges improved or stayed the same over time, what challenges were solved through mentorship and those that could not be solved.

Experiences with health education talks, support groups and one-on-one sessions

For health education talks, mentors were asked about their experiences delivering health talks including how engaged they felt with mentees, topics covered, challenges faced when organising health talks and the solutions they identified, and how the health education talks can be improved.

For support groups, mentors were asked about their experiences running support groups including their overall experiences organising and facilitating the groups including challenges faced, the level of participation and interaction, whether the group settings were useful including if they have advantages over one-on-one mentoring. They were also asked about topics covered during support groups, feedback received from mentees about the experience and support group attendance including whether the same women attended each session and the relationships that grew over time.

For one-on-one mentoring, mentors were asked about their experiences conducting one-on-one sessions including challenges faced, whether it was easy or difficult to pass information on to mentees, topics covered including which ones were easy or difficult to explain and how easy it was for mentees to understand, their thoughts on mentees knowledge of PMTCT, how much time was devoted to emotional support for mentees, any concerns with privacy or about specific modes of communication, (phone, SMS or in-person visits) and how the sessions could have been improved.

Experiences being a mentor

Mentors were asked about how being a mentor mother affected their life, whether they felt that they had the tools to be a good mentor mother and what they felt was missing. They were also asked about how they dealt with stress related to be a mentor mother, what additional support they needed and any recommendations on how to improve the mentor mother programme.

3.2.6.4 Mentee questionnaire

The mentee questionnaire (Appendix 8.9.2.2) covered various topics as highlighted below.

Overall experience participating in the Mentor Mother programme

Mentees were asked about their overall experience participating in the mentor mother programme including their motivations for joining, ways in which the programme has been helpful, elements that were not helpful and what mentees would tell other FSWs who may be interested in participating in the programme.

Information about their children

Mentees were asked to share information about their children and, if necessary, probing questions were asked including how many children they currently have, the children's ages, how they would describe the health and well-being of their children.

Challenges faced as a mother

Mentees were asked about the challenges they faced during pregnancy and/or breastfeeding, including challenges when taking ARVs, concerns about using ARVs while pregnant and/or breastfeeding, and any instances of defaulting. They were also asked about their experiences with accessing health care for their children, including any challenges experienced. Lastly, they were asked about their experiences with childcare, including any safety concerns that they had.

Experiences with mentorship

Mentees were asked about their interactions with mentors including whether they discussed challenges with mentors, how easy it was to have these discussions and the type of support received. They were also asked what the mentor could have done better.

Relationships with their mentor mother

Mentees were asked about the number of times they interacted with their mentor over the phone and face to face, their mentor's ability to address their challenges, and their thoughts about the mentor's character and skills.

Prevention of vertical transmission of HIV

Mentees were asked if they received any guidance on how to prevent vertical transmission during pregnancy and breastfeeding, and on follow up care for their children, including HIV testing. They were also asked about their choices around utilisation of interventions to prevent vertical transmission of HIV.

Experiences with health education talks, support groups and one-on-one sessions

Mentees were asked about the various activities that were led by the Mentor Mothers. For health education talks, they were asked about their attendance, topics covered, thoughts about the location where the talks were held, including concerns about privacy, what they learnt, how useful the information was to them and what could be done to improve the talks.

For the support groups, they were asked about their attendance, the number of other mentees who were present, their thoughts about the location where the support groups were held, including concerns about privacy, their experiences with sharing with other FSWs including how comfortable they felt, how useful the support groups were and what could be done to improve them.

For one-on-one mentoring they were asked about their attendance, whether interactions were over the phone and/or face to face, any concerns about privacy, what they learnt and how difficult the information was to comprehend, how useful the sessions were and what could be done to improve them.

3.2.7 Data Analysis

Multiple methods exist for analysing qualitative data that seek to understand experiences and meanings. I chose to draw upon the principles of Braun and Clarke's thematic analysis (Braun and Clarke, 2006) to understand mentees' experiences with PMTCT cascade completion, as well as both mentees' and mentors' experiences participating in the mentorship programme. Thematic analysis compares the content of interviews and classifies them into recurrent themes. It is argued that the flexibility and accessibility of thematic analysis provide richness and complex accounts. Contrary to Interpretative Phenomenological Analysis and Grounded theory, Thematic Analysis acknowledges the importance of both the lived experiences and the nature of social processes. Below I outline the analysis process.

I transcribed all English audio recordings verbatim, including pauses, laughter and interruptions. A former THC staff member was hired as a consultant to transcribe the interviews that were in isiXhosa. The transcripts and audio recordings were compared to ensure that there was no missing information and were updated accordingly. The isiXhosa transcripts were then translated into English. I read through the transcripts to familiarise myself with the data. I worked with a researcher from JHSPH to develop a codebook. The process was both inductive and deductive: our prior professional practice and reading through literature ensured that we examined areas of interest but at the same time remained open to the possibility of new and interesting themes emerging. The codebook was revised several times as more themes came up throughout the process. All transcripts were independently coded in duplicate by both researchers using Atlas.ti software (version 8.4.4 Scientific Software Development GmbH). Coding choices were discussed throughout the coding process and any differences resolved by the coders or through input from a third researcher, when necessary. Themes were identified and thematic networks constructed. Finally, the information was integrated and interpreted. Findings of the analysis are presented in Paper B (chapter 5).

3.2.8 Reflexivity

Reflexivity means sensitivity to the ways in which the researcher and the research process have shaped the collected data, including the role of prior assumptions and experience, which can influence even the most avowedly inductive inquiries. To improve the credibility of findings, researchers need to consider their personal and intellectual biases, as well as personal characteristics such as age, sex, social class, professional status and the "distance" between the researcher and those researched (Mays, 2000).

Throughout the process of undertaking this thesis, I was cognisant of my subjective position within it as an African woman, as a mother and as a person with a former career as in HIV prevention research. I also do not have the same educational background, socioeconomic status and lifestyle as majority of the participants. Consideration of my position, and the influence my position on the research is worthy of acknowledgement. My professional experiences have made me keenly aware of the challenges faced by vulnerable and marginalised populations. In particular, it was during this work at Wits RHI that I observed many of the women had children, but they were hardly spoken about. This deeply bothered me, especially once I had my own child (during the course of my DrPH). I wondered what it meant to be a part of a practically unseen population thus prompting my investigation.

3.3 Ethical Considerations

Both the quantitative and qualitative components were approved by the LSHTM Ethics Review Committee. Initial ethics approval from the LSHTM was obtained on 11 February 2019. Approval for an amendment submitted in May 2020 was granted on 19 June 2020.

Both the quantitative and qualitative components received local approval as highlighted below. Details on additional ethical considerations are also provided.

3.3.1 Qualitative Component

Approval for qualitative component was received from JHSPH Institutional Review Board and the South African Human Sciences Research Council (HSRC) (see Appendix 8.10).

Mentees who were found to be eligible for the IDIs were invited to participate. Identifiers used for contacting potential IDI participants during the recruitment process were not retained once recruitment was completed.

The informed consent process and interviews took place in a private room at the THC office. Potential IDI participants were informed by study staff about the objectives, methods, risks, benefits, and compensation scheme of the study, and were advised that discussions were confidential. They were informed that their participation was voluntary, that they had the option not to participate in the study, that they could also decline to answer any question or stop participating at any time, and that there would be no repercussions for their decision. Written informed consent for IDI participation and for audio-recording was obtained from each eligible participant. Consent forms were locked in a secure cabinet with access limited to authorised individuals.

All IDI participants were compensated ZAR 50 for their time and travel expenses.

Each participant was registered with a 9-digit unique identification number with the following structure:

M -DDMMYY-PP
M: Mentor mother ID number (A-D)
DDMMYY: Date
PPP: participant order of inclusion #

No personal identifiers were attached to any quotations used in this thesis.

Audio-recordings, transcriptions, translations, and notes were stored on my personal laptop in password protected folders.

3.3.2 Quantitative Component

Ethical approval for the quantitative component was granted by the London School of Hygiene and Tropical Medicine ethics committee on 19 June 2020 and by the Africa Medical and Research Foundation (AMREF) Ethics Research Committee on 16 April 2021. All datasets were stored on my personal laptop in password protected folders.

As mentioned earlier, each FSW was identified using a Unique Identifier Code (UIC) generated by a member of the data team. This ensured confidentiality was maintained.

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SECTION A – Student Details

Student ID Number	LSH217523	**Title**	Ms
First Name(s)	JUDIE		
Surname/Family Name	MBOGUA		
Thesis Title	Towards Elimination of Vertical Transmissin of HIV: Utilisation of HIV and Sexual and Reproductive Health Interventions by Female Sex Workers in Kenya and South Africa		
Primary Supervisor	Lynda Clarke		

If the Research Paper has previously been published please complete Section B, if not please move to Section C.

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Please list the paper's authors in the intended authorship order:	Judie Mbogua, David Muchiri, Gerald Githinji
Stage of publication	**Not yet submitted**

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For multi-authored work, give full details of your role in the research included in the paper and in the preparation of the paper. (Attach a further sheet if necessary)	I contributed to the overall concept, framing of the research questions and design of this study. I prepared the local ethics applications associated with my research project. Following data collection by peer educators and clinicians, and data entry by the ICRH-K data team, I carried out data cleaning and analysis in STATA 17.0 (StataCorp LP, Texas, USA), and wrote and revised the paper based on feedback received.

SECTION E

Student Signature	[redacted]
Date	14 August 2023

Supervisor Signature	[redacted]
Date	14 August 2023

4 Paper A: Utilisation of PrEP and Family Planning by Female Sex Workers and Impact of Peer Education

Abstract

The aim of this research was to understand utilisation of oral pre-exposure prophylaxis (PrEP) and family planning amongst HIV uninfected female sex workers, and how utilisation changes with differing numbers of self-reported weekly sex acts. The study also aimed to understand how utilisation of PrEP and family planning differs geographically and with different peer educator workloads. This study used logistic regression to analyse routine clinic data from drop-in centres serving female sex workers in Kilifi and Mombasa counties in Kenya. Overall, the analysis found that FSWs with more weekly sex acts had higher utilisation of family planning. At the county level, the odds of family planning utilisation in Mombasa were lower amongst those with more self-reported weekly sex acts. FSWs in Mombasa also have higher rates of sexually transmitted infections which may reflect low condom use. Low condom use may be attributed to the strong economic incentive for multiple partners and condomless sex. The odds of family planning utilisation in Kilifi were greater with higher sex acts which may be attributed to knowledge gained from the Performance Monitoring Action survey underway in Kilifi. Overall, FSWs with more sex acts had lower utilisation of PrEP. The same was noted in Kilifi. Previous studies have revealed hesitancy around PrEP use by heterosexual women. In Mombasa, however, there was higher utilisation of PrEP with increased sex acts. This suggests that individuals may recognise their heightened risk of HIV, possibly gained when seeking care for sexually transmitted infections. A lower peer workload was associated with higher family planning use amongst those with high sex acts suggesting an effective programme. Conversely, PrEP use did not vary with peer educator workload. As noted earlier, PrEP hesitancy has been observed amongst heterosexual women in previous studies, and this may have limited the effectiveness of peer education.

Key words: PrEP; Family planning; Peer education; Female sex workers; Kenya

Statements and Declarations: The authors have no declarations or conflicts of interest associated with this work.

Introduction

Globally the risk of acquiring HIV for female sex workers (FSW) is 21 times higher than for adult women aged 15–49 years (UNAIDS, 2019a). As such, they have a disproportionately high incidence and prevalence of HIV compared to other women of reproductive age (Baral *et al*., 2012; UNAIDS, 2019a) - at 29.3% it is four times higher than among women in the general population in Kenya (NACC, 2018). FSWs also have high rates of unintended pregnancy. A study amongst FSWs in Kenya found that 52% of participants reported ever having an unintended pregnancy (Sutherland, 2011). Elevated rates of HIV and unintended pregnancy are partly attributed to high frequency of intercourse and a high number of sexual partners (UNAIDS, 2018; Ampt, 2019).

Prevention of Mother to Child Transmission (PMTCT)[14] is a four-pronged approach to reducing vertical transmission of HIV. The first prong is primary prevention of HIV infection among women of childbearing age, the second is preventing unintended pregnancies among

[14] Mother to child transmission of HIV can occur during pregnancy, birth, and breastfeeding.

women living with HIV, the third is preventing HIV transmission from women living with HIV to their infant, and the fourth is treatment, care, and support for women living with HIV, their children, and families (WHO, 2007). Research has also shown that more than two-thirds of FSW in sub-Saharan Africa have children (Scorgie *et al*., 2012), but despite high and sustained risks of vertical transmission of HIV in this population, very little data and research exists on their engagement in PMTCT services. Analyses have highlighted that most PMTCT programming focuses on ART to prevent vertical transmission and treatment and care for HIV infected mothers and dependents, leaving behind prevention of HIV infection and unintended pregnancy (Rwema *et al*., 2019).

Oral PrEP is a user-controlled HIV prevention option recommended for persons who are not infected but who are at substantial risk of HIV infection as part of a combination prevention package of biomedical, behavioural, and structural interventions. It involves the use of once-daily antiretroviral (ARV) formulation of emtricitabine (FTC) and tenofovir disoproxil fumarate (TDF) to reduce the risk of HIV infection (NASCOP, 2017). Family planning is the information, means and methods that allow individuals to decide whether to have children and when. It includes use of contraceptive methods including pills, implants, intrauterine devices (IUDs), surgical procedures that limit fertility, and barrier methods, such as condoms, as well as non-invasive methods, such as the calendar method (UNFPA, 2021).

The aim of this research was to understand utilisation of oral PrEP and family planning amongst HIV uninfected FSWs, and how utilisation changes with differing numbers of self-reported sex acts which was considered a proxy for risk of HIV and unintended pregnancy, respectively. The study also aimed to understand how utilisation of PrEP and family planning differs geographically and with different peer educator:FSWs ratios, that is, the number of FSWs served per peer. The main rationale for this study was to determine heterogeneity in trends in the association of PrEP and family planning utilisation and the risk of HIV infection and unintended pregnancy, respectively. It is hypothesised that there will be an increase in PrEP and family planning utilisation as number of weekly sex acts, and thus the risk of HIV infection and unintended pregnancy increases. Previous research suggests that a higher number of sexual relationships is associated with increased perceived risk and thus adoption of preventive behaviours (Shushtari, *et al.,* 2019). The paper also aims to determine how the PE workload impacts utilisation of PrEP and family planning by FSWs. It is hypothesised that PE workloads above 80 FSWs will result in lower utilisation of interventions. This is based on national guidelines that recommend a range of between 60-80 FSWs per peer educator as the ideal PE workload to optimise utilisation of interventions (NASCOP, 2014).

Methods

Data

Between 2016 and 2018, the International Centre for Reproductive Health, Kenya (ICRH-K) implemented an HIV/SRH service delivery programme for FSWs in Kilifi and Mombasa counties. Peer educators carried out educational talks at sex work hotspots. These sessions covered various topics including prevention of HIV and STIs, HIV counselling and testing, behaviour change to reduce their risk of HIV and STI transmission, reproductive health and substance use. Afterwards, peer educators recruited FSWs to attend the HIV/SRH delivery programme at key population clinics, known as drop-in centres (DICEs), to receive care. A Contact Form was completed for 15,770 individual FSWs during outreach in which peer educators collected demographic data, and information on sex work history, substance use and

interactions with peer educators. A total of 10,361 FSWs accessed and were enrolled at a DICE or mobile clinic of their choice where baseline data were captured using an Enrolment Form, including questions on health seeking behaviour, violence, HIV/STI knowledge and sex work history. They visited the DICEs every 3 months (or as needed) where they received HIV treatment, family planning, STI care, cervical cancer screening, TB screening and referral for treatment, as well interventions for HIV prevention, PMTCT, substance use and GBV. In addition, during clinic visits, HIV negative FSWs were offered PrEP for HIV prevention through the Jilinde programme. Data on ongoing screenings, results, treatment, and referrals were collected using a Clinic Visit Form. This study utilises data from the Contact Form, Enrolment Form and the Clinic Visit form which were merged using a unique identifier code (UIC) assigned to each FSW. The analysis includes a total of 5,804 FSWs.

Outcomes

Oral PrEP Utilisation

'PrEP Utilisation' was one of two outcome variables of interest. At each clinic visit, it was determined whether FSWs were already receiving PrEP ('ongoing'). Those who were not receiving PrEP were screened for eligibility. Once confirmed to be eligible, they either chose to initiate PrEP or not. In our analysis, consideration was given the fact that PrEP is not lifelong, and patients may start and stop use if they choose.

Each FSW was assigned to one of two categories: 'Utilised PrEP' or 'Did not utilise PrEP'. This was a composite variable created from the responses to 'PrEP Screen Results' (no/yes/ongoing) and 'PrEP Treated/Supported' (initiated/not initiated). Those who, at any point, indicated they were ongoing PrEP users, or were marked 'initiated' during the programme were classified as 'Utilised PrEP'. Those who did not indicate PrEP use at any point during the programme were classified as 'Did not utilise PrEP'. All analyses around PrEP utilisation were limited to FSWs who were not living with HIV.

Family Planning Utilisation

The second outcome variable was 'Family Planning Utilisation'. At each clinic visit, FSW were screened to determine if they were using any family planning method. Confirmation of eligibility was then carried out for those who were not using any method. Next, FSWs either initiated family planning or did not initiate or were confirmed to be ongoing. Once again, in our analysis, consideration was given to the fact that FSWs may start and stop family planning if they choose. They were therefore assigned to one of two categories: "Utilised Family Planning' for those who were ongoing or new initiates at any point during the programme, and 'Did not Utilise Family Planning' for those who did not indicate family planning use at any point during the programme.

Independent variables

Exposure of Interest

'Number of weekly sex acts' was the exposure of interest. This measure of sex work frequency was used as a proxy for HIV risk and risk of unintended pregnancy. It was based on the answer to the question 'On average how many sex acts do you have per week?'. Respondents were assigned to one of the following categories: '4 or less sex acts' and '5 or more sex acts.

Covariates

The final models were adjusted for age, county and STI history. Age was categorised as 'Under 18 years', '18-24 years' and '25 years and over'. The chosen age groupings were based on United Nations age classifications (UN Advisory Committee for the International Youth Year (1st sess.: 1980 : Vienna) and UN. Secretary-General, 1981; United Nations, 1989) and allowed for a sufficient sample size in each group. Previous research suggests that older persons are less likely to negotiate for condoms therefore may be more likely to adopt alternative prevention methods, such as PrEP (Elmes *et al*., 2014; Mudzviti *et al*., 2020). Findings on association with family planning are mixed, for example, Luchters *(*2016) found that older FSWs more likely to already have children therefore may be more likely to use modern contraceptives[15] whereas Ampt *et al*., (2019) found that younger women more likely to use long-acting reversible contraceptives (LARCs)[16] than older women possibly due to difficulty returning to clinics often.

At each clinic visit, syndromic management was used to diagnose and treat STIs. At screening, FSWs were assigned to one of two categories: 'STI positive' and 'STI negative'. FSWs with a history of STIs may access treatment and thus have greater exposure to information on other SRH interventions, including PrEP and family planning, thereby increasing their likelihood of utilisation. Alternatively, an STI diagnosis may result in stigma, shame, and a loss of self-worth (Fortenberry *et al*., 2002) and ultimately avoidance of care.

County was categorised as 'Kilifi' and 'Mombasa' depending on the location of the DICE. Generally, utilisation of health interventions is lower in Kilifi than in Mombasa. Amongst women in the general population, use of any contraceptive methods in Mombasa is at 42% as compared to 45% in Kilifi (KNBS, 2023). Poverty levels are higher in Kilifi than Mombasa which likely leads to greater rates of survival sex particularly due to decline in household income as seasonal economic activities wane (NACC, 2016).

It would have been preferrable to also control for marital status, education, substance use, history of mental health and experiences of violence however, it was not possible as missing data on these variables was extremely commonplace.

Statistical Analysis

Logistic regression was used to calculate unadjusted odds ratios (ORs) and 95% confidence intervals (CIs) to assess the crude association between PrEP utilisation and number of weekly sex acts, as well as family planning utilisation and number of weekly sex acts. Multivariate logistic regression was used to calculate adjusted ORs and 95% CIs. Covariates were included in the model one at a time to determine if confounding was present. Further analysis was performed to determine associations by county. PE workload was included as an effect modifier and was categorised as '80 or less' and 'Over 80'. All analyses were performed using STATA version 17.0 (StataCorp, College Station, TX).

[15] Oral contraceptives, implants, injectables, intra-uterine devices (IUD), male and female condoms, sterilisation, lactational amenorrhoea method, and emergency contraceptives.
[16] Copper Intrauterine Device (IUD), Levonorgestrel (LNG) IUD and implantable rod

Results

Descriptive Statistics

Characteristics of the FSWs at enrolment visit

Among the 5804 women participating in the study, majority of FSWs (92%) visited DICEs in Mombasa at enrolment. More than half of the women reported working from indoors and in bars (35.41% and 22.5%, respectively). The median age was 26 years (IQR 22-21). Majority of the women were over 25 years (80.36%) and single (77.06%), primary school was the highest level of education for about one quarter of the population (24.5%), while a further 22.85% had completed secondary school, and 0.05% completed tertiary education. Majority of the women (27.57%) had between 3 and 5 living children. The median number of living children was 5 (IQR 4-12). Lifetime abortion rate was 14.61%. Just 3.76% of the women were pregnant at enrolment. In total, 4.84% reported themselves as being HIV positive at enrolment. Overall, 44.42% reported that they had ever experienced STI symptoms. Specifically, 1.41% had experienced genital ulcers, 10.99% painless vaginal growth, 4.29% foul smelling discharge and 28.02% lower abdominal pain. At the county level more FSWs in Kilifi (52.97%) reported having STI symptoms than in Mombasa (43.63%). Majority of the women (68.07%) were using family planning. At the county level, more women in Mombasa were using family planning than in Kilifi at enrolment (69.03% vs 56.46%). The most commonly used methods were condoms (39.04%) followed by contraceptive implant (14.66%) then injectable contraceptives, DMPA (11.65%). Similar findings were noted at the county level. Characteristics of all 10,361 FSWs enrolled are available in Appendix 1.

Characteristics of the FSWs during clinic visits

During clinic visits, majority of the women (64.47%) visited DICES in Mombasa County. In all, 52.38% of the women worked in bars, 31.56% worked indoors, and 11.35% worked outdoors. The median was 27 years (IQR 23-32). Majority of the women were over 25 years (80.36%). Overall, 6.20% reported themselves as being HIV positive during clinic visits, while HIV prevalence (as determined by testing at the clinic) was 3.81% amongst those who did not self-report being HIV positive. In total, 4.39% were found to have an STI after syndromic screening. At the county level, more women in Mombasa (5.61%) were found to have an STI compared to Kilifi (2.18%). In total 83.08% were found eligible for PrEP, and of these 9.08% utilised PrEP (ongoing or new initiates at any time point). By county, there was greater utilisation of PrEP in Mombasa than Kilifi (11.14% vs 5.75%). Overall, 77.08% of all the women used family planning (ongoing or new initiates). At the county level, more women in Kilifi were using family planning than in Mombasa during clinic visits (86.57% vs71.86%).

Table 1: Characteristics of the FSWs (where available)

	AT ENROLMENT VISIT		DURING CLINIC VISITS	
VARIABLE	**n/5804**	**%**	**n/5804**	**%**
County				
Mombasa	5363	92.40	3742	64.47
Kilifi	441	7.60	2062	35.53
Where they work from[17]				
Bars	1306	22.50	3040	52.38
Outdoors	381	6.56	659	11.35
Indoors	2055	35.41	1832	31.56
Other	369	6.36	88	1.52
Missing	1693	29.17	185	3.19
Age Categories				
Under 18 years	19	0.33	21	0.36
18-24 years	1121	19.31	1119	19.28
25 years and over	4664	80.36	4664	80.36
Median	26 (IQR22-31)		27 (IQR (23-32)	
Marital status			-	-
Divorced	301	5.19		
Married	227	3.91		
Separated	701	12.08		
Single	4513	77.76		
Widowed	62	1.07		
Education			-	-
Never attended school	104	1.79		
Did not complete primary	953	16.42		
Completed primary	1,422	24.50		
Did not Completed secondary	764	13.16		
Completed secondary	1,326	22.85		
Did not complete tertiary level	25	0.43		
Completed tertiary level	150	2.58		
Other	3	0.05		
Missing	1,057	18.21		
Number of living children			-	-
1 to 2	1391	23.97		
3 to 5	1600	27.57		
6 to 9	415	7.15		
Missing	2398	41.32		
Median	5 (IQR 4-12)			
Has had an abortion			-	-
No	3812	65.68		
Yes	848	14.61		
Missing	1144	19.71		

[17] Bars: bars without lodging, strip clubs and casinos.
Outdoors: street, highways, beaches and parks.
Indoors: bars with lodging, home based, lodging, guest house, hotel, sex den, brothel, massage parlour and salon.

Median	0 (IQR 0-1)			
Currently pregnant			-	-
No	4339	74.76		
Yes	218	3.76		
Missing	1247	21.49		
Self-reported HIV Status				
Negative	4402	75.84	5214	89.83
Positive	281	4.84	360	6.20
Does not want to share	279	4.81	230	3.96
Missing	842	14.51	-	-
HIV Status based on clinic testing	-	-		
Negative			5275	90.89
Positive			221	3.81
Inconclusive			3	0.05
Declined test/self-reported positive			305	5.25
Ever experienced STIs symptoms			-	-
No	3206	55.24		
Yes	2578	44.42		
Missing	20	0.34		
STI Symptoms experienced			-	-
Genital Ulcers	82	1.41		
Painless Vaginal Growth	638	10.99		
Foul Smelling Discharge	249	4.29		
Lower abdominal pain	1626	28.02		
Missing	3209	55.29		
Ever experienced STIs symptoms, by county			-	-
Kilifi				
No	187	42.40		
Yes	238	52.97		
Missing	16	3.63		
Mombasa				
No	3019	56.29		
Yes	2340	43.63		
Missing	4	0.07		
STI syndromic screening results	-	-		
Negative			5549	95.61
Positive			255	4.39
STI syndromic screening results, by county	-	-		
Kilifi				
Negative			2017	97.82
Positive			45	2.18

Mombasa				
Negative			3532	94.39
Positive			210	5.61
Depression	-	-		
Depression unlikely			1312	22.6
Mild depression			4	0.1
Moderate depression			1	0.0
No			1016	17.5
Missing			3471	59.8
PrEP Eligibility	-	-		
Not Eligible			977	16.83
Eligible			4822	83.08
Missing			5	0.09
PrEP utilisation	-	-		
Eligible for PrEP			4822	
Did not utilise			4384	90.92
Utilised			438	9.08
PrEP utilisation, by county	-	-		
Kilifi				
Eligible for PrEP			1843	
Did not utilise			1737	94.25
Utilised			106	5.75
Mombasa				
Eligible for PrEP			2979	
Did not utilise			2647	88.86
Utilised			332	11.14
Using family planning				
Yes	3951	68.07	4474	77.08
No	655	11.29	1329	22.90
Missing	1198	20.64	1	0.02
Using family planning, by county				
Kilifi				
No	98	22.22	276	13.39
Yes	249	56.46	1785	86.57
Missing	94	21.32	1	0.05
Mombasa				
No	557	10.39	1,053	28.14
Yes	3,702	69.03	2,689	71.86
Missing	1,104	20.59		
Family Planning methods used			-	-
Pill	182	3.14		
IUD	60	1.03		
DMPA	676	11.65		
Condoms	2266	39.04		
Implant	851	14.66		
Traditional/herbal	10	0.17		

Non-penetrative sex	6	0.10		
Withdrawal	11	0.19		
Natural	36	0.62		
Female sterilisation	12	0.21		
Missing	1694	29.19		
Family Planning methods used by county			-	-
Kilifi				
Pill	20	4.54		
IUD	3	0.68		
DMPA	66	14.97		
Condoms	126	28.57		
Implant	67	15.19		
Traditional/herbal	1	0.23		
Non-penetrative sex	2	0.45		
Withdrawal	4	0.91		
Natural	-	-		
Female sterilisation	-	-		
Missing	152	34.47		
Mombasa				
Pill	162	3.02		
IUD	57	1.06		
DMPA	610	11.37		
Condoms	2140	39.90		
Implant	784	14.62		
Traditional/herbal	9	0.17		
Non-penetrative sex	4	0.07		
Withdrawal	7	0.13		
Natural	36	0.67		
Female sterilisation	12	0.22		
Missing	1542	28.75		

Data on weekly sex acts and peer educator workload were collected at first contact. The median number of weekly sex acts was 4 (IQR 3-5). Majority of FSWs (72.21%) were engaged by peer educators who had workload of greater than 80 FSWs. The median number of FSWs served per peer educator was 64 (IQR 60-81).

Table 2: Number of weekly sex acts and peer load

CONTACT FORM		
VARIABLE	**n/5804**	**%**
Avg. number of sex acts per week		
Less than 5	3879	66.83
5 or more	1925	33.17
Median	5(IQR 3-5)	
Kilifi		
Less than 5	772	37.44
5 or more	1290	62.56

Mombasa		
Less than 5	3107	83.03
5 or more	635	16.97
Peer load		
>80	1613	27.79
<80	4191	72.21
Median	64 (IQR 60-81)	
Kilifi		
>80	541	26.24
<80	1521	73.76
Mombasa		
>80	1072	28.65
<80	2670	71.35

Association Between PrEP and Family Planning Utilisation and Weekly Sex Acts

The analyses showed that FSW who performed five or more sex acts per week had 0.80 (95% ci: 0.64 – 0.99) times the odds of PrEP utilisation relative to those who performed four or less acts per week. After adjustment for age, county and STI prevalence, the odds increased to 1.06 (95% ci: 0.84 - 1.35) though this was not statistically significant. FSW who performed five or more sex acts per week, relative to those who performed four or less per week had 1.84 (95% ci: 1.60 – 2.13) times the odds of family planning utilisation. After adjustment for age, county and STI prevalence the odds decreased to 1.29 (95% ci: 1.10 - 1.52) (Table 2).

Table 2: Odds Ratios (OR) and 95% Confidence Intervals (CI) of the Association Between PrEP/Family Planning utilisation and Weekly Sex Acts

	PrEP Utilisation		Family Planning Utilisation	
	Unadjusted	**Fully adjusted**	**Unadjusted**	**Fully adjusted**
Sex acts per week				
4 and under	1	1	1	1
5 and more	0.80 (0.64 – 0.99) *	1.06 (0.84 - 1.35)	1.84 (1.60 – 2.13) *	1.29 (1.10 - 1.52) *
Age				
<18 years		1		1
18-24 years		1.22 (0.36 – 4.24)		1.48 (0.61 - 3.56)
25+ years		0.39 (0.11 – 1.34) *		4.59 (1.91 – 11.00) *
County				
Kilifi		1		1
Mombasa		1.61 (1.25 – 2.07) *		0.47 (0.40 - 0.56) *
STI symptoms				
Negative		1		1

Positive		1.96 (1.33 – 2.88) *		2.73 (1.83– 4.08) *

*Statistically significant at the 5% level

Association Between PrEP Utilisation and Weekly sex acts, by county

FSW in Kilifi who performed five or more sex acts per week, relative to those who performed four or less sex acts per week had 0.22 (95% ci: 0.14– 0.34) times the odds of PrEP utilisation. After adjustment for age and STI prevalence the slightly increased to 0.28 (95% ci: 0.18 – 0.43). FSW in Mombasa who performed five or more sex acts per week, relative to those who performed four or less sex acts per week had 2.37 (95% ci: 1.82 – 3.07) times the odds of PrEP utilisation. After adjustment for age and STI prevalence the odds decreased to 2.08 (95% ci: 1.60 – 2.73) (Table 3).

Table 3: Odds Ratios (OR) and 95% Confidence Intervals (CI) of the Association Between Weekly Sex Acts and PrEP utilisation, by county

	Kilifi		**Mombasa**	
	Unadjusted	**Fully adjusted**	**Unadjusted**	**Fully adjusted**
Sex acts per week				
4 and under	1	1	1	1
5 and more	0.22 (0.14 – 0.34) *	0.28 (0.18 – 0.43) *	2.37 (1.82 – 3.07) *	2.08 (1.60 – 2.73) *
Age				
<18 years		1		1
18-24 years		0.34 (0.05 - 2.23)		2.99 (0.39 – 23.01)
25+ years		0.09 (0.01 – 0.59)		1.14 (0.15 – 8.75)
STI symptoms				
Negative		1		1
Positive		0.53 (0.12 – 2.30)		2.14 (1.42 – 3.28) *

*Statistically significant at the 5% level

Association Between Family Planning Utilisation and Weekly Sex Acts, by county

FSW in Kilifi who performed five or more sex acts per week, relative to those who performed four or less sex acts per week had 4.00 (95% ci: 3.03 – 5.24) times the odds of family planning utilisation. After adjustment for age and STI prevalence the odds decreased to 3.29 (2.48 – 4.37). FSW in Mombasa who performed five or more sex acts per week, relative to those who performed four or less sex acts per week had 0.70 (95% ci: 0.58 – 0.84) times the odds of family planning utilisation. After adjustment for age and STI prevalence the odds slightly increased to 0.74 (95% ci: 0.61 – 0.90) (Table 4).

Table 4: Odds Ratios (OR) and 95% Confidence Intervals (CI) of the Association Between Weekly Sex Acts and Family Planning utilisation, by county

	Kilifi		Mombasa	
	Unadjusted	**Fully adjusted**	**Unadjusted**	**Fully adjusted**
Sex acts per week				
4 and under	1	1	1	1
5 and more	4.00 (3.03 – 5.24) *	3.29 (2.48 – 4.37) *	0.70 (0.58 – 0.84) *	0.74 (0.61 – 0.90) *
Age				
<18 years		1		1
18-24 years		0.31 (0.03 – 2.85)		2.32 (0.82 – 6.57)
25+ years		1.47 (0.16 – 13.58)		5.76 (2.05 – 16.18) *
STI symptoms				
Negative		1		1
Positive		0.77 (0.36 - 1.76)		3.94 (2.45 – 6.33) *

*Statistically significant at the 5% level

Association with Age and STI history

Age

With respect to age, overall, older FSWs were less likely to use PrEP (0.39 (95% ci: 0.11 – 1.34)). The same was noted in both Mombasa and Kilifi but these findings were not statistically significant. Older FSWs were more like to use family planning (4.59 (95% ci: 1.91 – 11.00). The same was noted in Mombasa (5.76 (95% ci: 2.05 – 16.18) though the confidence intervals for both were very wide. Older FSWs in Kilifi also were more likely to use family planning, but this was not statistically significant.

STI history

Overall, those with a history of STIs were more likely to use PrEP (1.96 (95% ci: (1.33 – 2.88). FSWs in Mombasa with a history of STIs were also more likely to use PrEP (2.14 (95% ci: 1.42 – 3.28). FSWs in Kilifi with a history of STIs were less likely to use PrEP but these findings were not statistically significant.

Overall, FSWs with a history of STIs were also more likely to use family planning (2.73 ((95% ci: 1.83– 4.08)) . Similarly, FSWs in Mombasa with a history of STIs were more likely to use family planning (3.94 (95% ci: 2.45 – 6.33)). FSWs in Kilifi with a history of STIs were less likely to use family planning but these findings were not statistically significant.

Impact of Peer Educator Workload

Those who have five or more sex acts per week and have <80 PE workload have 1.28 the odds of PrEP utilisation compared to those with four or less sex acts and <80 PE workload. Those who have five or more sex acts per week and have >80 PE workload 1.01 the odds of PrEP utilisation compared to those with four or less sex acts and >80 PE workload. Neither were statistically significant.

Those who have five or more sex acts per week and have <80 PE workload have 1.55 the odds of family planning utilisation compared to those with four or less sex acts and <80 PE workload. Those who have five or more sex acts per week and have >80 PE workload have 1.21 the odds of family planning utilisation compared to those with four or less sex acts and >80 PE workload.

Table 5: Odds Ratios (OR) and 95% Confidence Intervals (CI) of the effect of having 10+ sex acts per week relative to 9 or less on utilisation of PrEP and Family Planning

	PrEP Utilisation	FP Utilisation
Low Peer Load (<80)	1.28 (95% ci: 0.80 - 2.07)	1.55 (95% ci: 1.15 – 2.10) *
High Peer Load (>80)	1.01 (95% ci: 0.77 - 1.32)	1.21 (95% ci: 1.01 – 1.45) *

*Statistically significant at the 5% level

Discussion

PrEP Utilisation

Both self-reported HIV status and the HIV prevalence determined from clinic testing are lower than expected for an FSW population due to the programme predominantly targeting HIV negative individuals.

Overall FSWs with more sex acts had lower utilisation of PrEP. The same was noted in Kilifi. Previous studies have revealed hesitancy around PrEP use by heterosexual women. Concerns that have been raised in previous studies include doubts about PrEP safety and efficacy, the association of antiretrovirals with HIV and the resultant self-stigma and stigma from partners and community members (van der Straten *et al*., 2014), low HIV risk perception and pill burden (Corneli *et al*., 2016). Further, while family planning is widely available, facilities offering PrEP to FSWs in Kilifi are more sparsely distributed compared to Mombasa (MOH, n.d.). As such, FSWs in Kilifi may have to travel further distances to access PrEP which may be a deterrent. Further, as noted earlier, Kilifi suffers much greater poverty than Mombasa (46.4% vs 27.1%) which may inhibit ability to travel to facilities offering PrEP (Development Initiatives, 2022).

In Mombasa, there was higher utilisation of PrEP with increased sex acts. This may imply that individuals may recognise their heightened risk of HIV and thus search for and use protection as has been observed in other studies (Lunkuse *et al*., 2022; Mudzviti *et al*., 2020; Restar *et al*., 2017). In addition, more women in Mombasa (5.61%) were found to have an STI compared to Kilifi (2.18%). This may have resulted in greater exposure to SRH information as they seek

treatment for STIs and subsequently higher utilisation of other interventions, including PrEP. Similar findings have been noted in other studies (Iyun *et al*., 2018).

Family Planning Utilization

There was an increase in family planning use from 68.07% to 77.1% which may be attributed to increased knowledge about risk and family planning options from participating in the programme.

Overall, the analysis found that FSWs with more sex acts had higher utilisation of family planning. Higher utilisation of interventions with increasing risk has been observed in previous research, for example, a study amongst FSW in Swaziland, found that those with 11 or more clients in the past month, had higher emergency contraceptive use than those with fewer than 11 clients (39.9% vs 25.5%) (Yam *et al*., 2014), while a study in Uganda found that inconsistent condom use was independently associated with having fewer paying clients in the past month (Bukenya *et al*., 2013). Knowledge of risks and/or previous experiences with unintended pregnancy, as well as fear of loss of income during pregnancy or concerns about child rearing expenses may be a driving force for higher family planning utilisation amongst women at higher risk of unintended pregnancy. Further, previous research also suggests that individuals with multiple sexual partners may have deeper social and peer-based networks which may increase their access to sources of information on health interventions (Lunkuse *et al*., 2022).

At the county level, the odds of family planning utilisation in Kilifi were greater with higher sex acts. Kilifi is one 11 counties[15] participating in the Performance Monitoring for Action (PMA), a mobile based survey platform generating family planning & SRH data. Participation in the survey may have resulted in improved family planning literacy in Kilifi. The same has been noted in the DHS where family planning utilisation increased from 34% in 2014 (KNBS, 2015) to 45% in 2022 (KNBS, 2023).

On the contrary, the odds of family planning utilisation in Mombasa during clinic visits were lower amongst those with more than five sex acts per week as compared to those with less than five sex acts per week. As noted earlier, FSWs in Mombasa had higher rates of STIs during clinic visits suggesting inadequate condom use which may be attributed to the strong economic incentive for condomless sex. This has been noted elsewhere, for example, a study in South Africa found that SWs were engaging in condomless sex to increase their earnings highlighting the fact that poverty can shape decision making (George *et al*., 2019).

Effect of Peer Educator Workload

A lower peer workload was associated with higher family planning use amongst those with high sex acts. Similar findings were noted in a study amongst key populations in Kenya whereby lower peer educator workload was associated with better outcomes including clinic attendance, screening and treatment services (Bhattacharjee *et al*., 2018).

On the contrary PrEP use did not appear to vary with peer educator workload. As noted earlier, PrEP hesitancy has been observed amongst heterosexual women in previous studies, and this may have limited the effectiveness of peer education (van der Straten *et al*., 2014; Corneli *et al*., 2016). It should be noted that research findings around peer educator impact have been mixed. For example, some studies showed that peer interventions directed at FSWs improved various SRH/HIV service utilisation indicators, including clinic attendance (Awungafac *et al*.,

2017) (Chingono *et al*., 2022), HIV and syphilis testing (Muhindo *et al*., 2021) and use of non-condom modern contraceptive methods (Dulli *et al*., 2019). Others have shown no significant impact, for example, on HIV testing (Chanda *et al*., 2017) or dual contraceptive method use (Dulli *et al*., 2019).

Implications of findings

In summary, the findings of the study suggest PrEP hesitancy amongst some FSWs highlighting the need to increase PrEP literacy both, amongst FSWs to increase utilisation, as well as in the wider community to reduce stigma around PrEP use. There is also a need to increase family planning knowledge and acceptability, particularly in Mombasa, for example through community dialogue facilitated by skilled health care workers. Key information can also be disseminated within communities through radio shows, social media, short message service (SMS) text messaging and web-based services. FSWs in Kilifi appeared to have experienced secondary benefits of a family planning survey underway, however, long term efforts should be made to maintain knowledge and acceptability of family planning in Kilifi.

Secondly, the research showed that financial insecurity impacts accessibility of interventions as well as choices around utilisation. Field worker outreach would be useful to improve access to interventions, such as PrEP for FSWs in hard-to-reach areas in Kilifi. Further, boosting financial security may help FSWs avoid high risk behaviour, such as condomless sex. For example, community savings have been shown to create a financial safety net and provide a sense of agency to participate in decision-making during interactions with clients, such as condom negotiation. (Mantsios *et al*., 2018). Further, addressing the unequal burden of unpaid care work amongst girls and women is important to allow women greater access to education and economic opportunities.

Lastly, while low utilisation of interventions by FSWs may be related to acceptability, it also highlights the need to evaluate peer educator programmes to determine how well they are running and their effectiveness in supporting utilisation of different interventions. Varying strategies and emphasis may need to be adopted to improve understanding and acceptability of different interventions by FSWs.

Areas for future research

Research into how peer workload impacts utilisation of other SRH/HIV services, and in other populations, such as pregnant and postpartum FSWs, is warranted. This should include determining how best to adjust peer education programmes to ensure effectiveness. Secondly, there is a need for research into how social and economic policies may lead to economic gender gaps, and how they can be adapted to reduce poverty amongst women.

Limitations

As noted, the data used for this study was a result of merging three datasets. Due to a change in formatting of the unique identifier codes used in the Enrolment Form at different points during the programme, a large number of FSWs were excluded from the analysis which may have impacted the overall findings. Further, it would have been preferred to have sex act categories of less than 10 and more than 10 as the National AIDS and STI Control Programme (NASCOP) classifies FSWs with 10 or more clients per week as high-volume (NASCOP, 2014). Upon merging majority of the women with sex acts above 10 were removed.

Secondly, Prong 2 of PMTCT focuses on utilisation of family planning by HIV positive women, however, this analysis predominantly includes HIV negative women as the data focused on PrEP utilisation. Utilisation of family planning may differ depending on HIV status, for example utilisation may be higher in women living with HIV due to exposure to broader SRH information during engagement in HIV care (Iyun *et al*., 2018). As such, given that majority of women included are HIV negative, the study may underestimate utilisation of family planning amongst HIV positive women, particularly amongst those accessing treatment and care.

Third, the STI prevalence during clinic visits was lower than findings of previous studies amongst FSWs (Vandenhoudt *et al*., 2013; UCSF, *et al*., 2015). Unlike these studies which relied on lab test to confirm the presence of STIs, the DICEs used syndromic management. It is therefore possible that some asymptomatic patients were missed therefore resulting in a lower STI prevalence being recorded. There is also a possibility that study participants did not self-report STI symptoms possibly due to recall bias or social desirability bias. However, FSWs enrolled at the clinic would have received information about STI prevention and treatment during peer outreach and, upon enrolling would be frequently screened for STIs and continue to receive prevention information during regular clinic visits. Further, the Jilinde programme placed much emphasis on messaging around PrEP and STIs, highlighting that PrEP cannot prevent STIs. These activities may have resulted in a heightened awareness about STIs and STI prevention as compared to those who first enrolled at the clinic.

Fourth, choices around utilisation of interventions were assumed to reflect perceived risk. This may not be accurate assumption, for example, in the case of a person who is aware of their risk but lacks agency around utilisation of interventions or where there are perceived benefits of not using interventions (for example, more money for condomless sex).

Fifth, logistic regression was used to calculate the odds of utilisation of PrEP and family planning, however, odds ratios (OR) do not tell the proportion of individuals who actually use the interventions. This would make it difficult to understand how likely an outcome is to occur thereby obscuring the significance of the findings. Absolute Risk would have been a better measure

Lastly, many variables had missing data which may have affected the validity of the analysis.

Appendix 1: FSW Characteristics for all 10,361 FSW enrolled

	ENROLMENT (N=10,361)	
VARIABLE	**n/10,361**	**%**
County		
Kilifi	1616	15.60
Mombasa	8745	84.40
Where they work from		
Bars	3206	30.94
Outdoors	902	8.71
Indoors	3762	36.31
Other	477	4.60
Missing	2014	19.44
Age Categories		
Under 18 years	118	1.14
18-24 years	3554	34.30
25 years and over	6689	64.56
Marital status		
Divorced	581	5.61
Married	820	7.91
Separated	1267	12.23
Single	7576	73.12
Widowed	117	1.13
Education		
Never attended school	166	1.60
Did not complete primary	1579	15.24
Completed primary	2812	27.14
Did not Completed secondary	1549	14.95
Completed secondary	2688	25.94
Did not complete tertiary level	49	0.47
Completed tertiary level	335	3.23
Other	5	0.05
Missing	1178	11.37
Number of living children		
1 to 2	2655	25.62
3 to 5	2077	20.05
6 to 9	1636	15.79
10 or more	49	0.47
Missing	3944	38.07
Has had an abortion		
No	7679	74.11
Yes	1441	13.91
Missing	1241	11.98
Currently pregnant		
No	8526	82.29
Yes	322	3.11
Missing	1513	14.60

Self-reported HIV Status		
Negative	8,166	78.81
Positive	515	4.97
Does not want to share	316	3.05
Missing	1,364	13.16
Ever experienced STIs symptoms		
No	5190	50.09
Yes	5118	49.40
Missing	53	0.51
Ever experienced STIs symptoms, by county		
Kilifi		
No	708	43.81
Yes	888	54.95
Missing	20	1.24
Mombasa		
No	4482	51.25
Yes	4230	48.37
Missing	33	0.38
STI symptoms		
Genital Ulcers	145	1.40
Painless Vaginal Growth	1060	10.23
Foul Smelling Discharge	351	3.39
Lower abdominal pain	3589	34.64
Missing	5216	50.34
Using family planning		
No	1229	11.86%
Yes	7818	75.46%
Missing	1314	12.68%
Using family planning, by county		
Kilifi		
No	322	19.93
Yes	1141	70.61
Missing	153	9.47
Mombasa		
No	907	10.37
Yes	6677	76.35
Missing	1161	13.28

Family Planning methods used		
Pill	413	3.99
IUD	140	1.35
DMPA	1455	14.04
Condoms	4222	40.75
Implant	1677	16.19
Traditional/herbal	25	0.24
Non-penetrative sex	11	0.11
Withdrawal	14	0.14
Natural	56	0.54
Female sterilisation	18	0.17
Missing	2330	22.49
Family Planning methods used by county		
Kilifi		
Pill	120	7.43
IUD	28	1.73
DMPA	243	15.04
Condoms	512	31.68
Implant	267	16.52
Traditional/herbal	8	0.50
Non-penetrative sex	5	0.31
Withdrawal	5	0.31
Natural	10	0.62
Female sterilisation	1	0.06
Missing	417	25.80
Mombasa		
Pill	293	3.35
IUD	112	1.28
DMPA	1212	13.86
Condoms	3710	42.42
Implant	1410	16.12
Traditional/herbal	17	0.19
Non-penetrative sex	6	0.07
Withdrawal	9	0.10
Natural	46	0.53
Female sterilisation	17	0.19
Missing	1913	21.88

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RESEARCH PAPER COVER SHEET

Please note that a cover sheet must be completed for each research paper included within a thesis.

SECTION A – Student Details

Student ID Number	LSH217523	**Title**	Ms
First Name(s)	JUDIE		
Surname/Family Name	MBOGUA		
Thesis Title	Utilisation Of HIV And Sexual And Reproductive Health Interventions By Female Sex Workers In Kenya And South Africa for Maternal and Child Welfare		
Primary Supervisor	LYNDA CLARKE		

If the Research Paper has previously been published please complete Section B, if not please move to Section C.

SECTION B – Paper already published

Where was the work published?			
When was the work published?			
If the work was published prior to registration for your research degree, give a brief rationale for its inclusion			
Have you retained the copyright for the work?*	Choose an item.	Was the work subject to academic peer review?	Choose an item.

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SECTION C – Prepared for publication, but not yet published

Where is the work intended to be published?	AIDS AND BEHAVIOR
Please list the paper's authors in the intended authorship order:	Judie Mbogua, Nikita Viswasam, Mfezi Mcingana, Lynda Clarke, Amrita Rao, Harry Hausler, Stefan Baral and Sheree Schwartz

SECTION D – Multi-authored work

For multi-authored work, give full details of your role in the research included in the paper and in the preparation of the paper. (Attach a further sheet if necessary)	I contributed to the development of the IDI questionnaires. Along with a staff member from JHSPH, I listened to the audio recordings of the interviews, transcribed the information, compared the transcripts with the audio recordings to ensure that there were no errors and updated missing information in the transcripts. Together with the JHSPH staff member, I generated a coding framework, identified themes, constructed thematic networks, and integrated and interpreted the data. I used Atlas.ti software to organise the data. I wrote and revised the qualitative paper based on feedback received from various reviewers.

SECTION E

Student Signature	[redacted]
Date	14 August 2023

Supervisor Signature	[redacted]
Date	14 August 2023

5 Paper B: Barriers and Facilitators to Prevention of Mother to Child Transmission of HIV (PMTCT) Cascade Completion and Impact of a Mentor Mother Program: Experiences of Female Sex Workers in Port Elizabeth, South Africa

Abstract

Female sex workers have disproportionately high HIV incidence and prevalence. Many sell sex during pregnancy, and coupled with insufficiently treated HIV infection, have high and sustained risk of vertical transmission. The objective of this analysis was to understand female sex workers' experiences when engaging in Prevention of Mother to Child Transmission of HIV interventions. The analysis also investigated female sex workers' experiences when participating in a peer mentorship programme. Data was obtained from in-depth interviews which were conducted as part of an evaluation of the *Masifundisane* Sex Worker Mentor Mother Programme. The study revealed several factors affecting PMTCT cascade completion, including lack of knowledge, socioeconomic status, substance use, intersecting stigmas, desire to protect their own health and that of their children, ease of use of interventions and affordability. The study also revealed the positive impact of support from family and friends as well as the benefits of peer education programmes, including increased knowledge and utilisation of PMTCT services, personal development, and relationship building between sex workers. Mentors noted experiencing self-improvement and a sense of fulfilment from participating in the programme, however, being a mentor took an emotional toll and left them with a sense of helplessness when faced with insurmountable mentee challenges. The importance of transformative peer interventions that go beyond promoting utilisation of biomedical interventions but rather empower FSWs to tackle broader challenges was noted.

Key words: PMTCT; HIV; Mentor mother; Peer support; Female sex workers; South Africa

Statements and Declarations: The authors have no declarations or conflicts of interest associated with this work.

Introduction

Female sex workers (FSWs) have disproportionately high HIV incidence and prevalence compared to other women of reproductive age (Baral *et al*., 2012; UNAIDS, 2019a). Research has shown that risk of female HIV acquisition is higher during pregnancy and even more so in the postpartum period suggesting that biological changes during pregnancy and the postpartum period increase HIV susceptibility among women (Thomson *et al*., 2018). For those who acquire HIV during pregnancy and breastfeeding, the probability of vertical transmission is especially high due to a spike in viral load around the time of seroconversion (UNAIDS, 2020b). More than two-thirds of FSW in sub-Saharan Africa have children (Scorgie *et al*., 2012), and many sell sex during pregnancy (Schwartz *et al*., 2015; Rwema *et al*., 2019). Coupled with their high HIV incidence and insufficiently treated HIV infection, they have high and sustained risk of vertical transmission (Moodley *et al*., 2011; Johnson *et al*., 2012).

The Prevention of Mother to Child Transmission (PMTCT) cascade is a system of interdependent steps that pregnant women pass through to prevent vertical transmission of HIV. It includes ANC attendance, HIV counselling and testing, receiving HIV test results, and linkage to long-term HIV care and treatment services for HIV infected mothers (Gimbel *et al*., 2014) with the goal of reducing maternal viral load, the main determinant for vertical

transmission (Myer *et al*., 2017; EGPAF, 2021). It also includes ARV prophylaxis, infant follow-up, and correct feeding practices for the uninfected infant.

South Africa's National Sex Worker HIV, TB and STI Plan (NSWP 2019 – 2022) seeks to ensure that at least 90% of sex workers know their HIV status, 90% of those testing positive are on ART, and 90% of those on ART are virally suppressed (SANAC, 2019). However, a study in Port Elizabeth found that just 52% of FSWs knew their HIV diagnosis prior to the study, only 50% of the FSW living with HIV started ART during pregnancy and less than half of FSW with children under five were on ART at the time of the study (Rwema *et al*., 2019). The elimination of new HIV infections among children will require higher levels of coverage of antiretroviral therapy among pregnant women, exceeding the overall 90–90–90 targets (UNAIDS, 2021a).

The objective of this analysis is to understand FSW mothers' experiences when engaging in PMTCT interventions at health facilities, specifically barriers and facilitators to service utilisation. This analysis also investigates FSWs' experiences when participating in a peer mentorship programme that supported the motherhood needs of FSW mothers and their children. The overall aim is to contribute to knowledge around and engagement in HIV prevention, care, and wellness programmes for FSW mothers and their children.

Methods

This study analysed data from qualitative in-depth interviews (IDIs) conducted as part of an evaluation of the *Masifundisane Sex Worker Mentor Mother Programme*, a peer-based mentorship programme implemented at TB HIV Care (THC) in Port Elizabeth, South Africa. The mentorship programme ran from December 2017 to November 2018.

At the start of the programme, four peer mentors affiliated with the implementing organisation were hired based on their first-hand experience as FSWs and mothers, and their perceived ability to serve as mentor mothers. They were trained using an FSW-tailored mentor mother curriculum to carry out community outreach and provide education and support for emotional and clinic engagement around PMTCT. They were also trained to provide general parenting support and education, and adherence counselling for FSW mothers living with HIV. Mentees were recruited to participate in the mentor mother programme by the four mentors across local sex work venues. Women were eligible to participate if they were cisgender, 18 years of age or older, currently pregnant or had at least one living child less than 5 years of age, had exchanged sex for money as a primary source of income in the last 12 months and were able to speak English or isiXhosa. FSWs were not eligible to participate in the programme if they demonstrated recurring mental incapacity, or any other illness preventing comprehension of programme procedures and informed consent. In total, the mentors served 318 mentees who were pregnant or mothers with children less than 5 years, engaging them through health education talks, support groups, and 1-on-1 mentoring sessions.

In-Depth Interviews (IDIs)

IDIs were carried out amongst both mentees and mentors. Mentees were predominantly selected for the IDIs if they had at least three one-on-one interactions with their mentor mother. Additional mentees were recruited even if they had had fewer contacts with mentors to ensure a range of experiences were captured. They were purposively sampled to participate in the IDIs

to ensure that both FSWs living with HIV and at-risk for HIV were included, and that an array of geographic areas and ages were represented.

The IDIs were conducted by two individuals – one English speaker and another individual who was fluent in the local language, isiXhosa. Both interviewers were taken through a 4-day training prior to the start of data collection. Interviews were audio recorded and lasted an average of 30 minutes.

Ethical Considerations

This study was reviewed and approved by the Johns Hopkins Bloomberg School of Public Health (JHSPH) Institutional Review Board, the South African Human Sciences Research Council (HSRC) and the London School of Hygiene and Tropical Medicine's (LSHTM) Ethics Committee.

All personnel involved with research activities were trained in Good Clinical Practice/Human Subjects Protection. Written informed consent was obtained for all participants prior to IDI administration and recording. The informed consent process and interviews took place in a private room at the THC office. Consent forms were locked in a secure cabinet with access limited to authorised individuals. Each IDI participant was registered with a unique identification number. All audio-recordings, transcriptions, translations, and notes were stored in password protected folders. All IDI participants were compensated for their time and travel expenses.

Data Analysis

Transcripts for each of the IDIs were transcribed verbatim and those that were in isiXhosa were translated into English. Investigator triangulation was used to increase the validity of the study. Specifically, in addition to the IDIs being conducted by two researchers, coding and analysis was also carried out by two researchers. A coding framework was deductively developed by the two researchers based on the interview guides and expanded upon inductively based on emerging themes. All transcripts were independently coded in duplicate by both researchers using Atlas.ti (version 8.4.4 Scientific Software Development GmbH) software. Coding choices were discussed throughout the coding process and any differences resolved by the coders or through input from a third researcher, when necessary. Thematic analysis was used to guide the identification of themes that emerged (Braun and Clarke, 2006).

Results

Demographics

IDIs took place between October and November 2018. All four peer mentor mothers took part in the IDIs and were included in this study. In total 36 mentee mothers participated in the IDIs, 23 of whom were living with HIV. The average age of the mentees was 28 years (minimum 18 years, maximum 41 years), and the average number of children was 1.6. The average age of children was 4 years. Data from 32 mentees (21 of whom were living with HIV) were used for this research due to missing data for four mentees.

Barriers And Facilitators

Interviewees shared FSWs' experiences accessing PMTCT interventions prior to engagement in the *Masifundisane* Project. The most commonly noted barriers to engaging in care were lack of knowledge, poverty, substance use, and stigma. Other less frequently mentioned barriers included long waiting times, stress, forgetfullness, unpredictable work schedules and challenges of being a first time mother. The most common facilitator to care engagement was a desire to protect one's baby from infection. Other less frequently mentioned facilitators included support from famly, friends and peers, fear of stigma, desire to protect oneself, low pill burden and breastfeeding affordability.

Lack of knowledge

All but one FSWs attended the ANC, however there was low knowledge of PMTCT cascade interventions amongst some mentees. Amongst those who knew of interventions, fears of side effects and doubts about the safety of ART during pregnancy hindered adherence:

"…I wanted to even to abort the child…I didn't want to infect the child with HIV. I didn't know that there are things that can be done for the child not to be infected" (Mentee 016)

"I just thought it was going to harm the baby, when you first take ARVs it's not so good. Your body reacts and I thought it was going to be dangerous" (Mentee 023)

Socioeconomic status

Limited financial support and lack of employment opportunities resulted in poverty. Even where health services are free, utilisation was inhibited by transport costs, opportunity cost of seeking care and unpredictable work schedules. Further, food insecurity impacted ART adherence and lactation. Amongst those who could breastfeed, the affordability of exclusive breastfeeding was noted however lack of refrigerators to store milk when away resulted in mixed feeding, particularly for those who were homeless.

"I am a single mother. That's one of the reasons I am in the streets, it's because of the child… sometimes there is no food at home…I don't take them [ART] when there is no food" (Mentee 008)

Substance use

Substances, such as alcohol and/or *tik*[18] were used to cope with these high stress levels. This substance use led to defaulting on treatment and inability to adhere to their children's clinic visits or provide basic care for them.

"…I was stressed, and the painful thing is being HIV positive and the father of the baby not having anything to do with you…..I would go drinking and not take them [ARVs]. Drink Friday, Saturday, and Sunday ... I did not stop neglecting my child...I didn't care whether my child died, or I died" (Mentee 025)

[18] Methamphetamines

Stigma

Mentees anticipated HIV stigma from others which resulted in fear of testing, difficulty accepting an HIV positive test result, and failure to attend ANC visits. Fear of status disclosure if seen taking pills and possible loss of income led to poor ART adherence, especially when in the company of clients and other FSWs.

"…I was very afraid of testing, and I told myself that I will not test because I know my ways… …I had not tested in a long time, and I have done so many things that are not good" (Mentee 004)

Mentees spoke of stigma and poor treatment by health care workers. For example, confidentiality breaches and being blamed for being infected because they sell sex.

"…when I have to go[to the clinic] and take them [ARVs] I have that memory that some nurses would come and judge people..." (Mentee 026)

Mentors recounted stories of impoverished mentees feeling embarrased about not being as neat as other mothers or being shouted at for their inability to maintain good hygiene for their children. When asked about additional challenges mentees experienced when accessing HIV testing and treatment, mentors noted that not having an ID made it difficult to access treatment. These negative interactions with staff resulted in avoidance of facilities.

Desire to protect health

Utilisation of ART was driven by a desire to protect their children during pregnancy and post-partum, as well as a desire to protect their own health, including to avoid HIV stigma that may occur should their health deteriorate.

"… like as any mom, they love their children, so they don't want to put their children at risk of contracting HIV, so they are adhering to treatment…I was taking them [ART] for my body so that I don't become weak when I am breastfeeding" (Mentee 002)

Support from family and friends

Support from family and friends, such as encourageent to take treatment, positively impacted utilisation, whereas not having support was detrimental to utilisation of care.

"…I got advice from my mother and also from the clinic that I should take medication at the right time" (Mentee 022)

"… when I was breastfeeding…I would take my treatment and sometimes not take it…I didn't go to the clinic…I didn't have support …so would just throw them" (Mentee 026)

Benefits of the mentorship programme

Mentees cited several benefits of participating in the mentorship programme including increased PMTCT knowledge and ART utilisation; increased self-confidence and reduced self-stigma; stress relief; and improvement in relationships with family. They appreciated the programme's focus on their children and found comfort in realising that others faced similar

challenges. Mentees supported each other and transferred lessons learnt to FSWs in the greater community.

"…when Wendy [mentor] found me, I [had] lost hope, I was just drinking. I didn't care about anything because I knew that I would die, so going to the programme has helped me. At least now I feel like a person. I'm taking care of my child. I'm taking him to the clinic, and I make sure that there is food" (Mentee 016)

"…my friends also didn't want to take treatment …I became their educator…I was taught, and I went on to teach other people out there" (Mentee 008)

Further quotes illustrating the themes identified are provided in Table 1.

Mentor experiences

Mentors appreciated the knowledge gained through trainings and were encouraged by the positive changes observed in the mentees. At the same time, mentors felt limited in their ability to help with certain situations and spoke of the emotional toll of their work although speaking with other mentors and counselling sessions provided some relief. Other challenges included mentees not attending sessions, including due to migration, perceived opportunity costs, tension between mentees due to past disagreements, and mentees' expecting reimbursement for attending support sessions due to previous experiences with research projects that offered reimbursement.

Discussion

This study revealed several important factors affecting PMTCT cascade completion by FSWs, namely, lack of knowledge, socioeconomic status, substance use, intersecting stigmas, desire to protect their own health and that of their children and the ease of use of interventions. The study also revealed the positive impact of support from family and friends, as well as the benefits of peer support programmes, included increased knowledge and uptake of PMTCT services, personal development, relationship building between FSWs, as well as the increased knowledge and self-improvement experienced by mentors.

Individual Level

Similar to other studies (Sutherland *et al*., 2011; Onyango *et al*., 2015; Schwartz *et al*., 2015; UCSF *et al*., 2015; Emmanuel *et al*., 2020; Mudzviti *et al*., 2020), lack of knowledge, including around safety of interventions, was noted amongst mentees. It may reflect poor health literacy highlighting the need for continuous support and education to ensure patients understand the benefits of interventions, This may be achieved through health care providers educating prospective patients about existing patients' experiences to alleviate fears (Kerrigan et al., 2020). Community dialogues with health workers have also been shown to be an important source of health information for FSWs (Emmanuel *et al*., 2020), while mobile health technology has been shown to improve FSWs' utilisation of HIV interventions (Mbotwa et al., 2023).

The negative impact of poverty on health care utilisation by FSWs has also been noted in previous research (Yam *et al*., 2014; Grosso, *et al*., 2015; Onyango *et al*., 2015; Luchters *et al*., 2016; Musyoki *et al*., 2018; Parmley *et al*., 2019a; Workie, *et al*. , 2019; Emmanuel *et al*.,

2020). A disincentivizing cycle develops whereby the more in financial need the FSW, the less time spent engaging in health services and the more likely to acquiesce to demands for unprotected sex which could potentially negatively impact her health and the health of her child, thereby limiting her ability to work, and ultimately sinking her deeper into poverty (Yourkavitch *et al*., 2018). Community savings groups could create a financial safety net and provide a sense of agency to participate in decision-making in their interactions with clients, although special consideration would need to be given on how to engage low earning FSWs who may struggle with contributions, as well as mobile FSWs who may not be available to give regular contributions (Mantsios *et al*., 2018).

Excessive substance use was common amongst mentees, and it was detrimental to PMTCT cascade completion. It was attributed to stress related to their work environment, living conditions and health status. This is in agreement with other studies (Sloss, *et al*., 2004; Syvertsen *et al*., 2014; Iaisuklang, 2017; Shea *et al*., 2019) and highlights the need for evidence based substance use prevention, treatment and rehabilitation programmes for FSWs. These programmes should wholistic, addressing other comorbidities, such as violence and common mental disorders, as substance use has been associated with overall psychological distress (Martín-Romo *et al*., 2023).

Social and sexual networks

The positive impacts of social support from family and friends on engagement in care has also been noted in previous research (Ampt *et al*., 2019; Parmley *et al*., 2019a; Parmley *et al*., 2019b). However, within these social networks, women and girls face an unequal burden of unpaid care work which limits their access to education and employment and subsequently their earning power resulting in poverty which, as noted earlier, impacts ability to utilise health interventions. There is a need to change community perceptions about unpaid care work and gender inequality to increase opportunities for education and economic participation. This may be achieved through community campaigns which have been shown to successfully raise awareness of the need for redistribution of responsibilities in the household and community (ActionAID, 2013).

Further, this research draws attention to the intersecting stigmas experienced by FSWs due to their health conditions, identities, and behaviours, a finding that has been observed in other studies (Hargreaves *et al*., 2016; Friedland *et al*., 2018). Mentees anticipated stigma related to being HIV positive from other sex workers and from clients. Engagement of the wider community to reduce stigma and create a more supportive environment for FSWs is warranted, while Cognitive Behavioural Therapy (CBT) has been shown to be useful in tackling self-stigma by revealing and changing false and distressing beliefs and thought patterns (Tshabalala, 2011).

Community Level

Lack of knowledge of PMTCT interventions may also be due to poor quality of care at health care facilities, including poor staff attitudes and inadequate attention given to patients (Valiani, 2019). Health literacy may therefore be enhanced by training health care workers on patient-provider communication (Camara *et al*., 2020). Further, mentees described experiences of enacted sex work stigma by health care workers, as well as 'poverty shame' which is less explored in research amongst FSWs in SSA. Overall, the stigma findings underscore the need for health care workers to understand and acknowledge the needs and rights of all persons, and

to be compassionate and respectful during interactions. Sensitisation training is critical to raise awareness of psychosocial vulnerabilities that FSWs face to reduce judgemental attitudes (Duby *et al*., 2019). Lastly, providing decentralised care may alleviate the financial burden of transport costs that FSWs face (Comins *et al*., 2022),

The peer mentorship programme provided emotional support, and helped increase PMTCT knowledge and improve FSWs' relationships with their families. Similar benefits of peer education programmes have also been observed in previous research (Emmanuel *et al*., 2020; Were *et al*., 2020). While mentors enjoyed helping mentees, and gained knowledge from participating in the programme, they also spoke of the emotional toll peer education had on them, especially in the face of insurmountable problems, such as poverty, which left them feeling helpless. It is recommended that transformative peer education programmes be adopted, that is, programmes that go beyond simply promoting utilisation of biomedical interventions but rather empower FSWs to work together to tackle broader challenges, such as violence, stigma and poverty (Campbell, 2012).

Policy Level

Financial hardship can be exacerbated by punitive legislation. Specifically, criminalisation of sex work can lead to fines and penalties following arrest (NSWP, 2017), and difficulty accessing financial services by individuals who are not formally employed (NSWP, 2020). Removal of punitive legislation would begin to address poverty by allowing access to financial services. In January 2023 a draft bill to decriminalise sex work in South Africa was introduced to Parliament to be voted on suggesting there is acknowledgement of these and other detrimental effects of criminalisation. Beyond decriminalisation of sex work, it is necessary to address social and cultural beliefs around sexuality, and promote equality, dignity, and freedom of choice for FSWs with respect to their participation in sex work.

Differential treatment experienced by undocumented persons has also been noted in previous research (Overs, 2013; Schwartz *et al*., 2017), and has been attributed to contradictory legislation, and negative beliefs and attitudes towards foreigners in South African society. Not only is it necessary to streamline policies but there is also a need to sensitise health care workers to understand their role as duty-bearers to protect and fulfil the needs and rights of all persons. It is recommended that their capacity to meet their obligations be developed (UNDP, 2003), for example through training.

Lastly, in addition to redistribution of responsibilities to reduce the burden of unpaid care work, there is a need to address women's poverty at the policy level, by raising visibility of unpaid care work in policy spaces, and addressing gender gaps in wages and economic participation. Access to early learning development programmes for children should be promoted thereby freeing up caregivers' time for income-earning, education, or other purposes. Lastly, where limited, access to water should be improved to reduce time spent traveling to water sources (ActionAID, 2013).

Limitations

This study has limitations. First, mentees were asked to tell the interviewer about their children, with the probes specifically asking how many children they have, how old they are and about their health and well-being. Mentees were not specifically asked about children who had died. As a result, it is not clear if any of the mentees had children who died, whether from HIV or

other causes as this was not raised by any mentee during the interviews. Any HIV related child deaths may have been due to poor use of PMTCT interventions. As such, in not knowing about them we may overestimate utilisation of PMTCT interventions and underestimate barriers to use. Further, no short birth intervals were observed and an overrepresentation of parity of one was noted. This may be due to exclusion of abortions and children who did not survive.

Second, mentees may be reluctant to report on any challenges they experienced while engaging with mentors because of social desirability bias. Third, the cross-sectional nature of the IDIs did not allow for investigation into mentees' care seeking experiences over time and thus the long-term benefits of the mentorship programme are unknown. Fourth, the study was predominantly conducted amongst women who had at least three one-on-one interactions with mentors in the Masifundisane programme. Their experiences may differ from women who chose not to or were unable to engage in health promotion programmes to the same extent. Further experiences of FSWs in Port Elizabeth may differ from FSWs in other geographic locations that may differ socially and culturally which would affect generalisability of the findings. However, given the existence of similar punitive legislation, and pervasive stigma and discrimination, it could be expected that FSWs' experiences would be similar in other settings. Lastly, only a small percentage of women had their first child before 18 years. This may be due to the recruitment process. Specifically, women were recruited to participate in the IDIs via word of mouth. This form of recruitment may limit diversity as the information may not go far beyond the recruiters' immediate circles. Despite these limitations, the findings contribute useful information for the optimisation of PMTCT programmes for FSWs.

It was noted that mentees were not asked about their experiences with prevention of vertical transmission of Hepatitis B virus (HBV) and syphilis. It would be useful to investigate knowledge of and experiences with interventions to prevent vertical transmission of syphilis and HBV. Future research should also look into the care seeking experiences of FSWs and thus the long-term benefits of the mentorship programme.

Conclusion

This study contributes to the limited knowledge around FSWs' knowledge and engagement in the PMTCT cascade. The findings demonstrate that, while South Africa has made tremendous progress in implementation of PMTCT programmes and achievement of reduction of vertical transmission of HIV, FSWs continue to face barriers to PMTCT cascade completion. The mentor mother programme was instrumental in motivating FSW mothers to utilize services; however some challenges can be difficult to overcome highlighting the importance of transformative programmes that go beyond simply promote uptake of biomedical interventions but rather empower FSWs to tackle broader challenges.

Table 1: Additional quotes on barriers and facilitators to utilisation of PMTCT interventions and experiences with the mentorship programme

BARRIERS	
Lack of Knowledge about PMTCT interventions	**Unaware of paediatric ARV prophylaxis** *"…the other thing is that I didn't know the kid also takes medicine while negative till that six months of breastfeeding" (Mentee 030)* **Unaware she could breastfeed** *"I didn't know that you can breastfeed the baby while you are positive and he is negative, because in my mind I was thinking that when you breastfeed him, he will also be positive" (Mentee 029)* **Practised mixed feeding** *"sometimes we are not told everything in the clinic, so I thought that as you are breastfeeding the baby you can also give him food… But after I met her [mentor].. she told me that I should stick to breastfeeding only and not mix" (Mentee 015)* ***Underestimated the importance of follow-up clinic visits*** *"…for instance, taking the baby to the clinic, things like that…I didn't see it as important but then as she [mentor] told me how the importance of those injections and everything" (Mentee 001)*
Fear of side effects	**Afraid to take ART** *"…I didn't take them [ARVs] when I was pregnant…I was not ready …during the time I was breastfeeding I had not started treatment…I was still afraid to take it" (Mentee 021)*
Poverty	**Effect of food insecurity on lactation** *"…At the hospital they tell you that if you breastfeed…I thought of what would I eat because when you are breastfeeding you must eat. So, I chose not to breastfeed" (Mentee 025)* **Unable to afford medication** *"…maybe they would give me something to go and buy the thing in the chemist which I can't afford so I ended up stopping going to the clinic" (Mentee 016)*
High stress levels	**Difficult experiences led to stress** *"I would have died of stress…I would think that I was going to have depression…it's a lot of challenges when you are HIV positive and don't have money…I have two children here at home and they need my care" (Mentee 015)*

Used substances	**Stress led to substance use** *"…I would never listen even though I was pregnant…I would drink and do all that because I didn't even know who the father of the child was…I was really stressed" (Mentee 022)* **Substance use impacted ART adherence and led to child neglect** *"I was stressed….I would go drinking and not take them [ART]. Drink Friday, Saturday, and Sunday … I did not stop neglecting my child...I didn't care whether my child died, or I died" (Mentee 025)*
Forgetfulness	**Forgot to take ART** *"On Thursday we start going out to the clubs…I would take the pill and fold it on a tissue and put it on my breasts so that I can take it at 8:00. Then I tend to forget taking it when I am having fun and will remember during midnight; of which I can't take it anymore because it would be another day" (Mentee 014)*
Experiences of stigma	**HIV anticipated stigma** *"…I didn't go to the clinic…I was embarrassed of what people are going to say when they find out, it was a shock to me because I never thought it [testing HIV positive] would happen to me" (Mentee 003)* ***HIV stigma from family*** *"…you are judged a lot…you are also judged by your family members, so you start feeling that it's even better when you are not with them. Because for them if you are positive it's like you are an animal or maybe a dirty person, to them" (Mentee 012)* ***Sex work stigma from family*** *"I just came back from the street and I was at home. We had to make food and I thought three times before I got up and made some food because [her siblings say]… 'yoh, you eat a lot…you came back from your prostitution rubbish with this burden.' As if I had a burden. 'You are coming back with a burden which we have to feed'" (Mentee 014)*
Health system weaknesses	***Confidentiality breaches*** *"…at the clinic we have the big brown cards with you name written in bold on it. It was known that if you have that card [you are HIV positive], so you will feel like not going to the clinic because everyone will know…for us the youth when you are HIV positive people take you as a slut…you'll be embarrassed to go to the clinic" (Mentee 025)*
Unpredictable work schedule	***Unable to adhere to ART*** *"…When you are pregnant …everything you are doing is for this innocent child…You have to take your treatment …the problems become if maybe I get a job, I can't do that [take pills at] 7 because at 7 I leave the house" (Mentee 012)*

Challenges as a first time mother	***Difficulty caring for child and adhering to ART*** *"…when it's your first time having a baby, you don't know anything … how I am going to take care of my child? And take treatment? (Mentee 024)*
FACILITATORS	
Desire to protect baby and self	**Attends follow up visits** *"…The child of an HIV positive mother goes to the clinic frequently… you need to make sure that she stays negative because if you decide to relax … you may find out that when you go maybe after a week, she is already positive. Who will you blame?" (Mentee 014)* **Adheres to ART** *"I was taking them for my body so that I don't become weak when I am breastfeeding" (Mentee 002)* *"…I wanted my child to be healthy, so during the time I was pregnant I made sure that I take my treatment each and every day. Even now I still take my treatment because I wanted my child to be healthy" (Mentee 032)*
Adequate support systems	**Sister was supportive when mentee seroconverted** *"…when you go to the clinic you are told about your [HIV positive] status and asked who is the person that can take care you …at first, I said there is no one and I will take care of myself … when I was ready I chose my sister to be the one to take care of me…I had told myself that I was never going to tell anyone, not even my parents, sister and friends"(Mentee 014)* **Sister takes child for follow- up clinic visits** *"…I was not skipping his dates, whenever it was his appointment date, I would go to the clinic… every month…he was taken by my sister… I was not around" (Mentee 021)*
Affordability of interventions	**Breastfeeding more affordable than formula** *"…I like breastfeeding because breastfeeding there is no money to buy milk, you just clean your breast and breastfeed your child" (Mentee 012)*
Ease of use	**Low pill burden made ART adherence easier** *"…It was easy …it's only once a day, it's either you take it when you go to sleep. It's not about 4 times, only one tablet once a day" (Mentee 005)*
Stigma	**Adhered to ART to avoid stigma** *"when you are taking your treatment as a mother it's not printed that you have HIV …when you are not taking your treatment HIV would be printed on you … it will also show outside" (Mentee 012)*

MENTEE EXPERIENCES WITH PROGRAMME	
Gained knowledge and improved utilisation	**Learnt about prophylaxis** *"…she [mentor] showed me that…there's a pill that they'll give me even if I'm breastfeeding the child won't be… infected (Mentee 016)* **Learnt about the importance of adherence** *"…I know what to do now… I know which steps to take to prevent my child from getting infected …I now take my treatment very seriously on a regular basis" (Mentee 023)* **Adherence and clinic attendance** *"…before I was a failure, I was a defaulter but since I joined this programme it made me not to be lazy every time to go to the clinic and take my treatment" (Mentee 005)*
Stress relief	**Mentor relieved stress** *"she's down… she's a person who's down to earth so whenever I talk to her, I feel like wow some burden has been taken care… taken out of my shoulder" (Mentee 030)* **Felt happy in group sessions** *"…when I am sitting with my group I would laughing and happy, even when I get home, I would be a happy person; so there is no problem when I am with my group" (Mentee 026)*
Reduced stigma	**Sex work related anticipated stigma** *"Even the embarrassment goes away, when you think 'what would the people say when they see me?' because people judge us [FSW] most of the time. So that embarrassment goes away, and you feel like 'let me live my life' …she [mentor] teaches you how to live your life*" (Mentee 012) **HIV self-stigma** *"…after I went to the session, I felt free, and I also realised that when you are HIV it doesn't mean that you are not a human being…. I didn't accept myself. I wanted to kill myself …this programme this programme has made me to know who I am, and it also made me to know that you must love yourself before anyone else can love you (Mentee 028)*
Fostering support systems	**Improved relationships with family** *"It made me able to talk …after I went to the support …I was able to also tell my mother [about mentee's HIV status] ... I was afraid of how she would take it and what she would say, it made me to open up and I was able to explain to her, I also explained to my brothers, and I became an open person" (Mentee 012)*

6 Discussion And Conclusions

6.1 Introduction

This chapter draws together the most important findings from the two papers presented in this thesis. It follows with recommendations for programmes, policy, and further research, an overview of strengths and limitations, and lastly, conclusions.

6.2 Synthesis of Findings

This section aims to synthesise the findings in relation to the overall aim of this thesis, that is 'to investigate FSWs' experiences with utilisation of HIV/SRH interventions to prevent vertical transmission of HIV, and to ultimately recommend strategies to improve policies and programmes to ensure availability and accessibility of interventions'. The discussion is guided by the individual objectives presented in the introduction. The conceptual framework developed for the thesis (chapter 1) is also referred to and adapted in light of the findings (Figure 1.18)

6.2.1 Objective 1

The first objective of the thesis was to determine rates of utilisation of PrEP and family planning by FSWs in Kilifi and Mombasa counties.

The analysis found that in the two counties combined, just 9.08% of HIV negative FSWs were using PrEP (ongoing or new initiators). This is lower than the target of 15% in the Jilinde project (Were *et al*., 2020). On the contrary, 77.08% of FSWs were using family planning. Compared to family planning, PrEP is a relatively new biomedical intervention therefore there may be some hesitancy and a preference for more familiar HIV prevention methods. Similar findings are noted in other settings where suspicion and mistrust hinder utilisation of PrEP (Makhakhe, Sliep and Meyer-Weitz, 2022).

6.2.2 Objective 2

The second objective was to investigate factors that affect FSWs' utilisation of interventions in Kilifi and Mombasa. Specifically, I looked at how 'self-reported sex acts per week' affects utilisation of family planning and PrEP by FSWs.

The analysis found that overall, FSWs with more self-reported sex acts per week had greater odds of PrEP utilisation (1.06 (95% ci: 0.84-1.35) (not statistically significant) and family planning utilisation (1.29 (95% ci:1.10 - 1.52)) relative to FSWs with fewer self-reported sex acts per week. Similar findings were noted in previous literature (Bukenya *et al*., 2013; Yam *et al*., 2014; Blumenthal *et al*., 2019). This suggests a good risk perception amongst this FSW population.

The analysis further revealed that there are geographical differences in PrEP and family planning utilisation. Specifically, relative to those with fewer self-reported sex acts per week, the odds of PrEP utilisation by FSWs with more self-reported sex acts per week was 0.28 (95% ci: 0.18 – 0.43) in Kilifi and 2.08 (95% ci:1.60 – 2.73) in Mombasa. Lower utilisation of health interventions by the population in Kilifi compared to Mombasa is congruent with findings from surveys conducted in the past (KNBS, 2015). Further, it was noted that facilities offering PrEP

in Kilifi are more sparsely distributed compared to Mombasa (MOH, no date). As such, FSWs in Kilifi may have to travel greater distances to access the intervention. Further, Kilifi suffers higher poverty rates than Mombasa which may inhibit ability to travel to facilities (Development Initiatives, 2022).

FSWs in Kilifi had higher utilisation of family planning than those in Mombasa. Specifically, relative to those with fewer self-reported sex acts per week, the odds of family planning utilisation by FSWs with more self-reported sex acts per week was 3.29 (95% ci: 2.48 – 4.37) in Kilifi and 0.74 (95% ci: 0.61 – 0.90) in Mombasa. Generally, as noted earlier, Kilifi has lower utilisation of health services than Mombasa therefore the findings were unexpected. However, Kilifi's participation in the Performance Monitoring for Action (PMA) survey may have resulted in higher family planning literacy as a result of information shared during the survey. For example, during the survey, participants were asked if they knew of different family planning methods and for each method a description was provided. Previous research has shown the benefits of activities that increase knowledge and resultant positive attitudes towards family planning interventions (Luchters *et al*., 2016; Ampt *et al*., 2019).

6.2.3 Objective 3

The third objective was to investigate how PE workload affects utilisation of PrEP and family planning by FSWs in Kilifi and Mombasa. The analysis revealed that the association between sex acts and PrEP utilisation does not appear to vary by the PE workload. This may be due to the hesitancy for new interventions noted earlier. This is contrary to previous research which found that lower PE workloads were significantly associated with more regular outreach contacts, risk reduction counselling, STI screening and HIV testing (Bhattacharjee, *et al*., 2018).

On the contrary, family planning utilisation was higher among those with a lower peer load. This was expected as it was hypothesized that utilisation would diminish as peer educators' workloads increased. Similar findings were noted in a study amongst key populations in Kenya whereby lower peer educator workload was associated with better outcomes including clinic attendance, screening and treatment services (Bhattacharjee *et al*., 2018).

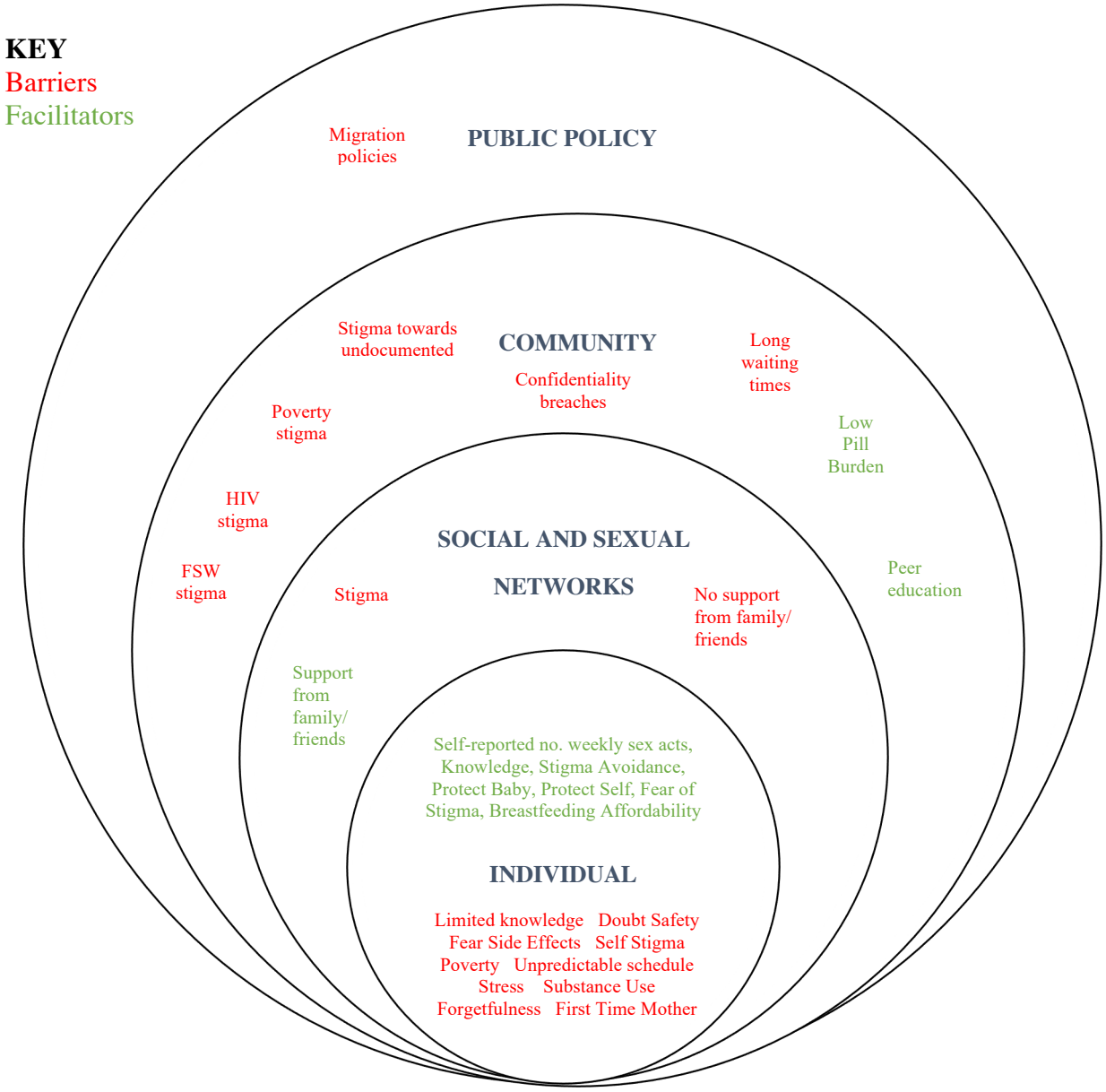
6.2.4 Objective 4 and 5

The fourth objective was to understand FSWs' experiences when passing through the PMTCT cascade. Specifically, barriers and facilitators to utilisation of interventions. Many of the barriers and facilitating factors to PMTCT cascade completion mirrored those from other settings around sub-Saharan Africa identified in the review: individual level factors such as knowledge, poverty and substance use, among others; social/sexual network factors, such as stigma and support (or lack thereof) from family and friends; and long-standing issues at the community level, such as challenges with clinic accessibility and poor patient-provider interactions.

At the policy level, barriers to access to care by undocumented persons stemming from legislation around migrant access to care were noted. These factors are captured in the conceptual framework (figure 6.1) and are discussed below. This figure also includes 'self-reported number of sex acts per week' which was considered in the quantitative component, as discussed in section 6.2.2 above. The fifth objective was to understand mentees' and mentors'

experiences in the mentorship programme. The findings from this component of the research were used to populate the various levels of the MSEM framework, as shown in Figure 6.1.

Figure 6.1: Barriers and facilitators to utilisation of HIV/SRH interventions



Individual level

Knowledge

At the individual level**,** a lack of knowledge amongst mentees manifested as fears and doubts about PMTCT cascade interventions. This could suggest poor information transmission during clinic visits due to difficulties with patient-provider interactions, challenges with health literacy or even language barriers. There is a possibility it may also be linked to low education levels, however, data on education levels of mentees was not collected therefore it would be difficult to tell if this contributed to challenges with health literacy. However, other studies have shown

that, in other parts of South Africa, a relatively low percentage of FSWs have completed high school (UCSF *et al.,* , 2015).

'Self-reported number of sex acts peer week'

'Self-reported number of sex acts peer week' from the quantitative component has been included in the conceptual framework as a factor under the individual component. The research revealed that FSWs in Mombasa appeared to have a high-risk perception around HIV infection as the utilisation of PrEP increased with increasing sex acts. The opposite was true in Kilifi though this is likely due to accessibility issues as the facilities offering PrEP in Kilifi are sparse and poverty levels are high. With respect to family planning increase as number of weekly sex acts led to an increase in family planning utilisation overall. There were geographic variations with Kilifi having high levels of family planning utilisation during clinic visits compared to Mombasa which may be due to the secondary benefits of the PMA survey. FSWs in Mombasa were found to have higher rates of STIs which would be congruent with lower condom use. This may be driven by financial incentives for condomless sex.

Poverty

Finances were the most frequently mentioned factor that shaped mentees' access to PMTCT services related to the opportunity cost of care, as well as concerns about food insecurity and its implications for ART adherence and choices around infant feeding practices. Further, financial difficulties led to competition between FSWs which had negative implication for utilisation of interventions. As noted earlier, finances also emerged in the findings of the quantitative component. The literature revealed similar challenges with access to interventions due to financial concerns (Syvertsen *et al*., 2014; Parmley *et al*., 2019a; Shea *et al*., 2019; Emmanuel *et al*., 2020).

Common mental disorders

Common mental disorders related to stress and anxiety also came out as influential factors amongst mentees. Specifically, stress related to being a first-time mother, difficult living circumstances and lack of support were mentioned. The literature revealed that lack of emotional, financial and physical support makes motherhood especially difficult and can lead to feelings of inadequacy. Further, stigma and resultant isolation can impact self-esteem. Together, these difficult life circumstances can lead to feelings of depression and anxiety (Chingono, 2022).

Substance Use

Mentees used substances to cope with their difficult life circumstances leading to forgetfulness, poor adherence to ART and child neglect. The literature revealed that high stress levels and subsequent use of substances as a coping mechanism has been observed amongst FSWs across sub-Saharan Africa (Sutherland *et al*., 2011; Luchters *et al*., 2016; Stansfeld *et al*., 2016; Chabata *et al*., 2020).

Low pill burden

Low pill burden emerged as a facilitator to utilisation of interventions. Similarly, a systematic review found that, compared to multiple-tablet regimens (MTRs), single tablet regimens (STRs) are associated with significantly higher ART adherence (Altice *et al*., 2019).

Desire to protect their children

Previous studies have shown that women are more likely to engage in interventions when there is a risk of their children becoming infected with HIV (Parmley *et al*., 2019a; Rao *et al*., 2019; Emmanuel *et al*., 2020; Mudzviti *et al*., 2020). Amongst mentees, this was the greatest facilitator for adherence to ART and HIV testing for their children to ensure they remained uninfected. They were also motivated to preserve their own health not only out of self-interest, but also to ensure they were healthy enough to care for their children. However previous research has shown that defaulting often occurs once the child is confirmed to be healthy as mothers deprioritise their own health. This highlights the importance of ensuring mothers understand the importance of remaining in HIV care and adhering to treatment for her own health (Clouse *et al*., 2014).

Stigma

Mentees experienced self-stigma and anticipated stigma (such as difficulty accepting their status and fear of others finding out their status) which had negative implications including, defaulting on treatment, however, anticipated stigma also motivated mentees to adhere to their treatment. Similar findings were noted where anticipated stigma from the community led FSWs to use family planning (Luchters *et al*., 2016).

Social and Sexual Networks

Support from family and friends

Support from family and friends or lack thereof emerged amongst some mentees as a factor that impacted PMTCT cascade completion. Overt expressions of stigma from friends and family and lack of needed emotional support left some women feeling hopeless and dejected likely contributing to the high stress levels mentioned earlier. These findings are congruent with previous research (Parmley *et al*., 2019b).

Community level

Intersecting stigma from health care workers

The research revealed that mentees experienced multiple intersecting stigmas related to their identity as sex workers and undocumented persons, to their health status as PLHIV and to their socioeconomic status. It was noted that while HIV stigma, xenophobia and sex work stigma are covered widely in the literature (Fick, 2006; Ekstrand *et al*., 2013; Munyaneza and Mhlongo, 2019; Rwema *et al*., 2019) there is less discussion of the stigma and feelings of shame FSWs experienced due to poverty.

Long waiting times

Mentors spoke of mentees' frustration with having to endure long waiting times when accessing heath interventions. This is congruent with the literature (Parmley *et al*., 2019b; Were *et al*., 2020) highlighting the need to address inefficiencies within health care systems due to the opportunity cost it presents.

Peer education

Peer education through the mentorship programme was highly acceptable to mentees. It provided emotional support, increased knowledge and utilisation of PMTCT interventions and built a sense of camaraderie amongst FSWs. These benefits spilled over to other FSWs in the community as mentees shared the knowledge they had gained. This was in keeping with the literature which found that positive peer influence can promote utilisation of interventions and improve overall health and wellbeing (Emmanuel *et al*., 2020; Were *et al*., 2020). Challenges were noted with peer education programmes including the emotional toll on mentor mothers and the sense of helplessness they felt in the face of some of the problems mentees were experiencing.

The quantitative component found that utilisation of family planning improved with lower peer load. On the contrary, PrEP utilisation did not change with differing peer loads. These contradictory findings have been noted in multiple studies. A critical appraisal of peer interventions is provided in section 6.2.5.

Public Policy Level

Contradictory legislation

Data from 2019 suggests that coverage of the national identity document is close to universal among South Africans aged 16 and above (the minimum age for obtaining an ID) (World Bank, 2019). Therefore, it is likely majority of the undocumented FSWs are migrants. It emerged that undocumented mentees experience differential treatment when attempting to access interventions. This highlights pervasive xenophobia and restrictions around health care access due to contradictory legislation. This is in line with findings from previous research (Overs, 2013; Schwartz *et al*., 2017).

6.2.5 Critical appraisal of peer support

Research findings around the effectiveness of peer education programmes have been contradictory.

Peer interventions and family planning

The analysis showed that FSWs who were engaged by peer educators with lower workloads (<80) were more likely to use family planning suggesting that peer education does indeed impact utilisation of family planning, and that the programme is more effective when workload is at or below 80 FSWs per peer educator. Similarly, a study in Zimbabwe found that peer support increased knowledge and sense of empowerment around family planning negotiation amongst mothers who had participated in a mentor mother programme (Shroufi, 2013).

FSWs may be highly motivated to use family planning. A 2016 study found that one in every four FSWs in Mombasa reported an unintended pregnancy in the last year (Luchters *et al*., 2016). Unplanned pregnancies are associated with social and economic consequences (Luchters *et al*., 2016) including the financial burden additional children would present (Luchters *et al*., 2016; Parmley *et al*., 2019a), increased financial dependence on sex work and associated stigma (Khan *et al*., 2009; Luchters *et al*., 2016; Ampt *et al*., 2018) and increased HIV risk, and community ridicule for bearing (more) children as FSWs (Luchters *et al*., 2016).

However, even when motivation is high, it may not always be possible to use family planning which may impact the observed benefits of peer interventions. For example, an enhanced peer education programme amongst FSWs resulted in a significant positive effect on use of non-condom, modern methods but no observed significant effect on dual method use. FSWs in the study noted difficulty negotiating condom use with both paying and non-paying partners. The author points out that the success of peer interventions may continue to be limited if they only target FSW but fail to address the knowledge, attitudes and behaviours of their male sexual partners (Dulli et al., 2019). Power imbalances (WHO, 2016), fear of violence (Evans, 2008; Panchanadeswaran *et al*., 2008), and economic incentive not to use condoms (Sadati *et al*., 2017) will continue to make it difficult for FSWs to use negotiate condom use.

Peer interventions and Oral PrEP

The research found that there was no difference in oral PrEP utilisation whether peer educator load was >80 or <80. That is, regardless of the workload of peers, oral PrEP utilisation remained low in this population, indicating that the peer education programme had limited impact on oral PrEP use.

Previous studies have suggested that weaknesses with peer interventions could include inadequate exposure to the peer intervention. For example, Abuogi *et al*. (2022) found that peer support and text messages did not appear to improve 12-month postpartum retention and adherence. It was determined that only 54% of women in the mentor mother arms and 46% in the text message arms received the desired 80% or more of the intervention, and that higher levels of exposure to the interventions may be necessary to achieve the desired effects (Abuogi *et al*., 2022). On the other hand, it is also possible for too much information to be shared during peer interventions. For example, a study amongst pregnant women living with HIV in Kenya found that delivering a combination of mentor support and text messages increased risk of adverse pregnancy outcomes. They recommended that interventions be delivered in an incremental, sequential and adaptive manner versus a one size fits all approach (Onono *et al*., 2021).

It is also important to consider the acceptability of oral PrEP as it is likely that the success of peer intervention was impacted by FSWs' perceptions and acceptance of the product. A high drop-out rate has been a common feature in many oral PrEP programmes. For example, in the Jilinde project only 31% and 8% of initiators were still using oral PrEP at month 1 and month 3, respectively (Were *et al*., 2020). Similarly, the TAPS demonstration project revealed a high attrition rate through the PrEP continuum with only 22% of oral PrEP initiators still using oral PrEP at their Month 12 visit (Eakle et al., 2017).

Further, barriers to utilisation of oral PrEP were revealed in qualitative studies that were undertaken with former participants of VOICE and FEM-PrEP, two clinical trials which demonstrated no effect of daily oral PrEP on HIV acquisition (Were *et al*., 2021) amongst heterosexual women.(Van Damme *et al*., 2012; Marrazzo *et al*., 2015). Former trial participants revealed their poor adherence was due to concerns about safety, efficacy, and stigma from their male partners and the community at large (van der Straten *et al*., 2014).

PrEP has also been found to be a challenge for pregnant and post-partum women which would limit the effectiveness of peer interventions. For example, a study found that reduced contact with health facilities during the postnatal period resulted in suboptimal PrEP use during the peripartum period which declined further over time in the postpartum period (Davey *et al*.,

2022). Also, a sense of instability during the postpartum period made it difficult to adhere to PrEP (Wyatt *et al*., 2023). Other challenges include concerns about stigma (Moran *et al*., 2022) due to the others' assumption that PrEP users are infected with HIV (Vazquez *et al*., 2019; Wyatt *et al*., 2023), questions about PrEP effectiveness (Vazquez *et al*., 2019), forgetfulness, travelling or being away from home, and concerns about side effects (Beesham *et al*., 2022), pill burden (Kinuthia *et al*., 2020), and belief that PrEP was not necessary when away from sexual partners (Wyatt *et al*., 2023).

Peer interventions and the PMTCT Cascade

The qualitative component found that peer support through the mentor mother programme was highly acceptable to mentees. The programme provided emotional support, increased knowledge, and utilisation of PMTCT interventions and built a sense of camaraderie amongst FSWs. These benefits spilled over to other FSWs in the community as mentees shared the knowledge they had gained.

Several studies amongst women in the general public have shown positive impacts of peer interventions including improved PMTCT knowledge (Futterman et al., 2010), ANC attendance (Onono et al., 2021), ART retention (Lyatuu *et al*., 2022), retention in care (Futterman *et al*., 2010; Shroufi *et al*., 2013), viral suppression (Sam-Agudu *et al*., 2017; Carlucci *et al*., 2022; Lyatuu *et al*., 2022), and infant testing (Schmitz *et al*., 2019). On the other hand, other studies showed peer interventions had no impact on ART adherence (Abuogi *et al*., 2022), viral suppression, infant testing, retention (Phiri *et al*., 2017), and vertical transmission rate (Phiri *et al*., 2017; Lyatuu *et al*., 2022). One study found that mothers exposed to the peer intervention were actually less likely to take their children for infant testing (Futterman *et al*., 2010).

As noted earlier, FSW in Port Elizabeth study had high attrition after enrolment in a PMTCT programme. Specifically, among all the mothers who knew they were positive prior to the study, 45% were on ART and 85% had their children tested for HIV at least once after birth. Majority (85%) of the women who tested their children breastfed them, but only 36% had their children retested after breastfeeding cessation (Rwema *et al*., 2019). Similarly, the PEARL study showed that PMTCT cascade completion rates were just 51% across the four African countries in which the study was conducted (Dionne-Odom *et al*., 2016), while an observational cohort study of 300 pregnant women in South Africa found that overall, 57.5% were lost between HIV testing and 6 months post-delivery (Clouse *et al*., 2013).

Even with support from peer interventions, there are some challenges that may be insurmountable, as highlighted by the mentors in the *Masifundisane* programme, making it difficult to access PMTCT. For example, reduced contact with health facilities during the postnatal period noted above (Davey *et al*., 2022) particularly where transport costs are high, substance use and the sense of instability during the postpartum period (Wyatt *et al*., 2023) especially if one has no support from family and friends.

6.3 Recommendations

The sixth and seventh objectives were to identify strategies (recommendations) to overcome barriers identified.

6.3.1 Individual Level

Knowledge: Increase health literacy

As noted earlier, health literacy implies the "achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing lifestyles and living conditions" (WHO, 1998). Health education is integral to improving health literacy (Nutbeam, 2000; Simon, *et al.,* 2014), and can have a positive and significant impact on the awareness and acceptability of interventions (Ugwu, 2012). Patient support and education should be continuous and include educating prospective patients about existing patients' experiences to alleviate fears.

Health literacy can also be achieved through community dialogue facilitated by skilled health care workers. For example, a study amongst FSWs and MSM in Nigeria revealed that community dialogues were the main source of information on PrEP that respondents received (Emmanuel *et al*., 2020). In addition, key information can be disseminated within communities through conventional media, such as radio, as well as through social media, short message service (SMS) text messaging and web-based services which have also been shown to be useful in reaching broad communities with non-formal education. For example, optimal use of a mobile app known as *Jichunge* was significantly associated with higher retention in PrEP services among female sex workers in Dar es Salaam (Mbotwa *et al*., 2023). Raising community knowledge about health interventions through these wide-reaching mediums would also likely reduce prevailing stigma in communities, including from family and friends.

Addressing unpaid care work is also critical to improving education achievements and thus health literacy, as is discussed in a later recommendation.

Poverty: Increasing financial security

Decentralised care through outreach can partially alleviate the challenges that transport costs present (Comins *et al*., 2022), however, long term solutions that economically empower FSWs should also be explored. Examples include community savings groups with a rotating pay-out system in which each member receives the total pooled from contributions made by all members. Such groups have been shown to create a financial safety net and provide a sense of agency to participate in decision-making during interactions with clients, such as condom negotiation. Consideration should be given on how to engage low earning FSWs who may not be able to contribute the stipulated amount and to mobile FSWs who may be unavailable to make deposits regularly (Mantsios *et al*., 2018). Tackling punitive legislation is also important when addressing financial security. Access to financial benefits often rests on one being formally employed, therefore, sex workers report difficulties with access to bank accounts, loans and legal forms of credit, insurance, pensions, and other basic employment benefits (NSWP, 2020). Further, interactions with law enforcement can result in financial hardship due to penalties and fines (NSWP, 2017). This is discussed further under 'Legislative reforms'.

Common Mental Disorders: Address mental health morbidity

Treatment of CMDs should be an essential element of FSW programmes, however, poor mental health literacy has been shown to be a barrier to seeking professional care in the sub-Saharan Africa (SSA). For example, a study showed that most participants defined mental health in terms of psychotic health conditions, excluding psychological health conditions such

as stress (Panneh et al., 2022). Community-based mental health literacy radio programmes have been shown to significantly improve knowledge, and mental health-seeking behaviour (Kutcher *et al*., 2019). Beyond raising awareness, it is important to explore the structural, historical, individual, and sexual/social network risk factors for CMDs. This includes poverty, repeat exposure to violence, harmful substance use, adverse childhood experiences (Beksinska *et al*., 2021), unsafe working conditions, barriers to accessing health services and stigma (Martín-Romo *et al*., 2023). There is need for tailored, informed interventions that address the complex and overlapping correlates of psychological morbidity.

Substance use: wholistic approach to prevention, treatment and rehabilitation

Evidence based substance use prevention, treatment and rehabilitation programmes should be made available to FSWs. These services should be sensitive to the experiences of FSWs, taking into consideration any overlapping stigmas and human rights violations, as well as their contexts (such as, dependence on substances to engage in sex work, as well as constraints related to motherhood) (Wechsberg *et al*., 2009) so as to improve accessibility and ultimately programme success rates.

Programmes should be comprehensive, addressing comorbidities, such as violence and common mental disorders – a systematic review showed that substance use was associated with overall psychological distress, and that SWs who reported substance use during work presented more depressive, suicidal, and anxious symptoms (Martín-Romo *et al*., 2023).

Address unpaid care work

In addition to impacting health, rest and leisure, unequal burden of unpaid care undermines women and girls' rights to education (which may lead to health literacy challenges) and to decent work thereby holding them back economically (Institute of Development Studies, no date). There is therefore a need to change community perceptions about unpaid care work and gender inequality. This may be done through community campaigns. In Nepal, for example, a national network of rural women has been successfully running community campaigns to make women's care work more visible and to raise awareness of the need for redistribution of household responsibilities (ActionAID, 2013).

Tackling self-stigma

Peer education programmes should strive to address self-stigma, fear and shame by building self-esteem and confidence amongst participants. Programmes supporting FSWs can engage with psychologists to provide Cognitive-behavioural therapy (CBT) which has been found to be a successful strategy to tackle self-stigma by revealing and changing false and distressing beliefs and thought patterns (Tshabalala, 2011).

Peer education programmes should endeavour to empower FSWs to understand their rights to help them to access legal recourse when needed. They should boost trust and solidarity between FSWs by encouraging them to work together to critically inspect limiting beliefs and expectations and identify what needs to change and how they can be part of the change process. They should engage external actors to tackle harmful stereotyping, and disempowering cultural and social norms that exacerbate self-stigma. These types of engagement can be done through Creative space workshops (CSWs) which are peer-led risk reduction workshops. In previous research, FSWs have described these workshops as healing, contributing to a sense of self-

worth, improving their emotional wellbeing and increasing a sense of agency and empowerment (Huschke, 2019).

6.3.2 Community Level

Knowledge: Improve patient-provider dynamics

A supportive environment within health facilities is needed for FSWs to feel comfortable to ask questions and contribute their opinions around their care, improve their decision-making capacity and promote use of interventions. Training and mentorship on patient-provider communication, as well as supportive supervision of health providers (Camara *et al*., 2020) should be provided as an essential component of staff continuing education and development. Further, providers should also be trained on how to work effectively with communication aids, where necessary and interpreters should be available when needed.

Peer education: Strengthening programmes

In addition to being provided with regular trainings to perform their work effectively, peer educators (such as mentors) should be supported to provide a wholistic experience for the FSWs they serve that goes beyond information sharing. This includes psychological support should they need it, and adequate financial and human resources to carry out their activities. The Sonagachi project, for example, was facilitated by a stable and supportive social, material and political context, and the allocation of significant resources to FSWs' empowerment, as opposed to focusing purely on disease diagnosis and treatment (Cornish, 2009). In addition, local funders should be identified to ensure programmes continue beyond international donors' funding cycles. Further, regular monitoring and evaluation of their processes and outcomes should be conducted to ensure the programme is running effectively.

Addressing stigma from health care workers

The International Covenant on Economic, Social and Cultural Rights, requires that States under the Charter of the United Nations promote human rights (UN General Assembly, 1966). As rights-holders, FSWs have a right to health care, a right to actively take part in decision making around their own sexual and reproductive health, and a right to challenge barriers that prevent them from exercising their rights (Office of the United Nations High Commissioner for Human Rights, 2012), In reality, however, stigma from health care provider makes it difficult in many settings. In keeping with the Human Rights Based Approach (HRA), as duty-bearers, health care providers must understand, protect, and fulfil the needs and rights of all persons and be compassionate and respectful during interactions. Where necessary, their capacity to meet their obligations should be developed (UNDP, 2003), for example through sensitisation trainings to reduce judgemental and discriminatory attitudes, and to encourage them to view FSWs as human beings in need of medical care and not as criminals. An evaluation of the effects of a key population sensitisation training for healthcare workers in South Africa found that the training not only increase providers' knowledge of HIV-related needs of key populations, but also raised awareness of psychosocial vulnerabilities, and resulted in a decrease in judgemental attitudes (Duby et al., 2019). Further, healthcare providers who have extensive experience treating FSWs should be engaged as role models for their junior colleagues to provide opportunities for observational learning to help change norms in the workplace and increase the likelihood of intervention implementation and sustainability (Ekstrand *et al*., 2013). Previous research has shown that such mentorship and coaching interventions are associated

with improvements in quality of care (Manzi *et al*., 2017). In all activities, consideration should be given to overlapping stigmas that may impact objective delivery of interventions to FSWs.

6.3.3 Policy Level

Strengthening the public health system

Under-resourced and overburdened public health systems lead to increased provider workloads, substandard care and long waiting times. Integration of services for FSW provides an opportunity to enhance both reproductive health outcomes and HIV prevention goals (Schwartz *et al*., 2015). Providers' have cited lack of capacity or confidence to provide different services and/or donor funding targeting separate interventions (Kachale *et al*., 2022), Both Kenya and South Africa need to strengthen capacity of health facilities to provide quality integrated SRHR services for all people by build provider capacity to deliver integrated services, and engaging with donors to streamline approaches to service provision. There is also a need to address corruption in the health sector, for example, through reforming of managerial structures to foster good governance, transparency and accountability, improving oversight and sanctioning of those involved in corruption.

Legislative reforms

Decriminalisation of sex work

As noted earlier, in November 2022, the South African cabinet approved the publishing of the Criminal Law (Sexual Offences and Related Matters) Amendment Bill of 2022 which, if passed, would decriminalise the sale and purchase of adult sexual services. At the time of writing, the revised bill had been introduced to Parliament to be voted on.

It should be noted that it is unlikely that decriminalisation of sex work will eliminate all the problems that sex workers face due to society's conflation of immorality and sex work and the resultant discrimination and violence they experience. This spotlight on sex work legislation presents an opportunity to sensitise decision makers (such as parliamentarians who will decide whether to pass, amend or reject the bill) and the public at large around the legitimacy of the problems that exist under the current legislative models (such as the severe financial hardship and high rate of violence towards sex workers) and the benefits of opting for less punitive legislation thereby improving access to health services, non-discrimination, privacy and security.

Sex workers' fundamental human rights are enshrined in the Constitution by the mere virtue of being human therefore the proposed legislative reforms must include campaigns to teach society at large about the human rights of sex workers. Further, advocating for equality and dignity includes tackling cultural notions around sexuality and patriarchal power, and ensuring access to opportunities to allow FSWs to choose whether or not to enter and/or stay in the sex industry.

Migrant Access to Care

With respect to migrants' access to healthcare, in addition to sensitisation training to reduce judgemental and discriminatory attitudes, national and/or provincial health authorities should train health care staff to understand that all persons have a right to access health care in South

Africa, and ensure that they understand the means-test fees to determine the correct tariff to be paid by patients. Further, legislature should amend the Immigration Act to be in line with the Constitution of South Africa, the National Health Act and the Refugees Act.

6.4 Areas for Future Research

6.4.1 Individual Level

6.4.1.1 FSWs engaging in PMTCT for HIV, syphilis, and HBV: prospective cohort study

Despite efforts to scale-up PMTCT programmes, little is known about PMTCT cascade engagement and outcomes among FSW populations in SSA (Rwema et al., 2019). This study provides some insight into their experiences although it was retrospective and more prone to recall bias. It would be good to carry out a prospective cohort study to look into FSWs experiences with PMTCT cascade completion, and for this to be done in different settings. Further, the WHO's Triple Elimination Initiative recommends that, in addition to PMTCT of HIV, pregnant women should be treated for syphilis with BPG ideally before the second trimester (WHO, 2017a), and those who test positive for HBV (DNA ≥ 5.3 log10 IU/mL (≥ 200,000 IU/mL2)) should receive tenofovir prophylaxis from the 28th week of pregnancy until at least birth (WHO, 2020b). PMTCT of syphilis has not received the same amount of attention as PMTCT of HIV, although it is estimated that syphilis affects more children globally than HIV (John-Stewart et al., 2017). Similarly, The infectivity of HBV is higher than the HIV virus but it receives less attention (Abdulai et al., 2016). Future PMTCT research should include questions about knowledge and uptake of BPG and tenofovir prophylaxis by FSWs during pregnancy.

6.4.1.2 Intersecting stigmas as pregnant and post-partum women accessing PMTCT interventions

Studies have shown that FSWs experience intersecting stigma related to their health conditions, identities, and behaviours (Fick, 2006; Misganaw and Worku, 2013; Overs and Loff, 2013; Beckham *et al*., 2015; Hargreaves *et al*., 2016; Ficht *et al*., 2018; Friedland *et al*., 2018; L Parmley *et al*., 2019b; Rwema *et al*., 2019). Relatively little attention has been paid to their experiences as mothers in need of health services (Schwartz *et al*., 2015). It would be interesting to explore their experiences as mothers accessing PMTCT care, particularly as relates to the intersecting stigmas they experience. It would also be interesting to look into any associative stigma (Holzemer *et al*., 2009) their children may experience when engaging in PMTCT care.

6.4.2 Community Level

6.4.2.1 Long-term effect of the mentor mother programme

As noted earlier, little is known about PMTCT cascade engagement and outcomes among FSW populations in SSA (Rwema et al., 2019). The IDIs for the Masifundisane programme shed some light into the impact of the programme on utilization of PMTCT cascade interventions. However, the IDIs were carried out at the one-year mark from the time the mentorship programme started, therefore we do not know about the long-term experiences of the women who participated in the programme, specifically ART utilisation, breastfeeding and infant

feeding practices for those with young children, as well as engagement in the PMTCT cascade in future pregnancies. Outside of the *Masifundisane* mentor mother programme, I did not find any other mentor mother programmes that targeted FSWs engaging in PMTCT therefore this information is also not available elsewhere. It would be useful to determine how engagement in the mentorship programme altered PMTCT cascade completion beyond the life of the mentorship programme and with subsequent pregnancies, and the long-term health outcomes of mothers and their children.

6.4.2.2 Peer workload and use of PMTCT interventions amongst pregnant and post-partum FSWs

This thesis shed some light into the experiences of FSWs when accessing PrEP and family interventions and the impact of peer workload. Only one other study about how peer workload impacts FSWs utilisation of health service was found (Bhattacharjee *et al*., 2018) but this was not specific to PMTCT. Mentors in the *Masifundisane* project noted the emotional toll being a mentor had on their lives particularly as relates to hearing about the difficult situations FSWs and their children find themselves in. A study into how peer workload impacts utilisation of services amongst pregnant and postpartum FSWs (including PMTCT and PrEP) is warranted.

6.4.2.3 Peer workload and utilisation of new PrEP interventions

In December 2021, the FDA approved injectable cabotegravir for PrEP (also known as CAB for PrEP or CAB LA) as a prevention option (AVAC, 2023b). CAB LA was approved for use in South Africa in December 2022 (SAHPRA, 2022). At the time of writing it was still under review in Kenya. The once-monthly dapivirine vaginal ring for HIV prevention has been approved in both South Africa and Kenya (AVAC, no date). It would be interesting to explore knowledge and utilisation of new PrEP interventions amongst FSWs as they become widely available, and the impact of peer education programmes on utilisation. This includes the impact of peer workload on initiation, adherence and retention, and the characteristics of the FSWs who chose to use the interventions and who did not. This current research used 'number of weekly sex acts' as a proxy for risk. Future research should ask specific questions about risk to understand women's risk perception and the impact of peer workload.

6.4.3 Policy Level

6.4.3.1 Unpaid care work

This unequal burden of unpaid care undermines women and girls' rights to decent work, education, health, rest and leisure, and holds them back economically (Institute of Development Studies, no date). The need for research into the impact of social and economic policies on women's unpaid care work and how they can be adapted has also been noted in other studies (ActionAID, 2013).

6.5 Strengths and Limitations

6.5.1 Strengths

The interviewers in the qualitative component received a standardized training on how to conduct the interviews. The peer educators in the quantitative component also received a standardized training on the outreach process and completion of the contact form. The clinic

visit form was administered by similarly trained healthcare workers so that the same processes were followed with all FSWs attending the two clinics. The use of routine clinic data in the quantitative component allowed the monitoring of a health system in real life setting (as opposed to a researching setting) in real time.

The quantitative component provided new data and understanding of how number of self-reported sex acts per week, socioeconomic factors and knowledge impacts utilisation of PrEP and family planning, and enhances understanding on how PE workload affects utilisation.

With regards to PMTCT cascade completion, much of the existing research looks at ANC visits and HIV testing for mothers and their children. This research provided new insights into barriers and facilitators around utilisation of ART by FSWs in the context of PMTCT, ARV prophylaxis for FSWs' children, infant feeding practices and follow-up clinic visits. Further, existing research focuses on stigma around sex work, HIV status, being a mother who sell sex and migrant status. This research shed light on poverty shame, an additional stigma FSWs face.

6.5.2 Limitations

Overall

The literature review search would have benefited from inclusion of short-term contraceptive methods (e.g. contraceptive patch, vaginal ring, combined contraceptive pill and progestogen-only pill) and specific mention of different types of LARCs (e.g. IUD, DMPA and implant) in the search terms. Further, the search strategy did not include headings from the various levels of the MSEM framework (individual, social/sexual networks, community, and public policy). Inclusion of these additional terms may have resulted in identification of additional studies for the literature review.

Both the quantitative and qualitative components were conducted in settings where programs targeting FSWs exist, such as the mentor mother programme in Port Elizabeth and the Linkages project in Kenya. The situation faced FSWs living in contexts with no support is likely to be different than the experiences of the study populations that do have some support thereby affecting the generalisability of the findings.

Generalisability may also be affected by the fact that the research was in just two settings in Africa therefore the FSWs' contexts and subsequently there may be socio-cultural variations and thus different characteristics and experiences. However, it should be noted that, generally, FSWs are highly mobile population who frequently migrate both internally and across borders. Further, the environments in which they work are similar, for example, their experiences of stigma and the punitive legislation they are subjected to. Therefore, it is expected that the characteristics and experiences of the FSWs should be similar.

Qualitative Component

The qualitative component may have been affected by several biases. For example, social desirability bias may arise amongst mentor mothers, if they are unwilling to discuss failings in the programme. This bias may also arise amongst mentees, for example if they are unwilling to discuss negative experiences with mentor mothers. Social desirability bias may also have arisen during the programmes implemented in Kenya (quantitative components) for example if participants were reluctant to discuss sensitive topics such as sexual history or adherence to

ART. Recall bias may be a challenge as participants in both the qualitative and quantitative components may not remember details of previous events or experiences.

The qualitative component did not inquire about deceased children. As such, there may be an overestimation of PMTCT intervention use, and an underestimation of the barriers to intervention use. Further, no short birth intervals were observed and an overrepresentation of parity of one was noted. This may be due to exclusion of abortions and children who did not survive.

Fifth, only a small percentage of FSWs who participated in the IDIs had their first child before 18 years. This may be due to the recruitment process. Specifically, women were recruited to participate in the IDIs via word of mouth. This form of recruitment may limit diversity as the information may not go far beyond the recruiters' immediate circles.

Lastly, given that the data collection for the qualitative components was conducted at a single time point in time, it would not be possible to measure any trends or changes in the populations over time.

Quantitative Component

Due to inconsistent UICs in the Enrolment dataset, a large number of FSWs were excluded from the analysis during merging of the datasets. Secondly, the analysis of family planning predominantly includes HIV negative women whereas PMTCT Prong 2 (family planning utilisation) focuses on HIV positive women. Motivation for family planning use may differ by HIV status. Third, 'number of sex acts' is used as a proxy for risk level however there may be an overestimation or underestimation of risk of HIV and unintended pregnancy as the data does not differentiate between different types of sex acts and frequency of different types of weekly sex acts. Fourth, the analysis does not take PrEP or family planning adherence into consideration, therefore it is difficult to characterise to properly characterise choices and behaviour. Fifth, logistic regression was used to calculate the odds of utilisation of PrEP and family planning, however, odds ratios (OR) do not tell the proportion of individuals who actually use the interventions. This would make it difficult to understand how likely an outcome is to occur thereby obscuring the significance of the findings. Absolute Risk would have been a better measure. Lastly, the true impact of PE workload may be undermined if the peer outreach process is not standardised.

6.6 Conclusions

This thesis investigated factors associated with FSWs' utilisation of PrEP and family planning, and PMTCT cascade completion.

Overall, the quantitative analysis suggests a good level of risk perception for HIV infection and pregnancy, however there are geographic differences in utilisation Lower utilisation of PrEP in Kilifi than Mombasa may reflect the sparse distribution of facilities offering PrEP and difficulties with accessing these clinics due to higher poverty rates in Kilifi. On the contrary, higher utilisation of family planning in Kilifi than Mombasa may reflect the secondary benefits of family planning research underway in the county. With respect to the effect of education, contrary to previous research, which suggests improved utilisation of interventions with lower PE workloads, utilisation of PrEP does not appear to vary by PE workload. This may reflect hesitancy around PrEP and a preference for more well-known HIV prevention interventions.

Further, higher utilisation of family planning with increased PE workload may signify high understanding of, need for and acceptance of family planning.

The qualitative component revealed multiple barriers and facilitators to PMTCT cascade completion. Lack of knowledge highlights the need for interventions that tackle health illiteracy and improve patient-provider dynamics. Efforts to improve financial security are needed to address poverty that many FSWs face. There is need to address mental health and substance use amongst FSWs given the high stress levels they experience and resultant substance use. FSWs should be encouraged to work together to build their self-esteem and confidence to reduce self-stigma. At the same time efforts should be made to sensitise health workers and the community at large around the negative effect of stigma and harmful stereotypes. Addressing inconsistencies in legislation around migrants' health access is also important to tackle stigma from health care workers. Health system weaknesses should be addressed to reduce inconvenience when seeking care, such as long queues.

Benefits of peer support programmes included increased knowledge and utilisation of PMTCT services, personal development, and relationship building between FSWs and with their families. Mentors also noted experiencing self-improvement and a sense of fulfilment from participating in the programme, however being a mentor was sometimes difficult as some mentee challenges were insurmountable. This highlights the need for well supported programmes that not only encourage utilisation of biomedical interventions but also provide needed support to peer educators, are sustainable and ensure long-term transformative benefits for the FSWs they serve.

7 References

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8 Appendices

8.1 Legislation around Termination of Pregnancy Services in South Africa and Kenya

South Africa
1996 Under the Choice On Termination Of Pregnancy Act (CTOPA) women, regardless of age or marital status, have the right to have an abortion on request until the 12th week of pregnancy and with certain conditions before the 20th week (Republic of South Africa, 1996a).
Kenya
2010 Kenya adopted a new constitution that recognises health as a fundamental right. Abortion is regulated by Article 26(IV) which states that: "Abortion is not permitted unless, in the opinion of a trained health professional, there is need for emergency treatment, or the life or health of the mother is in danger, or if permitted by any other written law" (GoK, 2010).
2012 The Kenya National Commission on Human Rights launches a public inquiry into sexual and reproductive rights violations in the country. The findings highlight that the Kenyan government failed to adequately respect, protect, and promote reproductive rights of the people and called for government and non-state actors to remedy this failure. The Ministry of Medical Services publishes the "Standards and Guidelines for Reducing Morbidity and Mortality from Unsafe Abortion in Kenya" providing health care professionals with guidance about when they are allowed to provide abortion services under the 2010 Constitution.
2013 Director of Medical Services arbitrarily withdraws the Standards and Guidelines without explanation.
2014 The Ministry of Health issues a memo prohibiting training of health care professionals on safe abortion services and medication abortion, threatening professional consequences for health professionals who carry out abortions. Following this memo, Jackson Tali, a registered nurse is sentenced to death after a young woman with pregnancy complications died in her care. The nurse was accused of assisting the woman to procure an illegal abortion, and that this abortion led to her death.
2015 The Centre for Reproductive rights files a petition against the Attorney General (AG), Director of Medical Services, and the Ministry of Health following the death of a 14-year-old girl who was unable to access safe abortion care when she was raped and became pregnant. She died after receiving an abortion from an unqualified provider and being denied post-abortion care. The petition challenged the lack of clarity on abortion laws and urged government to restore safe abortion trainings and reinstate the 2012 Standards and Guidelines.
2016 The United Nations Committee on the Rights of the Child calls for a review of legislation to ensure access to safe abortion and post-abortion care and the respect of girls' abortion decisions.

2017 The Court of Appeal of Kenya acquits Jackson Tali, following a ruling that the evidence relied on by the High Court to convict him was not sufficient.
2018 In November 2018, Marie Stopes banned from providing abortion and post-abortion care by the Kenya Medical Practitioners and Dentists Board (KMPDB). This ban is challenged by the Centre for Reproductive Rights. Following a petition to the High Court the ban is lifted by the Kenyan government in December 2018.
2019 In the *FIDA-Kenya and others v. Attorney General and others* case, the High Court challenges the government's arbitrary withdrawal of its 'Standards and Guidelines for Reducing Morbidity and Mortality from Unsafe Abortion in Kenya' thereby upholding the constitutional right to abortion and finding that the government violated the rights of women and girls by withdrawing the Standards and Guidelines.
2022 The High Court of Kenya issues a landmark decision in *PAK and Salim Mohammed v. Attorney General et al*, a case in which a minor (PAK) was detained for receiving abortion care, as was the clinician (Salim Mohammed) who provided treatment. The decision affirmed that the Constitution of Kenya protects abortion as a fundamental right and establishes that arbitrary arrests and prosecution of patients and providers seeking or offering abortion care is illegal (Center for Reproductive Rights, no date)

8.2 PMTCT Prong 3 – Kenyan Guidelines

1.6 Prevention of Mother to Child Transmission of HIV/Syphilis/HBV

- Prevention of mother-to-child transmission (PMTCT) of HIV, Syphilis and Hepatitis B (triple elimination) should be offered as part of a comprehensive package of fully integrated, routine antenatal care interventions
- All pregnant women, unless known positive, should be counseled and tested for HIV, Syphilis (using the HIV-Syphilis dual test) and HBV during their first ANC visit, and if negative a repeat HIV-Syphilis dual test should be performed in the 3rd trimester.
- **Lifelong ART should be initiated in all pregnant and breastfeeding women living with HIV, regardless of gestational age, WHO clinical stage or CD4 count**
- ART should be started as soon as possible, ideally on the same day HIV diagnosis is made, with ongoing enhanced adherence support
- The preferred first line ART regimen for pregnant and breastfeeding women is TDF + 3TC + DTG
- For pregnant and breastfeeding women newly initiated on ART, obtain VL 3 months after initiation, and then every 6 months until complete cessation of breastfeeding
- For HIV positive women already on ART at the time of confirming pregnancy or breastfeeding, obtain a VL irrespective of when prior VL was done, and then every 6 months until complete cessation of breastfeeding
- For pregnant or breastfeeding women with a VL ≥ 200 copies/ml (unsuppressed): assess for and address potential reasons for viremia, including intensifying adherence support, and repeat the VL **after 3 months of excellent adherence**
    - If the repeat VL is < 200 copies/ml (suppressed) then continue routine monitoring
    - If the repeat VL is ≥ 1,000 copies/ml (treatment failure), prepare for change to an effective regimen
    - If the repeat VL is 200 - 999 copies/ml (low level viremia), reassess adherence and other causes of viremia and consult the Regional or National TWG
- All HIV exposed infants (HEI) should be tested with DNA PCR within 6 weeks of age or first contact thereafter; if negative then another DNA PCR at 6 months, and if negative then repeat DNA PCR at 12 months.
- All HEI should receive infant ARV prophylaxis consisting of 6 weeks of AZT + NVP and thereafter NVP should be continued until 6 weeks after complete cessation of breastfeeding
- All infants irrespective of HIV status should be exclusively breastfed for the first 6 months of life, with timely introduction of appropriate complementary foods after 6 months, and continued breastfeeding up to 24 months or beyond

Source: (NASCOP, 2022)

8.3 **PMTCT Prong 3 – South African Guidelines**

3 PART 3 – CHARTS PER SERVICE DELIVERY AREA

ANTENATAL CLINIC

When caring for a pregnant woman, always be sure to:

- Recognise the pregnant client that requires urgent attention as outlined in BANC Plus and manage/refer as appropriate
- Identify the pregnant client who needs secondary level antenatal care as outlined in BANC Plus and manage/refer as appropriate
- Provide routine antenatal care to the woman not requiring urgent referral.

TESTING for HIV

HIV Testing: Provider Initiated Counselling and Testing (PICT) should be provided to all women with unknown or HIV-negative status:

- Offer an HIV test at ANC first/booking visit.
- Retest the HIV-negative mother at every routine BANC Plus visit.
- Offer couple/partner testing to promote prevention, access to HIV care and treatment, and/or manage discordant results (when one partner is HIV-positive and the other partner HIV-negative).
- If the woman and/or her partner test HIV-negative, provide **HIV prevention** information (Go to **HIV Prevention** on page 8).
- Women who choose not to be tested should be offered 'post-refusal' counselling and offered a re-test at every subsequent visit.
- If a woman tests HIV-positive at any stage, encourage testing of her other children, and linkage to HIV care and treatment as necessary.
- For the **HIV testing algorithm**, including the management of discrepant HIV test results, refer to the HTS Guideline.

TREATMENT for HIV

- Pregnant women already on ART should continue their current ART regimen pending their 1st VL result (see below). If she will now collect her ART at ANC, ensure that she is documented as a transfer-out from her former clinic, and not classified as lost-to-follow-up.
- All newly diagnosed HIV-positive pregnant women are eligible for lifelong ART regardless of gestation, CD4 count, or clinical stage.
- Creatinine and CD4 count should still be done to determine renal function and the need for prophylaxis (TB, PCP and CM).
- TDF, 3TC, and DTG (as a fixed dose combination) is the preferred regimen for women who are newly initiating ART. However, each mother should understand the risks and benefits of DTG and EFV-based regimens, and be enabled to make an informed choice. ART should be initiated on the same day as HIV diagnosis[18], and after contra-indications to ART have been excluded (Go to **ART Initiation Algorithm** on Page 18).
- Pregnant women already on ART should continue their current ART regimen pending the result of their 1st VL (to be done at entry into antenatal care as outlined below). Only if her VL is <50 c/ml, and she is no longer in the 1st trimester, offer her the option of switching to DTG. (If her VL is ≥ 50 c/ml, manage her as per the VL Non-suppression algorithm on page 21) A switch to DTG needs to be preceded by appropriate counseling on the risk for NTDs for subsequent pregnancies, postpartum contraception, and the new side-effects that may be experienced when switching to a new drug (see **DTG in pregnancy** on page 17). If she will now collect her ART at ANC, ensure that she is documented as a transfer-out from her former clinic, and not classified as lost-to-follow-up.
- Known HIV positive women, who are not currently on ART, but are ART-exposed (e.g. previous PMTCT, or previous LTFU on ART) should initiate a DTG-containing regimen. If she has a documented VL that was suppressed while she was previously on ART, start TLD. If no VL result is available, or her VL was not suppressed, start AZT, 3TC, and DTG.
- Appropriate ART literacy education should be given to the woman before she leaves the facility. (Go to **Key Adherence Messages** on page 19)
- All women living with HIV should be referred to a CHW to support adherence, breastfeeding and retention in care pre- and post-delivery.

PRIMARY OBJECTIVES

1. Identify HIV infection and achieve viral suppression
2. Identify and treat syphilis and other infections

! Initiating Dolutegravir in pregnant women in the 1st 6 weeks may carry risks. Counsel the mother on use of DTG in pregnancy and allow her to make an informed choice.

Remember to put the PMTCT code: **C#PMTCT** in the EGK code field of the lab form for each VL done to ensure the electronic gatekeeping rules (EGK) do not lead to sample rejection

VL MONITORING and Management

(Go to **VL Monitoring Schedule** on page 20)

Newly diagnosed and initiated ART for the first time:
- Do 1st VL at 3 months on ART.
- If VL < 50 c/ml, repeat VL at delivery.

Known HIV-positive women already on ART:
- VL at first booking visit in ANC.
- If VL < 50 c/ml, repeat VL at delivery.

Known HIV-positive women, who are not currently on ART, but are ART exposed (e.g. previous PMTCT, or ART LTFU) and who are initiating a DTG-containing regimen:
- Do 1st VL at 3 months on ART.
- If VL < 50 c/ml, repeat VL at delivery.

If the VL is ≥50 c/ml in any of the above scenarios, go to **the VL Non-suppression Algorithm on** page 21.

✓ Early referral to community-based services improves adherence to ART, exclusive breastfeeding and retention in care

! Pregnant adolescents are at a higher risk for poor adherence and poor viral suppression and require more intense support.
Go to **"The Pregnant Adolescent"** on Page 22

! Remember to insert the laboratory barcode sticker and record all VL, TB, and syphilis results in the Maternity Case Record/ANC Card, and the ART Clinical Stationery (if available in that facility)

SCREENING for TB and other OI's

Screen for TB at every visit regardless of HIV status and consider TPT if eligible. Ensure any woman diagnosed with TB is adherent to TB treatment and that she is aware that her newborn may require TB prophylaxis (Go to **TB screening and TPT** on page 27). Initiate Cotrimoxazole Prophylaxis (CPT) if CD4 count ≤ 200 cells/µL, or WHO clinical stage 2, 3, or 4.

If CD4 ≤100 cells/uL the lab will automatically perform a Cryptococcal Antigen test (CrAg). CrAg-positive clients who are pregnant should be offered an LP (regardless of symptoms) and discussed with an expert before a decision is made regarding management.

PREVENTION of transmission of Syphilis, HBV and other infections

Syphilis: Test all women for syphilis and screen for other STI's, e.g. gonorrhoea, at their first ANC visit. (Go to **Syphilis** on Page 31)
- If the first test is performed before 20 weeks gestation and is negative, a second test should be done at 32 to 34 weeks.
- Treat all women with a positive syphilis screening test, irrespective of titer (MCG, PC101).

HBV: All woman living with HIV will automatically be treated for HBV when they start routine 1st line ART containing TDF and 3TC/FTC. If she should need to switch to 2nd line ART, HBsAg should be checked. If HBsAg is positive, TDF should be retained as a fourth drug in her new regimen. If a HIV negative pregnant woman is known to have HBV infection, she should be referred for further tests to determine eligibility for treatment. All babies should receive hepatitis B vaccinations in accordance with the EPI schedule.

Malaria: Although MTCT is rare, malaria in pregnancy poses serious risks for both the mother and the baby. Malaria presents as a febrile illness and is often unrecognised or misdiagnosed with severe consequences. The most important aspect of making a diagnosis of malaria is having a high index of suspicion. If a woman presents with fever in pregnancy, always ask about her travel history. Refer any woman with signs of severe illness or danger signs as outlined in PC101. Comprehensive information on Malaria in Pregnancy is available in the Guideline for Maternity Care in South Africa, and the National Guideline for the Treatment of Malaria SA.

Other Care

- Routine antenatal care according to the BANC Plus guideline. Encourage male partner involvement throughout antenatal care.
- Nutritional screening for mother. Refer any woman with a BMI of less than 23 to a dietician
- Counselling on infant feeding. See the **Infant and Young Child Feeding Policy**.
- Mental health screen for mother
- Assist the mother to register on Mom-Connect

! TB and other non-pregnancy related infections remain an important cause of maternal and neonatal mortality

LABOUR AND DELIVERY

PRIMARY OBJECTIVES

1. Safe delivery for mother and infant
2. Prevent MTCT during labour

TESTING for HIV

PICT should be provided to all women presenting in labour ward who are not known to be HIV-positive (including born-before-arrivals [BBAs]):

- Offer couples counselling and partner testing. For the management of the discordant couple, go to the **HIV Prevention** section on page 8.
- Women who choose not to be tested should be offered 'post-refusal' counselling and offered a re-test at every subsequent visit.
- If a woman tests positive at any stage, encourage testing of her other children, and linkage to HIV care and treatment as necessary.
- If a woman has indeterminate or discrepant HIV test results, treat the baby as a high-risk HIV-exposed infant until mother's HIV status can be confirmed. Communicate clearly to the mother and document the results and plan of action in the maternal record and RTHB.

Antiretrovirals

Pregnant women already on ART should continue their current ART regimen at usual dosing times during labour.

Newly diagnosed, or known HIV positive women not on ART:

- Give a stat single fixed dose combination tablet of TDF, 3TC and DTG (TLD) and a stat single dose of NVP.
- Lifelong ART should be initiated the following day after contra-indications to ART have been excluded (Go to **ART Initiation Algorithm** on Page 18). TLD is the preferred regimen, provided the mother has been provided with all necessary information on DTG and EFV-based regimens including the risk of NTDs. A contraceptive method is recommended. Provide her with a choice of contraceptive options as desired.
- Appropriate ART literacy education should be given to the women before she leaves the facility. (Go to **Key Adherence Messages** on Page 19).
- Mothers must understand and anticipate the adherence challenges that may be experienced in the postpartum period.

! An elevated viral load at delivery increases the risk for poor maternal outcomes and MTCT during labour and through breastfeeding.

VL MONITORING and Management

Check if the mother has had a VL result in the last 12 weeks and categorize the risk for the infant:

- VL < 1000c/ml = Low risk
- VL ≥ 1000 c/ml = High risk
- No VL result in the last 12 weeks = High risk

All women must have a VL test done at the time of delivery.
Although this VL result will mostly still be unknown when infant prophylaxis is initiated, remember to insert the laboratory barcode sticker into the postnatal discharge form and the RTHB.
The results of the delivery VL must be checked at the 3-6-day postnatal visit, and the management of the mother-infant pair adjusted accordingly.

Remember to put the correct PMTCT code in the EGK code field of the lab form for each VL done to ensure the electronic gatekeeping rules (EGK) do not lead to sample rejection.
Use the code **C#Delivery** for all VLs done at the time of delivery.

SCREENING for TB and other OI's

- Screen all women for TB at entry to the labour ward, and initiate TPT for women living with HIV before discharge, if eligible (Go to **TB Screening and TPT** on page 26).
- Initiate Cotrimoxazole Prophylaxis before discharge if CD4 count ≤ 200 cells/uL, or WHO clinical stage 2, 3, or 4.

Other Care for the Mother living with HIV at delivery

Provide routine labour and delivery management according to the Maternity Guidelines of SA, including safe delivery techniques for the HIV positive mother:

- Avoid episiotomy & assisted delivery unless essential. Avoid prolonged rupture of membranes. Avoid unnecessary suctioning of the infant.
- If C/section required: Provide prophylactic antibiotics for all HIV-positive women according to the Maternity Care Guidelines 2016.

Within 1 hour of delivery

- Encourage skin-to-skin contact with baby and initiate exclusive breastfeeding. Hospitals and labour wards can support mothers to breastfeed by following the WHO **10 Steps to Successful Breastfeeding** on Page 28. In addition, counsel mother on **Breastfeeding Plus** on page 29.

At discharge

- Ensure contraception has been administered after appropriate counselling (go to **Contraception and Safe Conception** Page 9).
- Provide the mother with two-months' supply of ART and six-weeks supply of infant prophylaxis.
- Communicate follow-up appointment dates for the six-day post-natal visit at a named facility. Provide necessary referral letters. Provide an ART transfer-out letter, if she will receive her ART at a different facility. However, it is recommended that the mother-baby pair continue to receive integrated care within the maternal and child health stream until the baby is two years old or no longer breastfeeding.

Care of the HIV-exposed Infant at Delivery

All HIV-exposed Infants should receive a birth HIV-PCR to identify HIV transmission that occurred in-utero.
All HIV-exposed Infants should receive a minimum of six weeks post exposure prophylaxis with NVP.

Identify the high-risk infants for whom additional prophylaxis must be provided:

- Mother with a VL of ≥ 1000 c/ml at delivery (or most recent VL taken during the last 12 weeks of antenatal care), or
- Mother with no VL result in the last 12 weeks.
- These infants should be provided with high-risk prophylaxis until the result of the delivery-VL can be checked at the 3-6-day postnatal visit. When the delivery-VL result is known, the infant can be re-classified as high/ low-risk and prophylaxis adjusted accordingly.

All high-risk infants who are breastfed should receive additional AZT for the first six weeks of life and should receive NVP for a minimum of 12 weeks. NVP should only be stopped when the breastfeeding mother has a VL of less than 1000 c/ml, or until four weeks after she has stopped breastfeeding. All high risk infants who are exclusively formula fed should receive AZT for 6 weeks and NVP for 6 weeks. (Go to **HEI Prophylaxis Infographic and the NVP and AZT dosing chart** on Page 23)

Provide oral polio vaccine, BCG and other routine neonatal care as per the Maternity Care and Neonatal Care Guidelines. Do not give BCG if baby is TB-exposed, and will be receiving TB prophylaxis (Go to **Management of the TB-Exposed Infant** on Page 27).

PREVENTION of transmission of Syphilis, HBV and other infections

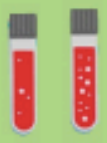
Syphilis: Examine and treat the newborn of the RPR positive mother (go to Syphilis on page 31):
Well (asymptomatic) baby: Treat baby with benzathine penicillin 50 000u/kg IM stat only if:

- Mother was not treated, or
- If the mother has received < 3 doses of benzathine benzylpenicillin, or
- If the mother delivers within 4 weeks of commencing treatment.

Symptomatic baby (hepatosplenomegaly, pseudoparesis, snuffles, oedema, jaundice, anaemia, purpura, desquamative rash -especially involving palms and soles): Refer all symptomatic babies for treatment of congenital syphilis: procaine penicillin 50 000 u/kg IM daily for 10 days, or benzyl penicillin (penicillin G) 50 000 u/kgldose 12-hourly IV for 10 days.

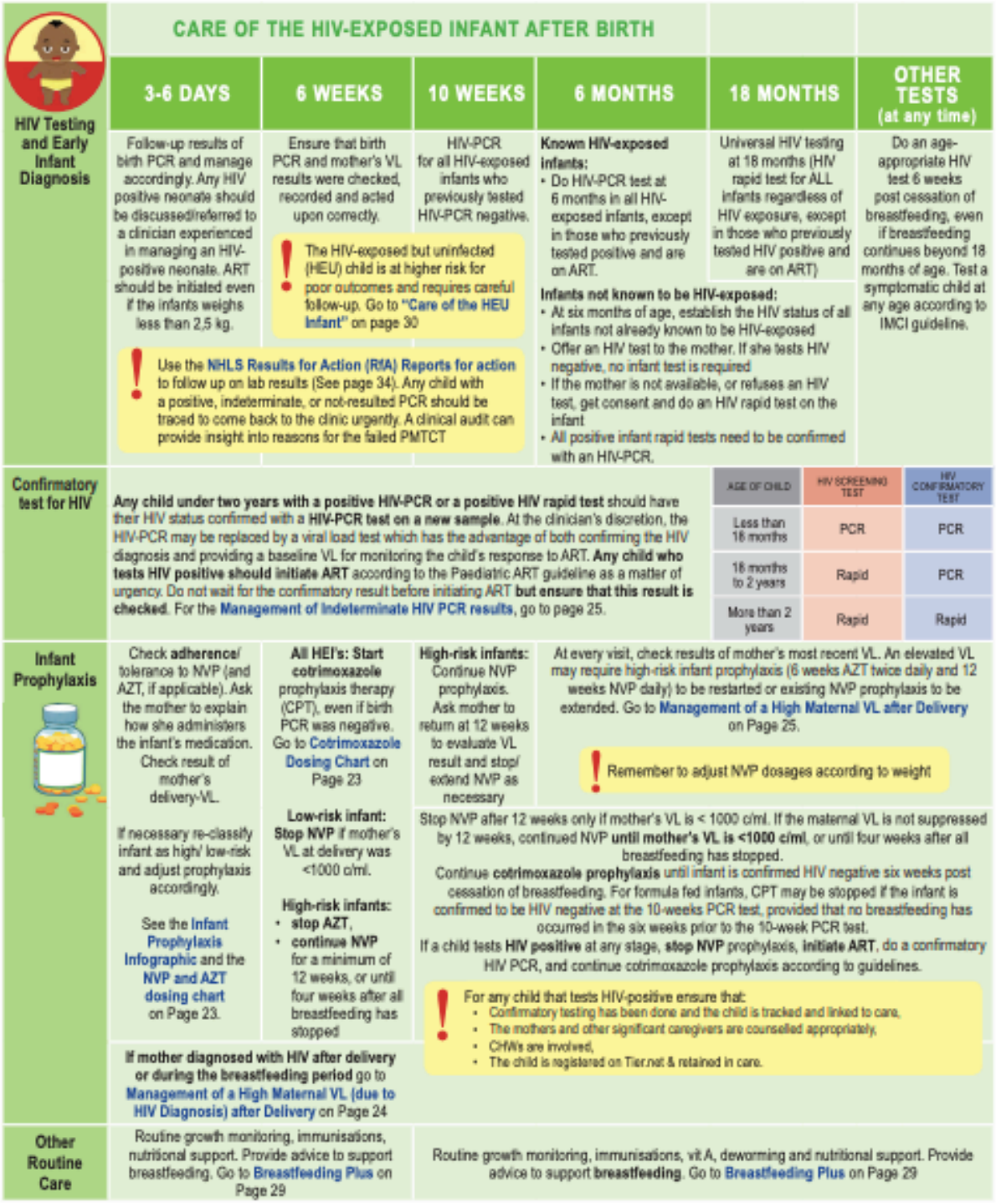
HBV: All babies should receive hepatitis B vaccinations in accordance with the EPI schedule.

CARE OF THE MOTHER AFTER BIRTH

	6 DAYS	6 WEEKS	10 WEEKS	6 MONTHS	18 MONTHS
TESTING for HIV 	Retest the HIV-negative mother if she was not retested in labour		Retest every HIV-negative mother at the **10-week visit** (~ three months postpartum), the **six-month visit**, and every **three months** whilst breastfeeding Remember to offer partner testing. If no longer breastfeeding, ensure that the mother receives an HIV test at least every year		
Antiretrovirals 	**Mother to continue ART** during the postpartum period and **for life.** If she is **newly diagnosed during the breastfeeding period**, initiate ART after contra-indications to ART have been excluded (Go to **ART Initiation Algorithm** on Page 18). Provide appropriate counselling on available ART options. TDF, 3TC, and DTG (TLD) is the preferred regimen, provided the mother has been given all necessary information on DTG and EFV-based regimens including the risk of NTDs. This is a high-risk period for poor **adherence**. Ensure that the mother understands the importance of continued viral suppression for her own health and that of her baby. She must also understand and anticipate the adherence challenges that may be experienced in the postpartum period. Link the mother to mom-connect, a CHW, a mentor mother, or a support group/club if available (See **Post-natal Clubs** on Page 34). Whether continued ART care is provided at MNCWH services (preferred) or at PHC/Wellness services, ensure that mother is **retained in care, adherent to ART, and maintains a suppressed viral load.**				
VL MONITORING and Management 	Check ART adherence Follow-up on result of **delivery-VL**. (If not yet available, follow-up again in 1 week. If VL not done at delivery, do VL at this visit) **If VL ≥ 50 c/ml:** manage mother as per **VL Non-suppression Algorithm** on Page 21. **If VL ≥ 1000 c/ml:** manage infant as a high-risk infant i.e. add AZT for six weeks, and extend NVP until mother's VL is <1000 c/ml.	Check ART adherence Repeat VL if delivery-VL was ≥ 1000 c/ml. Check mother's ART supply and confirm where she will be receiving her ongoing ART care **!** Viral Load suppression is critical for the health of the mother, her baby, her subsequent pregnancies, and her partner!	Check ART adherence Check, record and act on any earlier VL tests Check mother's ART supply and confirm where she will be receiving her ongoing ART care	Check ART adherence at every visit. Check, record and act on results of any earlier VL tests Do a VL for all HIV-positive mothers on ART at six months. Continue VL monitoring every six months (at 12,18, and 24 months) whilst breastfeeding. Ensure that the results of any VL test are checked within 1 week. If VL ≥ 50c/ml: • Recall the mother-infant pair to the facility • Manage mother as per **VL Non-suppression Algorithm** on Page 21 If VL ≥ 1000 c/ml: • Restart/extend infant prophylaxis if mother is still breastfeeding. Go to **Management of a High Maternal VL after Delivery** on Page 25.	
SCREENING for TB and other OI's	• Routine postpartum care as per the Maternity Care Guideline • TB screening, TPT, and CTMX according to guidelines • Mental Health: Screen for postpartum depression • Contraception and STI screening • Infant feeding counselling and support according to the Infant and Young Child Feeding Policy • Counselling on safe use of water, sanitation and hygiene (WASH) • A papsmear can be done from six weeks onwards		• TB screening, TPT, and CTMX according to guidelines • Mental Health: Screen for postpartum depression • Contraception and STI screening • Infant feeding counselling and support according to the Infant and Young Child Feeding Policy • Counselling on safe use of water, sanitation and hygiene (WASH) • Papsmear (if indicated)		

PRIMARY OBJECTIVES

1. Prevent MTCT through Breastfeeding
2. Retain Mother in Care
3. Achieve and Maintain Viral Suppression



Source: (NDoH, 2019)

8.4 Literature Review Summary Table

Author	Year	Country	Participants	Data Collection methods and dates	Key Findings on Barriers/Facilitators
1 Abelson, A.	2019	Cameroon	FSWs	Survey conducted in 2016	23.5% of respondents reported inconsistent condom use. Almost 50% had some level of depression. Of FSWs with no depression, 24.9% reported sexual violence vs 56.1% with severe depression. FSWs with severe depression showed almost twice the risk of inconsistent condom use compared to those without depression.
2 Aho, J.	2013	Guinea	FSWs	Survey conducted from June to December 2006	FSWs' desire to have children was strongly associated with inconsistent condom use with the regular non-client sex partners
3 Ampt, F.	2019	Kenya	FSWs	Questionnaire administered between September 2016 and May 2017	Implant use has increased among FSWs in Kenya. Unintended pregnancy risks remain high and IUD use is negligible. LARC use was independently associated with previous pregnancy, positive attitude to and better knowledge of family planning, younger age, and lower education. High rates of adverse effects were reported for all methods.
4 Beckham, S.	2015	Tanzania	FSW	IDIs and FGDs conducted between February and July 2012	FSWs are denied access to ANC services if they did not have a male partner present. Health care workers halt provision of ANC services and isolate FSW from other patients until they seek care from an HIV clinic due to the assumption that FSW are infected with HIV
5 Bhattacharjee, P.	2018	Kenya	FSWs and MSM	Quarterly programme monitoring data for the period October 2013 to September 2016	Lower KP:PE ratios, up to 90:1 for FSW and 60:1 for MSM, were significantly associated with more regular outreach contacts ($p<0.001$), as well as more frequent risk reduction counselling ($p<0.001$), STI screening ($p<0.001$) and HIV testing ($p<0.001$). Condom distribution and reporting of violence by KPs did not differ significantly between the two groups over all time periods

6	Black, K.	2012	n/a	Refers to provider resistance	Comprehensive search of multiple databases	Adverse events from older versions (pelvic infection, infertility, and death from sepsis) results in some health providers' reluctance to prescribe modern day versions
7	Bowring, A.	2020	Cameroon	FSWs	Behavioural questionnaire administered from December 2015 to October 2016	Receipt of HIV information in the previous 6 months and membership in an FSW-CBO were associated with lower levels of non-barrier contraceptive use. Higher levels of contraceptive use were associated with being HIV negative women, having had a previous TOP and ever used ECP.
8	Broel, E.	2017	Kenya	FSWs, truck drivers and general population	Kenyan Ministry of Health 2010-2011 National HIV Testing and Counselling (HTC) registry	Compared to participants who were never married, individuals who were married, or were separated, divorced or widowed had statistically significant decreased odds of consistent condom use with steady partners. FSWs had increased odds of consistent condom use with unsteady partners vs steady partners. Consistent condom use with steady partners was associated with knowing HIV status
9	Bukenya, J.	2019	Uganda	FSWs	Questionnaire administered from May and August 2017.	Lack of family planning use was associated with a non-emotional partner being the father of last pregnancy (linked to not having time to negotiate condom use), lack of social support, sexual violence (rape) in the last 2 years and substance abuse
10	Bukenya, J.	2013	Uganda	FSW	Structured face-to-face interviews conducted between April 2008 and May 2009	Condom use was associated with being married, sex work being the only source of income and having more paying clients in the past month. Lack of condom use was associated with early sexual debut, fewer paying clients in the past month, client unwillingness, having other sources of income and daily alcohol use.
11	Busza, J.	2019	Zimbabwe	FSW	Mixed methods study using data from routine programme statistics, qualitative interviews with participants and	PrEP use was inhibited by FSWs having to attend multiple screening appointments over 2-3 weeks before starting PrEP, fear of side effects and rumours that PrEP was introduced to kill FSWs.

				respondent driven surveys.	
12 Chabata, S.	2020	Zimbabwe	Young women who sell sex (YWSS) (18-24 years)	Questionnaire administered between April and July 2017	Lack of condom use was associated with physical violence, sexual violence, neither good nor bad relationships with other young women selling sex, being at risk of common mental health disorders (CMD) and not identifying as FSW. Condom use was associated with having good relationships with other young women selling sex.
13 Chanda, M.	2017	Zambia	FSW	Questionnaire administered between September and October 2016	History of incarceration or arrest was associated with decreased odds of using both condom and non-barrier methods for contraception. Condom availability at workplace associated with decreased odd of unplanned pregnancy. Only using condoms was associated with older age, having condoms available at workplace,
14 Chingono, R.	2022	Zimbabwe	AGYW FSWs	IDIs and FGDs between February and September 2019	Lack of emotional, financial and physical support makes motherhood especially difficult and can lead to feelings of inadequacy. Further, stigma and resultant isolation can impact self-esteem. Together, these difficult life circumstances can lead to feelings of depression and anxiety. Peer support resulted in an improvement in mental health wellbeing and acted as a support system. FSWs felt more confident to seek care for themselves and babies.

15 Cornell, M.	2018	n/a	Adolescent key populations	Literature review	Barriers to access to HIV prevention and treatment interventions in general criminalization of key populations, stigma, lack of resources for transport, poverty, low education, poor social support and mental health challenges. Barriers to utilisation of PrEP included fear of side effects, fear of discussing gender identity with study or health care staff, concerns about remembering to take daily medications and poor HIV risk perception. Strategies to increase engagement include incorporating adolescents into biological and behavioural surveys and the use of social media, use of digital innovations for HIV prevention and testing, and decriminalizing same-sex activity and commercial sex work.
16 Davey, C.	2018	n/a	FSW	Systematic Review	The mobility of FSWs has the potential to disrupt access to HIV-related healthcare. Research on mobility and sex work is sparse and offers limited guidance on ways that mobility can influence different elements of the HIV care and prevention cascades, and hence how its effects might be mitigated.
17 Dulli, L.	2019	Kenya	FSW	Interviews at baseline data: (June 20th to September 27th, 2013) and 6 months later (January 23, 2014, to May 12, 2014)	FSWs were less likely to use condoms due to difficulty negotiating condom us particularly with non-paying partners. They were more likely to use condoms with paying partners.
18 Elmes, J.	2014	Zimbabwe	FSW	Self-completed questionnaire from March 2010 and May 2011	Clients request for condom use significantly predicted protected sex. Being offered more money for unprotected sex decreased the likelihood of condom use.
19 Eluwa, G.	2012	Nigeria	FSW	2007 and 2010 IBBSS	Low condom use with boyfriends continued to be a potential bridge between FSWs and the general population.

20 Emmanuel, G.	2020	Nigeria	MSM and FSW	Mixed method: online survey, FGDs and consultative workshops conducted between June and July 2016	Barriers to PrEP utilisation were stigma, cost, frequency of HIV counselling and treatment services required, and possible drug-drug interactions. Concerns included possible condom migration, increased risk for sexually transmitted infections and pregnancy for FSW, and poor adherence to medication and hospital schedules. Facilitators for PrEP use included community education, referrals to DICs for counselling and testing, sensitivity training for DIC staff, peer education, one-stop shop clinics for FSW and favourable policies.
21 Ficht, A.	2018	Cameroon, Tanzania, and Ethiopia	FSW	Field notes	Stigma was a barrier to ANC attendance as well as HIV testing for both mother and infant.
22 Fielding-Miller, R.	2016	Swaziland	FSWs	IDIs and survey between November 2013 and October 2014	Increased gifts or support from a partner decreased condom use
23 Grosso, A.	2015	Burkina Faso	FSWs	Questionnaire administered between January and July 2013	Early sex work debut was associated with poor condom use (client removes condoms, difficulty negotiating condom use and experiences of violence). Early sex work debut also associated with poor HIV testing.
24 Grosso, A.	2015	The Gambia	FSWs	Questionnaire administered between July and August 2011	67.34% reported it was not at all difficult to negotiate **condom use** with clients and were more likely to report consistent condom use with all clients and partners in the past 6 months compared to those perceiving any difficulty in condom negotiation. FSW were more likely to report using condoms in the past month with new clients and in the past month with non-paying partners if they had been tested for HIV in the past year. Women who bought all their condoms were less likely than those who received all of their condoms for free to have used a condom at last vaginal or anal sex with a non-paying partner.

25 hIarlaithe, M.	2014	Global	Women in general	Literature review	Barriers fall into four categories: (1) socioeconomic status: resources (including financial) of the individual, e.g. transportation costs, education level and age (2) social norms and knowledge: interactions with other household members and members of society at large as well as knowledge of HIV and HIV treatment, e.g. difficulty of disclosing to partner, social support, knowledge of HIV and HIV treatment, stigma towards use of infant formula/infant feeding (3) psychology: psychological situation of the individual, e.g. fear of disclosing HIV status, mental health and level of trust in providers (4) physiology refers to effects of illness and treatment on body function, e.g. side effects.
26 Jinga, N	2019	South Africa	Health care providers	IDIs	FSW only attended the initial ANC visit to access a clinic card to avoid poor treatment from staff when delivering their child and not for ongoing ANC attendance to monitor the unborn child's growth and development
27 Kerrigan, D.	2020	Dominican Republic and Tanzania	FSWs	Survey and interviews from 2017 to 2018	Barriers to oral ART use include pill fatigue (burdensome and stressful), forgetfulness, irregular and unpredictable work schedules (not carrying enough pills because they underestimated how long they would be away from home and engaging a client when they are supposed to be going home to take your pills, stigma (client may check handbag and food insecurity – cannot take pills on an empty stomach.
28 Kounta, C.	2019	Mali	FSWs and non-FSWs	Survey and FGDs in December 2015	Barriers to condom use included boyfriend refusal (due to belief that trusting relationships are safer), lack of money for food and to take care of family, difficulty using a female condom. STI treatment utilisation was hampered by high cost. Condom use was more likely to occur amongst bar based FSWs (vs street based). Nigerian FSWs were more likely to use condoms than Malian and Guinean FSWs. Further, in Mali, condoms were seen as an insult.

29 Lancaster, K.	2016	Malawi	FSW	Survey conducted from July to September, 2014	FSWs who are hazardous drinkers or harmful drinkers are more likely to be unaware of their HIV infection when compared to abstinent or non-hazardous drinkers
30 Luchters, S.	2016	Kenya	FSWs	Mixed method (survey, IDIs and FGDs) between May 2006 to September 2007.	Barriers to utilisation of contraceptives included side effects, younger age, higher income, substance use, sex with an emotional partner and forgetfulness. Facilitators included desire to plan the size of one's family and provide for one's dependents, avoiding community ridicule for bearing (more) children as sex workers, older age having children, higher level of education and promoting contraception knowledge.
31 Mantsios, A.	2018	Tanzania	FSWs	IDIs and FGDs conducted between April 2015 and February 2016	Being financially secure, for example, through participating in community savings groups, allows FSWs to refuse high-risk sex with clients.
32 Misganaw, A.	2013	Ethiopia	Homeless women (some FSWs)	Mixed method (survey, IDIs and FGDs) in August 2010	Barriers to use of ECP included fear of side effects, not knowing know to get it (which clinic), reluctance, Lack of awareness, and stigma. A barrier to condom use was lack of money
33 Mudzviti, T.	2020	Zimbabwe	FSWs	Questionnaire conducted between December 2016 and February 2017	Anticipated barriers to PrEP use include low knowledge, cost and side effects. Anticipated facilitators include desire to prevent HIV Infection, PrEP knowledge, older age and higher risk perception.
34 Musyoki, H.	2018	Kenya	FSW, MSM, and PWID	Polling Booth Survey in 2014 and 2015	Poor condom use was associated with non-paying client, partner refusal, dependence on partners, experiences of violence, trust in relationships, being offered more money for sex, substance use and condoms not being available.
35 Ochonye, B.	2019	Nigeria	FSW, MSM, PWID	Semi-structured questionnaire administered between April and June, 2015	Condom use was associated with use of psychoactive substance and ability to negotiate condom use (self-efficacy)
36 Okafor, U.	2017	SSA	FSWs	Comprehensive search of multiple databases	Condom use is lower with regular and non-paying partners (vs paying partners)

37 Onyango, M.	2015	Ghana	FSWs	IDIs and FGDs conducted from August through October 2011	Barriers to access to HIV interventions include the invisibility of young girls and international child protection treaties. Barriers to condom use include ignorance, inexperience, poor negotiation skills [self-efficacy], age and intimidation/anger by clients, risk of violence/rape/homicide, the promise of more money from clients, substance use, going to a known client's or strangers house or staying overnight with no nearby support and police harassment . Condom breakage occurred due to rough sex and intentional damage by clients. Facilitators for condom use include distrust of boyfriends, hope for future marriage, desire for contraception and avoiding substance use.
38 Ortblad, K.	2017	Uganda	FSWs	Cluster-randomized controlled health systems trial	Provision of HIV self-tests significantly increased the likelihood that FSWs participated in HIV testing at 1 month and additionally resulted in almost universal HIV testing at 4 months. Within a 4-month period, FSWs in the HIV self-testing arms were also significantly more likely to test twice for HIV compared to those in the standard of care arm.
39 Ortblad K.	2020	Zambia	FSWs	Face-to-face interviews conducted between September to November 2016 (three rounds of data collection at baseline, 1 month, and 4 months)	Knowledge of an HIV positive status is associated with an increase in number of clients. Knowledge of an HIV negative status is associated with an increase in condom use.
40 Overs, C.	2013	n/a	SWs	n/a	Complex combinations of law, policy, and enforcement practices determine sex workers vulnerability to HIV and rights abuses. The author identified "lack of recognition as a person before the law" as an important but undocumented barrier to accessing services and conclude that multi-faceted, setting-specific reform is needed—rather than a singular focus on decriminalization—if the health and human rights of sex workers are to be realized.

41 Packel, L.	2021	Tanzania	FSWs	Survey conducted in 2013	Individuals were less likely to use condoms if their partner refused, they did not like the feeling, they did not have condoms and if they needed money. They were more likely to use condoms if they had received free counselling and condoms, and if they were working in a brothel (vs bars and street) at baseline.
42 Parmley, L.	2019	Swaziland	FSWs	IDIs conducted between June and August 2011	Lack of condom use was associated with having children and being offered more money for sex (to cater for food and transport for children). Children reminded their mothers to take their ART and assist them with attending clinic visits.
43 Parmley, L.	2019	South Africa	FSWs	Semi-structured IDIs from October 2014 to April 2015	Less likely to use family planning if they didn't think they could get pregnant, experienced side effects, were trying to get pregnant, had not time for methods, did not have periods, had a fear of needles, believed that contraceptives are not needed if one has irregular periods and that they cause cancer and infertility. Contraceptive use was associated with wanting to obtain a clinic card.
44 Pitche, P.	2013	Togo	FSWs	Questionnaire administered in December 2011	Motivations for condom use included desire to prevent HIV, STIs and unwanted pregnancy.
45 Pitpitan, E.	2014	South Africa	Male and Female SWs	Survey conducted between October 2009 to May 2012	Poor condom use was associated with alcohol use.
46 Rao, A.	2019	Cameroon	FSW	Survey conducted between December 2015 and October 2016.	Those attending ANC were more likely to be using long-acting reversible contraceptives than those not attending. FSWs were more likely to test their children if they had attended the ANC, completed a higher level of education, future pregnancy intentions, and were aware of their HIV status. They were more likely to test their children for HIV before 5 years of age if they had completed secondary or higher education, had future pregnancy intentions compared and were aware of their HIV status.

47 Rwema, J.	2019	South Africa	FSWs	Semi-structured IDIs from October 2014 to April 2015	Twenty-eight percent of FSW were asked by a provider to bring a partner during their ANC visit and 2 of them reported to have ever been denied ANC services because their male partners had not attended. FSWs least likely to use condoms with long-term partners followed by casual non-paying partners. Most likely to use condoms with paying partners.
48 Schwartz, S.	2014	Burkina Faso and Togo	FSWs and MSM	Questionnaire administered from January to July 2013	HIV-uninfected women trying to conceive were engaged in frequent unprotected sex with their non-paying partners
49 Schwartz, S.	2015	Côte d'Ivoire	FSWs	Questionnaire administered from March to July 2014	Lack and knowledge and limited access to health services were barriers to utilisation of contraceptives. Younger women had the highest use of reliable non-barrier contraceptive methods. Young FSW had much lower condom use as compared with older FSW
50 Schwartz, S.	2015	Swaziland, Burkina Faso and Togo	FSWs	Secondary analysis	FSW had significant and consistent unmet contraceptive needs across countries. Barriers to utilisation of contraceptives in general included having a non-paying partners vs clients and having 2 or more children. Barriers to use of highly effective non-barrier methods included being >=35 years, a migrant and reported consistent condom use. Facilitators of utilisation of highly effective non-barrier methods included having 1 or more children, and a history of being raped.
51 Sekoni, A.	2016	Nigeria	FSWs	Questionnaire administered	Lack of condom use was associated with non-paying customers and difficulty negotiating. There were high rates of condom breakage. Younger FSWs were less likely to test for HIV.
52 Shea, J.	2019	Malawi	FSWs	FGDs conducted between November and December of 2016	Barriers to PrEP acceptability include adherence challenges due to the unpredictable nature of FSWs lives and pill burden, stigma (including belief they are taking ARVs), side effects, substance use and forgetfulness. Motivations to use PrEP

					included love for one's life and anticipated negative economic effects associated with HIV acquisition.
53 Sutherland, E.	2011	Kenya	FSW	Survey interviews and semi- structured focus group discussions (FGDs)from June to December 2008	Low knowledge of non-barrier family planning methods has been noted as a barrier to utilisation. Forgetfulness leads to a preference for methods that do not require daily use
54 Trout, C.	2015	Mali	FSW	Integrated HIV/sexually transmitted infection (STI) Surveillance and Behavioural Surveys	Condom use with boyfriends was difficult due to inability to negotiate use.
55 Muula, A.	2015	Malawi	FSWs	IDIs conducted between 2013 and 2014	FSWs were less likely to use condoms if the client refused, if they were offered more money, if condoms were not accessible (esp. at night when shops are closed), if they underestimated their risk for HIV infection, and due to religious belief, fatalism and predestination.
56 UCSF, Anova Health Institute & WRHI	2015	South Africa	FSW	Questionnaire	Low knowledge of the use of ART to prevent vertical transmission (UCSF, 2015) is a barrier to utilisation.
57 Vandenhoudt, H.	2013	Kenya	FSWs	Questionnaire administered in 2008	Age > 29 years, having received 500/- or more from last client and ever tested for HIV were predictors of condom use. Being drunk during last sex act, usually having sex during menses, having received STI treatment in the past year, sex with Boyfriend (vs client) (46.1% vs 75%) and lower price per sex act were predictors of lack of condom use.
58 Were, D.	2020	Kenya	FSW, MSM and Adolescent girls and young	Programmatic surveillance using routine programme data from February 2017 to December 2019. FGDs conducted between	Barriers to PrEP Initiation included low risk perception, lumping of PrEP and HIV services together, stigma, provider reluctance and inefficient referral pathways. PrEP continuation is inhibited by side effects, low motivation, myths/misconceptions, stigma, negative peer influence, poor

			women (AGYW)	October 2017 and May 2019	access (waiting times, arduous referral pathways) and HIV stigma (provider stigma, stigma around PrEP packaging)
59 Workie, H.	2019	Ethiopia	FSWs	Face-to-face interviews conducted between April 15-June 25, 2016	Condom use was impacted by deliberate acts of their clients. This included lack of condom utilisation skill, payment beyond normal, being forced, alcohol intoxication and difficulty negotiating.
60 Yam, E.	2014	Swaziland	FSWs	Face-to-face interviews conducted between April 15-June 25, 2016	Older FSWs were less likely to use ECP. ECP use was associated with higher education levels (vs primary school or less), being single (vs ever married), higher income, more clients (11+ in past month), not using condoms and having experienced condom failure

8.5 Critical Appraisal of Selected Articles

(I) Critical Appraisal for Survey/Questionnaires (28 studies)

1. Was a questionnaire the most appropriate method?
2. Have claims for validity been made, and are they justified? (Is there evidence that the instrument measures what it sets out to measure?)
3. Have claims for reliability been made, and are they justified? (Is there evidence that the questionnaire provides stable responses over time and between researchers?
4. Are example questions provided?
5. Did the questions make sense, and could the participants in the sample understand them? Were any questions ambiguous or overly complicated?
6. Are details given about the piloting undertaken?
7. Was the questionnaire adequately piloted in terms of the method and means of administration, on people who were representative of the study population?
8. Was the sampling frame for the definitive study sufficiently large and representative?
9. Was the method of distribution and administration reported
10. Were the response rates reported, including details of participants who were unsuitable for the research or refused to take part?
11. Have any potential response biases been discussed?
12. What sort of analysis was carried out and was this appropriate? (e.g. correct statistical tests for quantitative answers, qualitative analysis for open ended questions)
13. Were all relevant data reported?
14. Are quantitative results definitive (significant), and are relevant non-significant results also reported?
15. Have the researchers drawn an appropriate link between the data and their conclusions?
16. Have the findings been placed within the wider body of knowledge in the field (e.g. via a comprehensive literature review), and are any recommendations justified? (NICE, 2014)

	Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total	%
1	Abelson (2019)	Y	U	Y	Y	Y	N	U	U	Y	N	Y	Y	Y	Y	Y	Y	13	81.25
2	Aho (2013)	Y	Y	Y	Y	Y	N	U	Y	Y	N	Y	Y	Y	Y	Y	Y	13	81.25
3	Ampt (2019)	Y	Y	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	14	87.5
4	Bowring (2020)	Y	Y	N	N	U	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	68.75
5	Bukenya (2019)	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	14	87.5
6	Bukenya (2013)	Y	Y	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	14	87.5
7	Chabata (2020)	Y	N	U	N	U	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	68.75
8	Chanda (2017)	Y	Y	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	14	87.5
9	Dulli (2019)	Y	N	N	N	U	N	U	Y	N	Y	N	Y	Y	Y	Y	Y	8	50
10	Elmes (2014)	Y	N	N	N	U	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	68.75
11	Eluwa (2012)	Y	Y	Y	N	U	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	75
12	Grosso (2015)	Y	Y	N	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	13	81.25
13	Grosso (2015)	Y	Y	U	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	13	81.25
14	Lancaster (2016)	Y	Y	Y	Y	Y	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	13	81.25
15	Mudzviti (2020)	Y	Y	U	N	U	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	10	62.5
16	Musyoki (2018)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	15	93.75
17	Ochonye (2019)	Y	Y	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	15	93.75
18	Packel (2021)	Y	Y	U	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	14	87.5
19	Pitche (2013)	Y	Y	U	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	14	87.5
20	Pitpitan(2014)	Y	Y	Y	Y	Y	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	13	81.25

21	Rao (2019)	Y	N	Y	Y	Y	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	12	75
22	Schwartz (2014)	Y	N	U	N	U	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	9	56.25
23	Schwartz (2015)	Y	Y	U	N	U	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	10	62.5
24	Sekoni (2016)	Y	Y	U	N	U	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	10	62.5
25	UCSF (2015)	Y	U	U	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	75
26	Vandenhoudt (2013)	Y	N	N	N	U	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	8	50
27	Trout (2015)	Y	Y	U	N	U	U	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	68.75
28	Schwartz (2015)	Y	Y	N	N	U	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	68.75

(II) Critical Appraisal for Mixed Method studies (7 studies)

1 Was a questionnaire the most appropriate method?
2 Have claims for validity been made, and are they justified? (Is there evidence that the instrument measures what it sets out to measure?)
3 Have claims for reliability been made, and are they justified? (Is there evidence that the questionnaire provides stable responses over time and between researchers?
4 Are example questions provided?
5 Did the questions make sense, and could the participants in the sample understand them? Were any questions ambiguous or overly complicated?
6 Are details given about the piloting undertaken?
7 Was the questionnaire adequately piloted in terms of the method and means of administration, on people who were representative of the study population?
8 Was the sampling frame for the definitive study sufficiently large and representative?
9 Was the method of distribution and administration reported
10 Were the response rates reported, including details of participants who were unsuitable for the research or refused to take part?
11 Have any potential response biases been discussed?
12 What sort of analysis was carried out and was this appropriate? (e.g. correct statistical tests for quantitative answers, qualitative analysis for open ended questions)
13 Were all relevant data reported?
14 Are quantitative results definitive (significant), and are relevant non-significant results also reported?
15 Have qualitative results been adequately interpreted (e.g. using an explicit theoretical framework), and have any quotes been properly justified and contextualised?
16 Have the researchers drawn an appropriate link between the data and their conclusions?
17 Have the findings been placed within the wider body of knowledge in the field (e.g. via a comprehensive literature review), and are any recommendations justified?

(NICE, 2014)

	Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total	%
1	Emmauel (2020)	Y	N	Y	Y	Y	N	U	Y	Y	Y	N	Y	Y	N	Y	Y	Y	13	76.47
2	Kerrigan 2020	Y	Y	Y	Y	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	15	88.24
3	Busza (2019)	Y	U	U	N	U	N	U	U	N	N	N	N	N	N	Y	Y	Y	4	23.53
4	Luchters (2016)	Y	U	Y	N	U	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	11	64.71
5	Misganaw (2013)	Y	U	Y	N	U	N	U	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	11	64.71
6	Sutherland (2011)	Y	N	Y	N	U	N	U	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	11	64.71
7	Kounta (2019)	Y	U	N	Y	U	N	U	Y		Y	Y	Y	Y	Y	Y	Y	Y	12	70.59

(III) Critical Appraisal for Cohort Studies (1 study)

1. Did the study address a clearly focused issue?
2. Was the cohort recruited in an acceptable way?
3. Was the exposure accurately measured to minimise bias?
4. Was the outcome accurately measured to minimise bias?
5. (a) Have the authors identified all important confounding factors?
   (b) Have they taken account of the confounding factors in the design and/or analysis?
6. (a) Was the follow up of subjects complete enough?
   (b) Was the follow up of subjects long enough?
7. What are the results of this study?
8. How precise are the results?
9. Do you believe the results?
10. Can the results be applied to the local population?
11. Do the results of this study fit with other available evidence?
12. What are the implications of this study for practice? (Critical Appraisal Skills Programme, 2018a)

	Question	1	2	3	4	5a	5b	6a	6b	7	8	9	10	11	12	Total	%
1	Broel (2017)	Y	Y	U	U	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	12	85.7
2	Bhattacharjee (2018)	Y	Y	U	U	N	N	Y	Y	Y	U	Y	Y	U	U	7	50

(IV) Critical Appraisal for Qualitative Studies (15 studies)

1. Was there a clear statement of the aims of the research?
2. Is a qualitative methodology appropriate?
3. Was the research design appropriate to address the aims of the research?
4. Was the recruitment strategy appropriate to the aim of the research?
5. Was the data collected in a way that addressed the research issue?
6. Has the relationship between the researcher and the participants been adequately considered?
7. Have ethical issues been taken into consideration?
8. Was the data analysis sufficiently rigorous?
9. Is there a clear statement of findings?
10. How valuable is the research? (Critical Appraisal Skills Programme, 2018b)

	Question	1	2	3	4	5	6	7	8	9	10	Total	%
1	Beckham (2015)	Y	Y	N	Y	N	N	Y	Y	Y	Y	7	70
2	Chingono (2012)	Y	Y	N	Y	N	N	Y	Y	Y	Y	7	70
3	Fielding-Miller (2014	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	9	90
4	Jinga (2019)	Y	Y	N	Y	Y	N	Y	Y	Y	Y	8	80
5	Mantsios (2018)	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	9	90
6	Onyango (2015)	Y	Y	N	Y	N	N	Y	Y	Y	Y	7	70
7	Ortblad (2020)	Y	Y	N	U	N	Y	Y	Y	Y	Y	7	70
8	Parmley (2019)	Y	Y	N	Y	Y	N	Y	Y	Y	Y	8	80
9	Rwema (2019)	Y	Y	N	Y	N	Y	Y	Y	Y	Y	8	80
10	Shea (2019)	Y	Y	N	Y	Y	N	Y	Y	Y	Y	8	80
11	Muula (2015)	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	9	90
12	Workie (2019)	Y	Y	N	Y	N	N	Y	Y	Y	Y	7	70
13	Yam (2014)	Y	Y	N	Y	N	Y	Y	Y	Y	Y	8	80
14	Were (2020)	Y	Y	N	Y	Y	N	U	Y	Y	Y	7	70
15	Parmley (2020)	Y	Y	N	Y	Y	U	Y	Y	Y	Y	8	80

(V) Critical Appraisal for Randomised Control Trials (1 study)

1. Did the study address a clearly focused research question?
2. Was the assignment of participants to interventions randomised?
3. Were all participants who entered the study accounted for at its conclusion?
4. Were the study groups similar at the start of the randomised controlled trial?
5. Apart from the experimental intervention, did each study group receive the same level of care (that is, were they treated equally)?
6. Were the effects of intervention reported comprehensively?
7. Was the precision of the estimate of the intervention or treatment effect reported?
8. Do the benefits of the experimental intervention outweigh the harms and costs?
9. Can the results be applied to your local population/in your context?
10. Would the experimental intervention provide greater value to the people in your care than any of the existing interventions? (Critical Appraisal Skills Programme, 2018c)

	Question	1	2	3	4	5	6	7	8	9	10	Total	%
1	Ortblad (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	9	90

(VI) Critical Appraisal for Systematic Reviews

1. Did the review address a clearly focused question?
2. Did the authors look for the right type of papers?
3. Do you think all the important, relevant studies were included?
4. Did the review's authors do enough to assess quality of the included studies?
5. If the results of the review have been combined, was it reasonable to do so?
6. What are the overall results of the review?
7. How precise are the results?
8. Can the results be applied to the local population?
9. Were all important outcomes considered?
10. Are the benefits worth the harms and costs? (Critical Appraisal Skills Programme, 2018d)

	Question	1	2	3	4	5	6	7	8	9	10	Total	%
1	Cornell (2018)	Y	Y	U	U	Y	Y	Y	Y	Y	Y	8	80
2	Davey (2018)	Y	Y	Y	Y	Y	Y	N	Y	N	Y	8	80
3	Black (2012)	Y	Y	U	U	Y	Y	Y	Y	N	Y	7	70
4	hIarlaithe (2014)	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	9	90
5	Okafor (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10	100

8.6 Policies around Migrant Access to Health Care

Kenyan policies	
2006 Refugee Act	Silent on the right to healthcare of aliens.
Constitution of Kenya, 2010	Article 43 (1)(a): "Every person has the right to the highest attainable standard of health which includes the right to health care services, including reproductive health care" Article 43(2): "a person shall not be denied emergency medical treatment" Article 21(2): The State shall take legislative, policy and other measures, including the setting of standards, to achieve the progressive realisation of the rights guaranteed under Article 43. Article 21(3): "All State organs and all public officers have the duty to address the needs of vulnerable groups within society" (GoK, 2010)
2010 Immigration Act	Silent on the right to healthcare of aliens
The Kenya Health Policy 2014-2030	Aims to attain a right to health that highlights the importance of human dignity, having particular concern for the needs and rights of vulnerable groups, and emphasising that the health system is "made accessible to all"(GoK, 2014)
The 2017 Health Act	Section 4(1)(a): the state should develop laws and policies to "protect, promote, improve and maintain the health and well-being of every person" Section 5(1): "every person has the right to the highest attainable standard of health which shall include progressive access for provision of promotive, preventive, curative, palliative and rehabilitative services" Section 7(1): "every person has the right to emergency medical treatment" (GoK, 2017)
2019 Refugee Bill	Silent on the right to healthcare of aliens
South African policies	
1997 White Paper for the Transformation of the Health System in South Africa	Given their contribution to the economic development of South Africa through labour, the right to health care is extended to migrants, particularly those from Southern Africa (NDOH, 1997)
1998 Constitution of the Republic of South Africa	Article 27: contains an equality-threshold that forbids group-based distinctions in the provision of health services, and forbids arbitrary or unfair exclusion from health-related programs and provision of healthcare services (Republic of South Africa, 1996b)
Refugee Act of 1998	Stipulates that refugees are entitled to the same access to treatment and "basic healthcare services" as citizens in public healthcare facilities (Republic of South Africa, 1998)
1999 Patients' Rights Charter of the South African National Department of Health	Para 2(3)(a): "everyone has the right to access healthcare services that include receiving timely emergency care at any healthcare facility that is open, regardless of one's ability to pay" (NDOH, 1999)

2002 Immigration Act, 2002	States that, except in the case of an emergency, clinics and hospitals must confirm a patient's legal status before providing care, and that they should report illegal foreigners or anyone whose status is not clear to the Director General of Home Affairs (Republic of South Africa, 2002)
National Health Act, 2003	Section 4 (3): State funded clinics and community health centres must provide (a) "pregnant and lactating women and children below the age of six years who are not members or beneficiaries of medical aids schemes, with free health services" (b) "all persons, except member of medical schemes and their dependants and persons receiving compensations for compensable occupational diseases, with free primary health care services" (Republic of South Africa, 2003)
East African Community (EAC) policies	
Treaty for the Establishment of the East African Community (EAC)	Article 118 covers the subject of health however, does not mention if the access to a decent healthcare could be also provided to aliens (East African Community, 1999)
Southern Africa Development Community (SADC) policies	
1999 Protocol on Health in the Southern Africa Development Community	Article 2(b)("Principles") Provides for the State Parties to promote, coordinate and support individual and collective efforts "to attain an acceptable standard of health for all their people" (Southern Africa Development Community, 1999) **Foreigners are apparently excluded from this formulation.**
2001 Regional Indicative Strategic Development Plan	Para 3.5.3.1: "In the area of health, the main goal of integration is to attain an acceptable standard of health for all SADC citizens and to reach specific targets within the objective of "Health for All" in the twenty first century by 2020 in all Member States" (Southern Africa Development Community, 2001)
International policies	
1951 Convention Relating to the Status of Refugees (Refugee Convention)	Article 23 ("Public Relief") "The Contracting States shall accord to refugees lawfully staying in their territory the same treatment with respect to public relief and assistance as is accorded to their nationals" (UN General Assembly, 1951)
1966 International Covenant on Economic, Social and Cultural Rights (ICESCR)	Article 12: (1) "The States Parties to the present Covenant recognise the right of everyone to the enjoyment of the highest attainable standard of physical and mental health" (2)(d)Parties should create "…conditions which would assure to all medical service and medical attention in the event of sickness" (UN General Assembly, 1966)
1981 African Charter on Human and Peoples' Rights	Article 16 (entitled "Right to Health") (1)"Every individual shall have the right to enjoy the best attainable state of physical and mental health" (2)" State parties to the present Charter shall take the necessary measures to protect the health of their people and to ensure that

	they receive medical attention when they are sick" (Organisation of African Unity, 1981)
2000 CESCR General Comment No. 14: The Right to the Highest Attainable Standard of Health (Article 12)	(34) states should refrain from "…denying or limiting equal access for all persons, including prisoners or detainees, minorities, asylum-seekers and illegal immigrants" (UN Committee on Economic, 2000)
2011 Guidelines and Principles on Economic, Social and Cultural Rights in the African Charter on Human and Peoples' Rights	Para 1(e) migrant-workers (both documented and un-documented), asylum-seekers and refugees are included under "disadvantaged groups" Para 67(x): National Plans on health and access to healthcare should "prioritise members of vulnerable and disadvantaged groups in access to healthcare" Para 67(y) ensures access to affordable health facilities "to all without discrimination of any kind" (African Commission on Human and People's Rights Collection, 2011)

8.7 Uniform Patient Fee Schedule (UPFS) Categories (Means Test Fees)

Fully Subsidised (H0 tariff category)

Category	Description
Social Pensioners	Recipients of the following types of pensions/ grants are classified as social pensioners: ▪ Grant for Older Persons ▪ Child support grant ▪ War Veteran's Pension ▪ Care dependency grant ▪ Social Relief of Distress grant ▪ Disability grant ▪ Foster Childcare grant
Formally Employed	Persons supported by the Unemployment Insurance Fund. Proof of unemployment from Department of Labour must be produced.

Partially Subsidised

Category	Individual/ Single Gross Income per annum	Household/Family Unit Gross Income per annum
H1	Less than R70,000	Less than R100,000
H2	Equal to or more than R70,000 but less than R250,000	Equal to or more than R100,000 but less than R350,000
H3	Equal to or more than R250,000	Equal to or more than R350,000

Full Paying Patients

Category	Description
Externally funded	A patient whose health services are funded or partly funded by a third party in terms of – ▪ The Medical Schemes Act, 1998 (Act 131 of 1998) ▪ The Road Accident Fund Act, 1996 (Act 56 of 1996) ▪ Compensation for Occupational Injuries and Diseases Act, 1993 (Act 130 of 1993) ▪ Another state department, local authority, foreign government, or any other funder, and ▪ Project research trail.
Self-funded	A patient whose is liable for the full UPFS tariffs: ▪ A patient who chooses to be treated by a private practitioner in a state facility ▪ Revenue Generation Projects

	▪ Foreign nationals not assessed according to the prescribed means test.
Non-subsidised services	The following services are non-subsidised services and are excluded from subsidisation and should be paid in terms of the prescribe full paying tariffs: ▪ Issuing of medical reports and copies of x-rays, as well as the completion of certificates/form ▪ Accommodation for persons who accompany patients (patient companions) ▪ Cosmetic surgery ▪ Contest fatherhood test (HLA and DNA typing) ▪ Immunisation for foreign travel purposes ▪ Work evaluations ▪ Autopsies ▪ Mortuary fees

Source: (Western Cape Government, 2018)

8.8 Peer Support Appraisal - Summary of Studies

Peer Support for PMTCT (all women)	Sample size	Data Collection Methods	Location	Intervention	Duration	Outcome
1. Onono (2021)	1275 pregnant women living with HIV	Secondary data analysis (24 public ANC clinics)	Kenya	Community mentor mother (CMM) visits and automated text messages	Dec 2015 - May 2019	Encouraged uptake of MCH behaviours and services, (ANC attendance, birth planning, and skilled delivery). CMM only and automated text messages: lower risks of experiencing any APOs. Combination of CMM and text messages: associated with increased risk of APOs possibly due to "information overload". Recommend interventions be delivered in an incremental, sequential and adaptive manner vs "overload" or a one size fits all approach.
2. Abuogi (2022)	1338 post-partum women living with HIV	Cluster randomised trial	Kenya	Standard care (control), Text-messaging, Community-based mentor mothers (cMM), Text-messaging and cMM	Dec 2015 – Aug 2017	Retention in care and ART Adherence at 12 months post-partum not significantly higher in intervention arms vs control. Significant and increasing impact of SMS alone, followed by CMM visits alone and CMM and text messaging combined if women received 80% of the expected intervention (however, only 54% of women in the CMM arms and 46% in the text arms received 80% or more of the expected intervention).
3. Carlucci (2022)	Post-partum women with HIV at 85 facilities in 9 districts in Zambezia province	Retrospective analysis of routine clinic data. Outcomes were assessed at the facility level	Mozambique	Mentor mother program (support to pregnant and postpartum women and their babies)	August 2016 - April 2019	MM associated with improved retention in PMTCT, higher VL suppression. Odds of an HIV positive test amongst HEI increased after MM programme possibly due to an increase in HIV testing amongst infants.
4. Lyatuu (2022)]	1957 pregnant women in peer-mother facilities and 1384 in control facilities	Cluster randomized implementation study in routine healthcare settings providing PMTCT care	Tanzania	Peer-mentor programme	January 2018 to July 2021	PMTCT enrolment increased over time in both arms but higher in intervention at 0-6 months (90.7%vs 88%%) and 25months (93.8% vs 92.9%). Improved ART retention among all women. ART retention in 1st year higher in intervention (78% vs 73.6%). More women tested for viral suppression in intervention (79.9% vs 77.5%). Viral suppression similar in

						both groups (92.0% intervention vs 91.1%) but not statistically significant. ART naïve women had higher viral suppression n intervention (90.8% vs 88.1%). Fewer transfers to other facilities, and lower ART attrition, LTFU, attrition in ART naïve, and attrition in ART experienced. Retention in PMTCT and ART care not significant in adjusted analysis. COVID-19 negatively impacted PMTCT enrolment and viral suppression from months 13-18. Low and similar. No significant influence on MTCT rate (1.5% intervention vs 2.2%). Most infants diagnosed by 2 months.
5. Igumbor (2019)	2304 HIV positive mother-baby pairs (1161 intervention group,1143 control group)	Secondary data analysis	Uganda	Mothers2mothers (m2m) Mentor Mother (MM) programme	January 2011 - March 2014	M2m group performed better with respect to retention, and % remaining active on ART 12 months after initiation. Retention was better in the m2m group but there was a decreasing trend in both arms though significantly better in the intervention arm from 6 weeks after birth until 18 months after birth. No difference in the proportion of the retained mother-baby pairs who received prescribed PMTCT interventions (e.g. HEI PCR test) at different time points.
6. Schmitz (2019)	Mother-child pairs	Scoping review (33)	N/A	Lay Health Workers (LHWs) including "peer mentor" and "mentor mother"	Articles published between Jan 2008 - July 2018	LHW programme led to improvement in community awareness of MTCT of HIV, proper and consistent condom use, clinic attendance and timely HIV testing of HEIs, and retention in care for infected persons.
7. Phiri (2017)	1269 pregnant or breastfeeding women	Randomized control trial	Malawi	Facility based peers and community-based peers. Community based intervention included reminders and had a higher peer to participant ratio.	Enrolment from November 2013 to January 2014. Women followed for 2 years or until study end.	ART uptake: 90% community-based, 86% facility-based, 81% SOC; Retention below target at M24: 83% community-based, 80% facility-based, 66% SOC; VL testing uptake at M24: 94% facility-based, 91% community-based, 81% SOC; Viral suppression at M24: similar across the 3 arms. Infant testing and positivity rate at M24: similar across the 3 groups. Community based somewhat more successful than facility based.

8. Sam-Agudu (2017)	497 HIV-positive pregnant women (260 MM support, 237 PS)	Prospective paired cohort study	Nigeria	Structured mentor mother (MM) vs unstructured peer support (PS)	Recruitment between April 2014 - Sep 2015. Follow-up until M6 postpartum.	Overall greater retention in MM vs PS (24.9% vs 61.9%). Of those with VL results available, 78.6% were from the MM arm and 21.4% from the PS arm. Overall, 58% were virally suppressed. MM support associated with higher odds of viral suppression than PS.
9. Shroufi (2013)	14 mentors, 10 mentor family members, 30 PMTCT/M2M beneficiaries, 10 PMTCT/M2M beneficiary family members, 5 PMTCT beneficiaries not in M2M, 10 staff	IDIs	Zimbabwe	Mother2mothers peer programme	MSF supported the M2M programme from 2009 to 2012. No date provided for interviews.	Compared to those not opting in, there was improved retention at 6-8 weeks (99% vs 50%) and higher adherence to PMTCT guidelines. M2M increased knowledge and sense of empowerment (e.g. around family planning negotiation), helped facilitate disclosure, although in one case this had negative consequences; increased male involvement in PMTCT; contributed to reduced stigma. Mentors were generally preferred over clinic staff except in one case due to concerns about formal training and qualification.
10. Futterman (2010)	160 Mothers living with HIV (77 control, 83 intervention)	Case/control study	South Africa	Mamekhaya program (combination of the mothers2mothers peer-mentoring program and a culturally adapted cognitive-behavioural intervention in addition to standard PMTCT care).	Recruitment between 2006–2007. Followed until 6 months after delivery.	PMTCT service uptake high in both study groups (ARV use, testing the baby, and exclusive infant feeding, disclosure to the partner and practicing safer sex). No significant effect on partner testing. Mothers in intervention less likely to test baby for HIV, but more likely to take baby for follow-up clinic visits. Intervention arm showed improvement in establishing social support, lower depression scores, greater positive coping, increase HIV knowledge scores especially regarding meaning and importance of viral load and CD4 test results.
Peer Support for FSWs (all services)	**Sample size**	**Data Collection Methods**	**Location**	**Intervention**	**Duration**	**Outcome**
1. Chingono (2022)	93 FSWs (adolescent girls and young women)	18 IDIs and 3 FGDs	Zimbabwe	Self-help group	Feb - Sep 2019	Peer support resulted in an improvement in mental health wellbeing and acted as a support system. FSWs felt more confident to seek care for themselves and babies.

2. Muhindo (2021)	FSWs	Case/control study	Uganda	Weekly peer education sessions and bi-monthly SMS reminders to patients at Mbarara city (case) vs Mbale city (control)	September 2019 and February 2020	At baseline, HIV testing was 54% in control group vs 57% in the intervention group. HIV testing increased to 82% upon introduction of the intervention. At baseline, syphilis testing was 39% in control vs 35% in the intervention group. Syphilis testing increased to 81% upon introduction of the intervention. Peer education and text messaging increased HIV and syphilis testing. Peer education had slightly higher effect on syphilis testing than SMS'. Lack of emotional support may limit impact.
3. Kerrigan (2019).	171 HIV-positive and 216 HIV-negative FSWs	Survey and blood draws	Tanzania	(1) Community-led DICE, mobilization (2) Monthly Venue (community) based peer edu, condom distribution, HCT (3) Peer service navigation and social support for treatment and adherence (4) Quarterly sensitivity training for providers and police (5) SMS: general and reminders	Recruitment from Oct-2015 to Apr 2016. 2 study visits: at baseline and 18 months	The intervention group saw a reduction in HIV incidence, inconsistent condom use. Also saw improved HIV care continuum outcomes. Increased exposure to the interventions led to better HIV-outcomes. Positive but nonsignificant changes to viral suppression raising questions about socio-structural barriers, ART adherence and drug resistance.
4. Dulli (2019)	360 FSWs in Naivasha (intervention site) and 359 FSWs in Nakuru (control site)	Interviews at baseline and Month 6 between June 2013 and 2014	Kenya	(1) Enhanced peer education on dual contraceptives (2) Routine screening for FP	Baseline data collected between Jun - Sep 2013. End line data collected	Intervention had a significant positive effect on use of non-condom, modern methods but no observed significant effect on dual method use. This was strongly predicted at end line by change in partner type (from both paying and non-paying to paying only). Statistically

				needs and counselling on dual contraceptives (3) Expanded non-barrier FP availability (DMPA, IUD, implants), free of charge	between Jan - May 2014	significant drop in consistent condom use with both partner types in the intervention group compared to comparison group. Consistent condom use reported in both groups, but women also reported difficulty negotiating condom use with both paying and non-paying partners. Non-barrier methods can help curb unintended pregnancy, but risk of STI/HIV remain highlighting the need for methods such as PrEP.
5. Bhattacharjee (2018)	FSWs and MSM	Quarterly programmatic monitoring data were analysed from October 2013 to September 2016	Kenya	KP:PE ratio	Programmatic data from Oct 2013 to Sep 2016	Lower KP:PE ratios, up to 90:1 for FSW were significantly associated with more regular outreach contacts, more frequent risk reduction counselling, STI screening and HIV testing. Condom distribution and reporting of violence by KPs did not differ significantly between the two groups over all time periods.
6. Chanda (2017)	965 FSWs	Cluster randomized control trial	Zambia	(1) Direct distribution of an oral HIVST from the peer educator (2) Coupon for collection of an oral HIVST from a health clinic/pharmacy (3) SOC	Screening between Sep – Oct 2016. Completed questionnaires month 1 and 4 following peer educator interventions	At M1 and M4 overall testing in the previous month was high and there were few statistically significant differences across study arms. For HIV+, linkage to ART care and ART initiation was lower in intervention group (vs SOC) but not statistically significant. HIVST was acceptable and accessible. However, HIVST may not substantially increase HIV cascade progression in contexts where overall testing and linkage are already high.
7. Ortblad (2017)	960 FSWs	Cluster randomized control trial	Uganda	- Direct distribution of an oral HIVST from the peer educator - Coupon for collection of an oral HIVST from a health clinic/pharmacy	Participants randomized between Oct 2016- Nov 2016. Baseline prior to randomization. 2 assessments at M1 and M4 following peer	Recent HIV testing at M1 and M4 and repeat HIV testing at M4 was significantly greater in the direct provision arm compared to the facility collection arm and the SOC arm. Almost all FSWs switched to self-testing. Seeking HIV care as lower in intervention groups than SOC but this was statistically insignificant. No statistically significant differences in ART initiation across study arms

					educator interventions	but degree of certainty for this finding was high (wide CI).
8. Awungafac (2017)	FSWs	Systematic review (25 studies - cohort interventions, randomised controlled trials and cross-sectional)	SSA	Various interventions including peer education	Literature published between 1 January 2000 and 22 July 2016	14 of the studies reported increased consistent condom use mostly due to the role of peer educators who promoted and distributed condoms. In DRC, a 'champion community' (CCs) group model resulted in 2x increase in coverage in BCC within a year and an increase in clinic utilisation. In Benin, the programme strengthened SWs to act collectively and reduced HIV, chlamydia and gonorrhoea prevalence.
9. Luchters (2008)	FSWs (503 in 2000 and 506 in 2005)	Cross-sectional survey (February-March 2000 and October-November 2005)	Kenya	One-on-one or weekly-group sessions	Feb-Mar 2000 and Oct-Nov 2005	Individuals exposed to peer education had more consistent condom use with clients (86.2% versus 64.0%); 2.3x more likely to suggest condom use; 1.7x more likely to refuse clients unwilling to use condoms. Those exposed to PE had greater HIV And STI knowledge. No significant differences in rates of STI infection. Effect on HIV prevalence was greater amongst FSWs who had greater peer-intervention exposure: 25% in FSW attending 4 peer-education sessions vs. 34% in those attending 1-3 sessions. Overall HIV prevalence was 30.6 (151/493) in 2000 and 33.3% (166/498) in 2005 (P=0.36).

8.9 Data Collection Tools

8.9.1 Quantitative Component

8.9.1.1 Contact Form

Name of County: _____ Sub-county: _____

Ward: _____ Implementing partner: _____

Date of first contact: (dd/mm/yyyy): _____/_____/_____

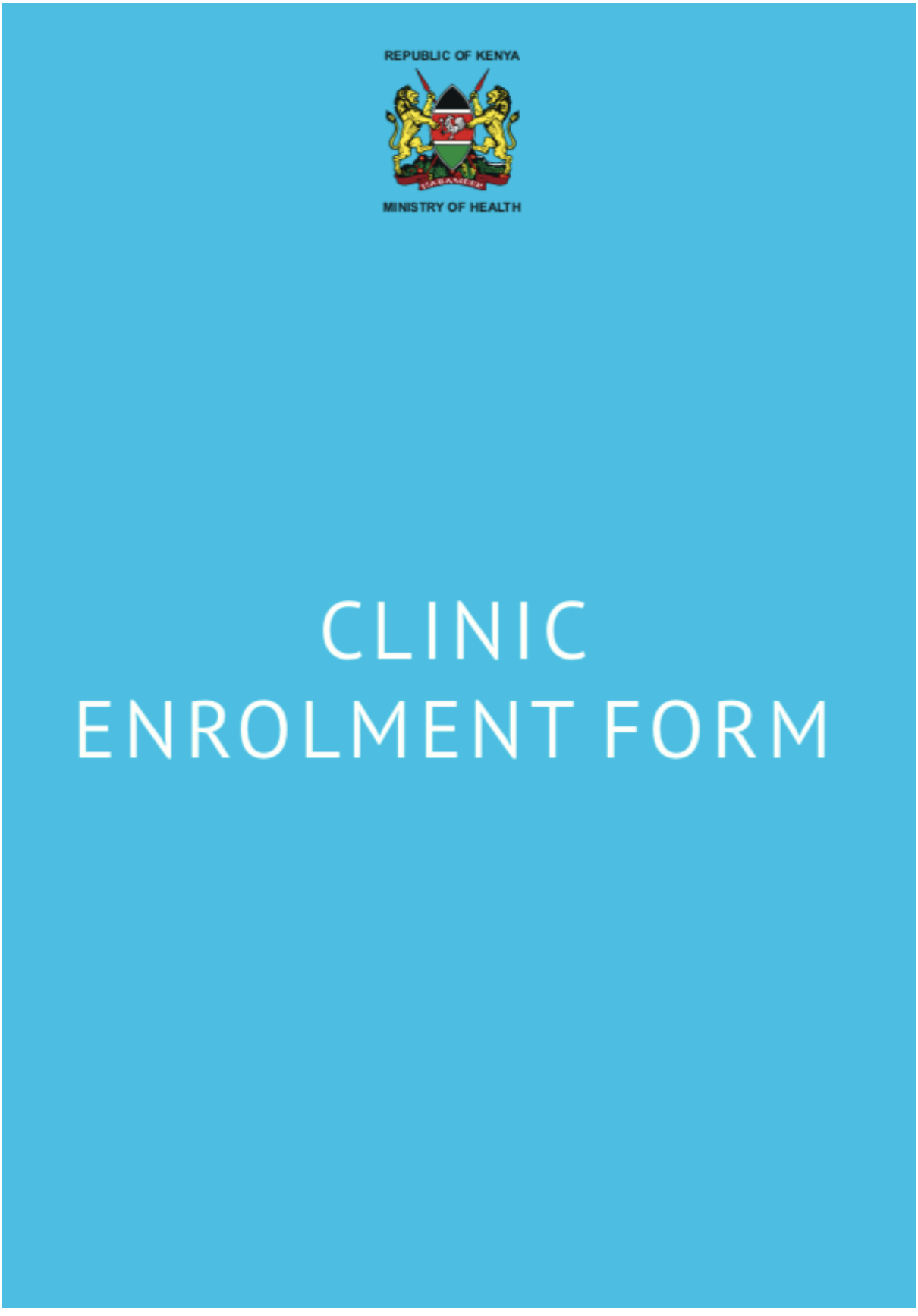
Name of peer educator/health care worker: _____

KP unique identifier code: _____

KP type (Tick appropriate): FSW | MSM | MSW | PWID | PWUD | Transman | Transwoman

1. What is your name? (All three names) (Please add the nickname)	
2. Sex (circle appropriate) 1= Male; 2= Female	
3a. Date of Birth (DD/MM/YYYY):	3b. Age:
4. Contact Phone No:	5. Alternative contact person and phone number:
6a. Have you been contacted by a peer educator? 1. Yes 2. No	
6b. If yes, which programme do you receive services from?	
7a. Where do you **MOSTLY** operate/hangout/conduct sex work/Inject/meet your clients or partners? *(Write down name and physical address of the Hotspot MOSTLY frequented)* 7b. Type of spot MOSTLY frequented 1= Street, 2= Injecting den, 3= Uninhabitable building, 4= Parks, 5= Homes, 6= Beach, 7= Casino, 8= Bar with lodging, 9= Bar without lodging, 10= Sex den, 11= Strip club, 12= Highways, 13= Brothel, 14= Guest house/Hotels/ Lodgings, 15= Massage parlor, 16= Chang'aa den, 17= Barbershop/Salon, 18= Virtual Space, 19= Other(Specify)	
8. a. Which year did you start sex work? Year: _____ b. Which year did you start having sex with men (MSM only)? Year: _____ c. Which year did you start using drugs (injecting or smoking)? Year: _____	
9. On average, how many sex acts do you have PER WEEK?	
10. On average, how many anal sex acts do you have PER WEEK?	
11. On average, how many times do you inject drugs per day? (only for PWID)	

8.9.1.2 Clinic Enrolment Form



Name of County: _____ Sub-county: _____

Ward: _____ Implementing partner: _____

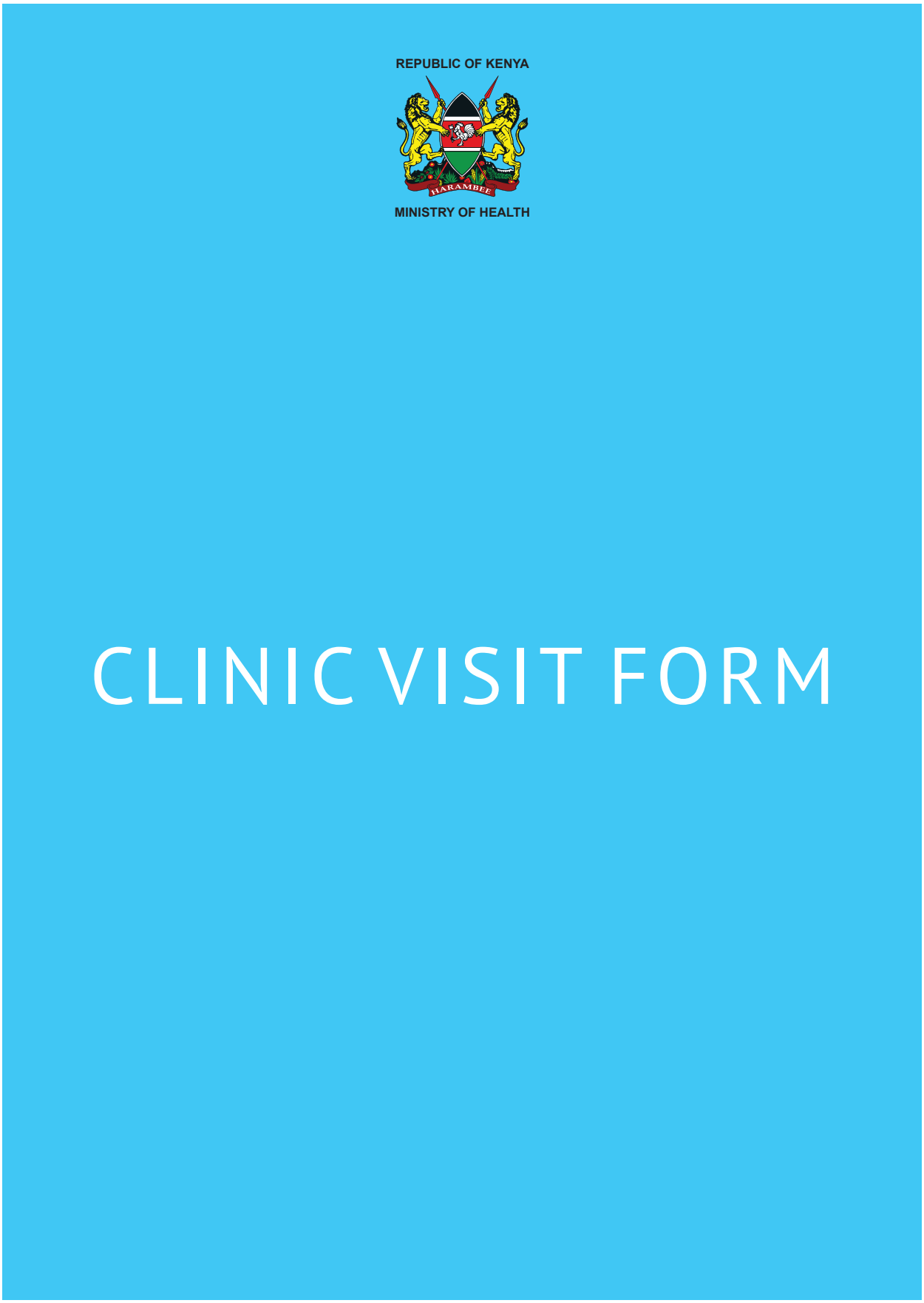
Date of enrolment (DD/MM/YYYY): _____/_____/_____ MFL code: _____

KP unique identifier code: _____

KP type (Tick appropriate): FSW MSM MSW PWID PWUD Transman Transwoman

1	Name of KP: _____
2	Have you been contacted by a peer educator for any health services? 1.Yes ☐ 2. No ☐
3	Do you have a regular non paying **sexual** partner? 1. Yes ☐ 2. No ☐
4	a. Which year did you start sex work Year: _____ b. Which year did you start having sex with men (MSM only) Year: _____ c. Which year did you start using drugs (injecting or smoking) Year: _____
5	Have you ever experienced physical/sexual violence? 1= Yes ☐ 2= No ☐ (If yes, specify Physical / Sexual / Both) _____
6	a) Have you ever been tested for HIV? 1= Yes ☐ 2= No ☐ If NO, skip to Q10 b) The last time you received HIV testing, how did you test? ☐ Rapid HIV testing ☐ Self-test
7	Would you like to share your LAST test result with me? (circle the number) 1= Yes, I tested positive ☐ 2= Yes, I tested negative ☐ 3= I do not want to share ☐
8	If POSITIVE, are you receiving HIV care? 1= Yes ☐ 2= No ☐ (If NO refer to CARE)
9	If Yes (receiving care), ASK for the following; Facility Name: _____ CCC number: _____ Viral load test: 1. Yes ☐ 2. No ☐ _____ Date of VL result: _____
10	Are you willing to be tested for HIV? 1= Yes ☐ 2= No ☐ If No, indicate reason _____
11	In case you are due for clinical services, could we contact you through: Phone 1. Yes ☐ 2. No ☐ Peer educator 1. Yes ☐ 2. No ☐ Outreach worker 1. Yes ☐ 2. No ☐ Clinician/HTS Counsellor 1. Yes ☐ 2. No ☐ Treatment buddy 1. Yes ☐ 2. No ☐ Name of the treatment buddy_____Telephone number of the treatment buddy_____ Signature /Thumb of the KP_____ Completed by: _____ Date: _____

8.9.1.3 Clinic Visit Form



Name of County: _____ Sub-county: _____

Ward: _____ Facility Name: _____

Date (dd/mm/yyyy): _____/_____/_____ MFL Code: _____

Implementing Partner: _____ Type of visit: ☐ Initial ☐ Revisit

Reason for visit: ☐ Asymptomatic ☐ Symptomatic ☐ Quarterly Screening checkup ☐ Follow up

Service delivery Model: ☐ Static ☐ Outreach

GENERAL INFORMATION	
Client Name	
Phone no	
Sex	1 = Male 2 = Female
Date of Birth (DD/MM/YYYY)	Age
KP Type (FSW/MSM/MSW/PWID/PWUD/Transman/Transwoman)	
KP unique identifier code	

SERVICES

	Screened	**Screening Results**	**Treated/Support**	**Referred**
STI	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes	☐ No ☐ Yes, if yes Specify _____
TB	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes	☐ No ☐ Yes, if yes Specify _____
Hepatitis B	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes ☐ Vaccination	☐ No ☐ Yes, if yes Specify _____
Hepatitis C	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes	☐ No ☐ Yes, if yes Specify _____
Overdose management	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes Received naloxone ☐ Yes ☐ No	☐ No ☐ Yes, if yes Specify _____
Abscess	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes	☐ No ☐ Yes, if yes Specify _____

SERVICES				
	Screened	**Screening Results**	**Treated/Support**	**Referred**
Alcohol & drug abuse	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes	☐ No ☐ Yes, If yes Specify _____
Cervical cancer	☐ No ☐ Yes	☐ Negative ☐ Positive	☐ No ☐ Yes	☐ No ☐ Yes, If yes Specify _____
PrEP	☐ No ☐ Yes ☐ Ongoing	☐ Eligible ☐ Not eligible	☐ Not Initiated ☐ Initiated	☐ No ☐ Yes, If yes Specify _____
Violence	☐ No ☐ Yes	☐ No ☐ Yes Types of Violence : ☐ Harassment ☐ Assault/Physical abuse ☐ Illegal arrest ☐ Verbal Abuse ☐ Rape/Sexual assault ☐ Discrimination	☐ Not Supported ☐ Supported	☐ No ☐ Yes, If yes Specify _____
Risk reduction counselling	☐ No ☐ Yes	☐ Eligible ☐ Not Eligible	☐ Not Supported ☐ Supported	☐ No ☐ Yes Counseling EBI provided specify _____
Family Planning	☐ No ☐ Yes	☐ Eligible ☐ Not Eligible	☐ Yes (Given method) ☐ No (Not given) ☐ Ongoing	☐ No ☐ Yes, If yes Specify _____
Mental health	☐ No ☐ Yes	☐ Depression unlikely ☐ Mild depression ☐ Moderate depression ☐ Moderate-severe depression ☐ Severe depression	☐ Not Supported ☐ Supported	☐ No ☐ Yes, If yes Specify _____

HIV testing Services

Self-reported status	Setting of the last HIV test	Counselled	Tested	Frequency of test	Received results	Testing results	Linked to ART
☐ Positive ☐ Negative ☐ Unknown	☐ Universal HTS ☐ Self- testing ☐ Never tested	☐ Yes ☐ No	☐ Yes ☐ No ☐ Not applicable	☐ Initial ☐ Repeat ☐ Not applicable	☐ Yes ☐ No ☐ Not applicable	☐ Positive ☐ Negative ☐ Inconclusive ☐ Known Positive ☐ Not applicable	☐ Yes Facility linked to... ☐ No ☐ Not applicable

HIV Self-Testing

HIV self-test education/ demonstra-tion	Number of HIV self-test kits given	Self-tested for HIV	Date conducted	Frequency of test	Testing results	Confirmatory HIV test results	Facility name where confirmatory was done	Linked to ART
☐ Yes ☐ No	For self-use_____ For distributing to others _____	☐ Yes ☐ No	Date: _____ mm/yr	☐ Initial ☐ Repeat	☐ Positive ☐ Negative ☐ Inconclusive	☐ Positive ☐ Negative ☐ Not done	☐ On-site ☐ Off-site If off-site: specify _____ _____	☐ Yes Facility linked to _____ ☐ No ☐ Not applicable

HTS counselor name: _____ Signature: _____ Date: _____

Care and Treatment

Facility of HIV Care	Initiated on ART this month	Active on ART	Eligible for Viral Load	Viral Load Test Done	Viral Load Results
☐ Provided here	☐ Yes ☐ No	☐ Yes ☐ No If No, Circle appropriate: Defaulted, LTFU	☐ Yes ☐ No	☐ Yes ☐ No	Indicate the copies: ☐ Suppressed ☐ Not Suppressed ☐ Results not yet received
☐ Provided elsewhere Specify:	☐ Yes ☐ No	☐ Yes ☐ No If No, Circle appropriate: Defaulted, LTFU	☐ Yes ☐ No	☐ Yes ☐ No	Indicate the copies: ☐ Suppressed ☐ Not Suppressed ☐ Results not yet received
☐ Referred (For newly referred, linkage not yet confirmed)	☐ Not applicable	☐ Not applicable	☐ Not applicable	☐ Not applicable	☐ Not applicable
☐ Not Applicable					

Other Services:

Condom education/demonstration	☐ Yes	☐ No	
Post Abortal Care provided	☐ Yes	☐ No	☐ Referral
Number of condoms given: Male _____ Female_____ Number of Lubes given: _____ Number of needles and syringes given: _____			
PEP ☐ Yes ☐ No Type of exposure for PEP : ☐ Rape ☐ Condom burst ☐ Other (specify) _____			
Linkage to psychosocial support	☐ Yes	☐ No	

Other Ailments/ Clinical Notes:

Next Visit Date (DD/MM/YYYY) : _____

Name and Signature of Clinician : _____

8.9.2 Qualitative Component

8.9.2.1 Mentor Questionnaire

IDI Data Collection Tool – Questionnaire for Mentors

In-depth Interview Guide: Peer Mentor Experience

INTERVIEW INFORMATION
Date of Interview:_____ Interviewer Identification:-_____
Age (years): _____ Living with HIV? (Y/N) _____ If yes, on treatment? (Y/N) _____

Introductory Statement for Interviews
"Hello, my name is _____. I am one of the project staff conducting evaluation research on this programme. Thank you for agreeing to talk with us today. You've been asked to do this interview because you have been a peer mentor in the Mentor Mother programme here in Port Elizabeth. Today, we would like to talk with you to understand more about the experiences you've had in working in the program. This can help us better orient our programme to meet mentee needs and mentor needs. We also want to understand any challenges you faced, or successes you had while interacting with your mentee. Please know that there are no right or wrong answers. I just want to hear your opinion."

"I would like to let you know that I will be taking some notes and using a digital audio recorder as we speak. Please remember that what is said here is confidential, your name is not recorded on any of these forms or on the audio recording, and please keep in mind that nothing you discuss here will be discussed outside of this interview. Do you have any questions before we begin?"

I'd like to hear specifically about your own experiences as a mother and a sex worker.

1. **Were you engaged in sex work at the time when you were raising any of your children or pregnant with them?**

2**. Are you faced with any challenges in accessing HIV prevention and treatment services for yourself? If so, please describe.**

3. What challenges do you face in ensuring that your children are tested and if necessary, on treatment?
   i. What is the single biggest challenge you face in relation to HIV testing and treatment of your children?
   ii. What could be done to help address some of these challenges?

4. What challenges, if any, have you faced in terms breastfeeding and infant feeding?
   i. Did you breastfeed, formula feed or some combination of both?
   ii. If you breastfed, how long did you breastfeed?
   iii. Were you still breastfeeding when you returned to work or started engaging in sex work?
   iv. If you breastfed, what were some of the challenges?

v. If you used formula feeding, what were some of the challenges? How did you balance your work and caring for your child?
vi. What did you do to help address some of the challenges? Are there any other strategies that you are aware of now that you might have used to address these challenges?

5. Do you have any challenges in ensuring that your child/children get to the clinic and receive good health care? If so, what challenges do you face in ensuring that your child/children get to the clinic and receive good health care?

i. What is the single biggest challenge you face in relation to seeking health care for your child?
ii. What could be done to help address some of these challenges?

6. What challenges do you face in terms of childcare for your children?

i. Who takes care of your children during the day and night when you are not there?
ii. Where do your children stay during the day and night when they are not with you?
iii. What are your childcare needs that are not being met?
iv. Do you have concerns about the safety of your child during the day or night? If yes, please describe.
v. What could be done to help address some of these challenges?

Now I'm going to ask you about your mentee's experiences.

7. Thinking overall about your experience as a mentor mother, what were the most common challenges faced by your mentees?

Probes: Topic-based challenges

i. What were some breastfeeding or infant feeding challenges your mentees had?
ii. Did you feel there were challenges with accessing healthcare for your mentee or for her children? If so, please describe.
iii. Did any of your mentees have challenges getting HIV testing and treatment?
iv. For mentees who were HIV positive, what was adhering to ARVs like for them during pregnancy or as new mothers? Was adherence difficult for any mentees? Do you think that being a new mom makes it easier or harder for your mentees to adhere to their treatment? Please explain? Was there anything else that may have made adherence easier for expecting or new mothers?
v. What were your mentees' experiences with alcohol, drugs, and/or smoking during pregnancy or as a new mother?
vi. What were your mentee's experiences with daily nutrition and/or their child's nutrition?
vii. Did your mentees talk about any parenting challenges that stood out to you?

Addressing challenges through mentorship

i. Did your mentee's challenges as mothers change over the course of the time that you worked with them? By this I mean, did the challenges stay the same, improve?
ii. What are some challenges your mentees expressed that you felt were not solved or could not be solved with your mentorship?

iii. What were some challenges or problems, if any, that your mentees had said had been resolved through your mentorship?

I'm going to now ask you about the various activities you led, and I would like you to tell me about your experiences with them.

8. Venue-based health education talks

i. How was your overall experience with delivering health talks?
ii. How engaged did you feel the attendants were?
iii. What topics did you deliver on?
iv. Did attendants feel the sessions were useful? Were some topics more useful or interesting to attendants than others? Please describe.
v. What challenges did you face organising the health talks? What solutions did you come up with to address those challenges?
vi. Based on your experience, how could the health talks be improved

9. Support groups

i. What was your overall experience with organising and facilitating support groups?
ii. How much did the those attending the support groups participate and interact?
iii. Do you think that the group setting was helpful for the women or that they struggled to participate in a larger group?
iv. What advantages did you see in the support groups versus the 1-on-1 mentoring?
v. For the most part did the mothers attending the support groups stay the same over time? What relationships did you see develop between the mothers over time? Did the challenges/experiences change for repeat attendees throughout the sessions? Overall, do you believe that mothers participating in support groups felt that the groups helped them resolve some of their challenges?
vi. What topics did you deliver on during the support groups?
vii. From the feedback that you received, what were the groups useful for and what did not work as well in the group setting?
viii. What were some challenges you faced when facilitating support groups? What could be improved?

10. 1-on-1 mentoring

i. How was your overall experience in conducting one-on-one sessions with mentees? What was enjoyable or fulfilling about your role as mentor? What was frustrating about it?
ii. What challenges did you face conducting 1-on-1 activities with mentees?
iii. Was giving information to your mentees easy or difficult?
iv. Were some topics easier or harder for mentees to understand? What topics they had trouble understanding or had wrong information on? What topics did you find were difficult to explain? What are your thoughts on mothers' knowledge of prevention of mother to child transmission of HIV? Is there anything related to PMTCT that you feel mothers did not understand well?
v. During your sessions, how much of your time was focused on giving emotional support and how much of it was on giving information to your mentee? *Probe: How many minutes were spent chatting/making small talk, how many minutes you gave information and how many minutes you provided emotional support*

vi. Was it easy or difficult to conduct sessions in privacy? Were the modes of communication (telephone, SMS, work visit) easy or difficult? Describe.
vii. How could the sessions or organising the sessions be improved?

11. Being a mentor

i. Overall, how did being a mentor mother affect your life – both positively and negatively?
ii. Did you feel that you had the tools that you needed to be a good mentor to your mentees? What tools/skills did you feel were missing/could have been improved?
iii. Sometimes as mentors, it can be easy to take on the stress and concerns of the mothers you work with – meaning their challenges weigh on you and can cause you stress. How did you deal with this stress? Was there additional support that you needed to answer questions or deal with the stress of being a mentor mother? Please give any recommendations that you have.
iv. What other recommendations do you have for the mentor mother programme?

Thank you so much for your time today and for your valuable work as a mentor mother. If you should have any additional questions or concerns, I am happy to listen.

8.9.2.2 Mentee Questionnaire

IDI Data Collection Tool – Questionnaire for Mentees

IN-DEPTH INTERVIEW GUIDE: Mentee Mother Experience

PI: Stefan Baral and Sheree Schwartz
Study Title: Evaluation of a peer mentor mother model for women at high risk for HIV infection and mother to child transmission
PI Version/Date: V1/25 January 2018
IRB No.: IRB00008508

INTERVIEW INFORMATION

Date of Interview:_____ Interviewer Identification:-_____
Age (years): _____ Number of interactions with Mentor Mother? -_____
Living with HIV? (Y/N) _____ If yes, on treatment? (Y/N) _____

Introductory Statement for Interviews
"Hello, my name is _____. I am one of the project staff evaluating this programme. Thank you for agreeing to talk with us today. You've been selected for this interview because you have participated in the Mentor Mother programme here in Port Elizabeth. Today, we would like to talk with you to understand more about the about the experiences you've had in participating in the programme so that we can better orient our programme to meet your needs, and understand any challenges you faced or successes you had while interacting with your Mentor. Please know that there are no right or wrong answers. I just want to hear your opinion. Your responses to these questions will help us to improve the programme."

"I would like to let you know that I will be taking some notes and using a digital audio recorder as we speak. Please remember that what is said here is confidential, your name is not recorded on any of these forms or on the audio recording. Your Mentor will not be informed of your responses. Do you have any questions before we begin?"

1. **Tell me what your overall experience has been participating in the Mentor Mother programme?**
   Probe:
   a. *What motivated you to join the programme?*
   b. *In what ways has the programme been helpful to you?*
   c. *Are the elements of the programme that you did not found useful?*
   d. *What would you tell another mother interested in participating in the mentor mother programme?*

2. **I was wondering if you could tell me a little bit about your children.**
   Probe:
   a. *How many children do you currently have and what are their ages?*
   b. *How would you describe the health and well-being of your children?*

Next, I'd like to hear specifically about the experiences you've had during motherhood and whether or not your Mentor Mother was able to help you through some of the challenges.

3. **Can you please describe to me what challenges you face as a mother?**
   Probes:
   a. *What were some of the challenges you faced during your pregnancy?*
      i. *Were you aware of your HIV status during your pregnancy?*
      ii. *If yes, did you take ARVs during your pregnancy?*
      iii. *What concerns or challenges did you experience taking ARVs while pregnant?*
      iv. *Did you ever miss doses or stop taking your ARVs during pregnancy? If yes, what were the reasons?*
   b. *What challenges did you face or are you currently facing related to breastfeeding or infant feeding?*
      i. *Did you take ARVs while breastfeeding?*
      ii. *What concerns or challenges did you experience taking ARVs while breastfeeding?*
      iii. *Did you ever miss doses or stop taking ARVs during breastfeeding? If yes, what were the reasons?*
   c. *What challenges, if any, have you had with ensuring that your child receives good healthcare? When was the last time that your child went to the clinic? Who took them? Have they been tested for HIV?*
   d. *What challenges do you face with your own HIV prevention or treatment needs? By this I mean both accessing prevention/treatment and adhering to treatment?*
   e. *What challenges do you face in terms of childcare? Are there any safety concerns you have for your child?*
4. **Now, thinking about those challenges, is there anything that your Mentor has done to help you deal with any of those challenges? Please describe.**
   a. *Have you talked to your Mentor about these challenges? Did she help you strategize solutions and offer you advice?*
      i. *What types of support did you receive around adherence to your ARVs during pregnancy or breastfeeding from your Mentor Mother? How useful was this support?*
   b. *What could your Mentor Mother have done better?*

Now I'd like to ask you a few questions about your Mentor and your relationship with her. I want to remind you that your responses will not be shared with your Mentor.

5. Please tell me what your relationship has been like with your Mentor?

a. How many times have you met with your mentor mother face to face?

b. How many times have you talked over the phone?

c. What is she like as a Mentor?

d. To what extent do you feel that your Mentor knows you, understands your situation and takes an interest in you? For example, does she remember things that you have told her in the past?

e. How knowledgeable is your Mentor Mother about parenting?

f. What areas, if any, could your Mentor use additional knowledge or better skills?

g. To what extent do you trust the advice that you receive from your Mentor?

h. What do you value the most about your Mentor?

i. In general, what do you think are the most important skills for a Mentor Mother to have? (Does your Mentor Mother have these skills?).

I'm going to now ask you about the various activities that were led by the Mentor Mothers, and I would like you to tell me about your experiences with them. What was your overall experience with:

6. **Venue-based health education talks**
    - ***a.*** *Did you attend any of the health education talks? If yes, how many?*
    - ***b.*** *What topics were covered in the talks that you attended?*
    - ***c.*** *How did you feel about the location? Were you worried about privacy?*
    - ***d.*** *What did you learn? Did you feel that the information provided was easy or difficult to understand? Why?*
    - ***e.*** *How useful was the session to you?*
    - ***f.*** *How could it have been improved?*

7. **Support groups**
    - ***a.*** *Did you attend any support groups? If yes, how many?*
    - ***b.*** *About how many other women attended the support groups?*
    - ***c.*** *How did you feel about the location? Were you worried about privacy?*
    - ***d.*** *What type of support did you get from sharing experiences with other women in the group?*
    - ***e.*** *How comfortable did you feel sharing your experience and asking questions in a group setting?*
    - ***f.*** *How useful was it to you to attend the support group?*
    - ***g.*** *How could the group session have been improved?*

8. **1-on-1 mentoring**
    - ***a.*** *Did you attend any 1-on-1 mentoring sessions? If yes, how many?*
    - ***b.*** *Did you speak face to face or over the phone? How worried were you about your privacy during the mentoring sessions?*
    - ***c.*** *What did you learn? Did you feel that the information provided was easy or difficult to understand? Why?*
    - ***d.*** *How useful was the 1-on-1 mentoring that you received?*
    - ***e.*** *How could it have been improved?*

9. Overall, do you prefer getting support in a group setting or by 1-on-1? Why?

    - ***a.*** *Specifically, did you receive any guidance on taking medications to help manage HIV? Was this information useful? Will the information provided make it easier for you to take your medications?*
    - *b. Did you receive information on how to prevent your child from getting HIV when you were pregnant or breastfeeding? Can you tell us what you know about this?*
    - ***c.*** *Did you receive information on how to get your children tested for HIV? What was the information you received?*

10. What were the most important or interesting new things that you learned so far through your participation in the programme?

11. What areas would you like to see additional mentorship in?

12. Do you feel that by participating in this programme you have gained knowledge or skills that will help you to become an even better parent? Please explain?

13. In what ways has participating in this programme affected your engagement in HIV prevention or treatment for yourself? *For those living with HIV, how has it affected your adherence to treatment?*

That is all of the questions that I have for you today. Is there anything else that you would like me to know or would like to ask me?

Thank you for sharing your experiences with me. We really value your input.

8.10 Ethical Clearance Documents

8.10.1 LSHTM Ethical Clearance (February 2019)

London School of Hygiene & Tropical Medicine
Keppel Street, London WC1E 7HT
United Kingdom
Switchboard: +44 (0)20 7636 8636

www.lshtm.ac.uk

Observational / Interventions Research Ethics Committee

Ms. Judie Mbogua
LSHTM

11 February 2019

Dear Judie,

Study Title: Barriers and facilitators to Prevention of Mother-To-Child-Transmission (PMTCT) cascade completion by Female Sex Workers (FSWs) in Zambia and South Africa

LSHTM Ethics Ref: 16213

Thank you for your application for the above research project which has now been considered by the Observational Committee via Chair's Action.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Conditions of the favourable opinion

Approval is dependent on local ethical approval having been received, where relevant.

Approved documents

The final list of documents reviewed and approved is as follows:

Document Type	File Name	Date	Version
Protocol / Proposal	Zambia IBBSS Data Collection Tool	22/08/2017	DE14760EN
Consent form	IDI Mentee Consent form_English	29/03/2018	2.0
Consent form	IDI Mentor Consent form_English	29/03/2018	2.0
Local Approval	JHSPH Approval Letter_11April2018	11/04/2018	1.0
Local Approval	HSRC_ethics_approval	10/10/2018	1.0
Protocol / Proposal	IDI Data Collection Tool_Mentor Mother Questionnaire (vFinal, 29 January 2019)	29/01/2019	Final
Protocol / Proposal	IDI Data Collection Tool_Mentee Mother Questionnaire (vFinal, 29 January 2019)	29/01/2019	Final
Investigator CV	Judie Mbogua Curriculum Vitae_29 January 2019	29/01/2019	1.0
Protocol / Proposal	Thesis Study Protocol (v1.0, 29 January 2019)	29/01/2019	1.0

After ethical review

The Chief Investigator (CI) or delegate is responsible for informing the ethics committee of any subsequent changes to the application. These must be submitted to the committee for review using an Amendment form. Amendments must not be initiated before receipt of written favourable opinion from the committee.

The CI or delegate is also required to notify the ethics committee of any protocol violations and/or Suspected Unexpected Serious Adverse Reactions (SUSARs) which occur during the project by submitting a Serious Adverse Event form.

An annual report should be submitted to the committee using an Annual Report form on the anniversary of the approval of the study during the lifetime of the study.

At the end of the study, the CI or delegate must notify the committee using the End of Study form.

All aforementioned forms are available on the ethics online applications website and can only be submitted to the committee via the website at: http://leo.lshtm.ac.uk.

Further information is available at: www.lshtm.ac.uk/ethics.

Yours sincerely,

Professor John DH Porter
Chair

ethics@lshtm.ac.uk
http://www.lshtm.ac.uk/ethics/

Improving health worldwide

8.10.2 LSHTM Ethical Clearance for Amendment (June 2020)

London School of Hygiene & Tropical Medicine
Keppel Street, London WC1E 7HT
United Kingdom
Switchboard: +44 (0)20 7636 8636

www.lshtm.ac.uk

Observational / Interventions Research Ethics Committee

Ms. Judie Mbogua
LSHTM

19 June 2020

Dear Judie,

Study Title: Barriers and facilitators to Prevention of Mother-To-Child-Transmission (PMTCT) cascade completion by Female Sex Workers (FSWs) in Zambia and South Africa

LSHTM Ethics Ref: '16213 - no. of amendment 01'

Thank you for your letter responding to the Observational Committee's request for further information on the above amendment to research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above amendment to research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

Approval is dependent on local ethical approval for the amendment having been received, where relevant.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document Type	File Name	Date	Version
Covering Letter	JHSPH Investigator_Study Staff Agreement	26/02/2018	1.0
Covering Letter	TB-HIV Care Visa Invitation	01/03/2018	1.0
Covering Letter	IDI Mentor Consent form_English_29 March 2018	29/03/2018	2.0
Covering Letter	IDI Mentee Consent form_English_29 March 2018	29/03/2018	2.0
Covering Letter	JHSPH Visa Letter of Support	17/05/2018	1.0
Covering Letter	Letter from SA Dept of Home Affairs	17/05/2018	1.0
Covering Letter	Data sharing agreement_JHSPH_24 Jan 2019	24/01/2019	1.0
Other	Amended protocol vFinal_clean version	20/05/2020	2.0
Other	Amended protocol vFinal_additions highlighted	20/05/2020	2.0
Other	Amended protocol vFinal_deletions and additions highlighted	20/05/2020	2.0
Covering Letter	Data Sharing agreement_ICRHK_02 June 2020	02/06/2020	1.0
Covering Letter	Cover Letter for LSHTM Ethics Committee	05/06/2020	1.0
Covering Letter	Cover Letter for LSHTM Ethics Committee_17 June 2020	17/06/2020	1.0

After ethical review

The Chief Investigator (CI) or delegate is responsible for informing the ethics committee of any subsequent changes to the application. These must be submitted to the Committee for review using an Amendment form. Amendments must not be initiated before receipt of written favourable opinion from the committee.

The CI or delegate is also required to notify the ethics committee of any protocol violations and/or Suspected Unexpected Serious Adverse Reactions (SUSARs) which occur during the project by submitting a Serious Adverse Event form.

An annual report should be submitted to the committee using an Annual Report form on the anniversary of the approval of the study during the lifetime of the study.

At the end of the study, the CI or delegate must notify the committee using an End of Study form.

All aforementioned forms are available on the ethics online applications website and can only be submitted to the committee via the website at: http://leo.lshtm.ac.uk

Additional information is available at: www.lshtm.ac.uk/ethics

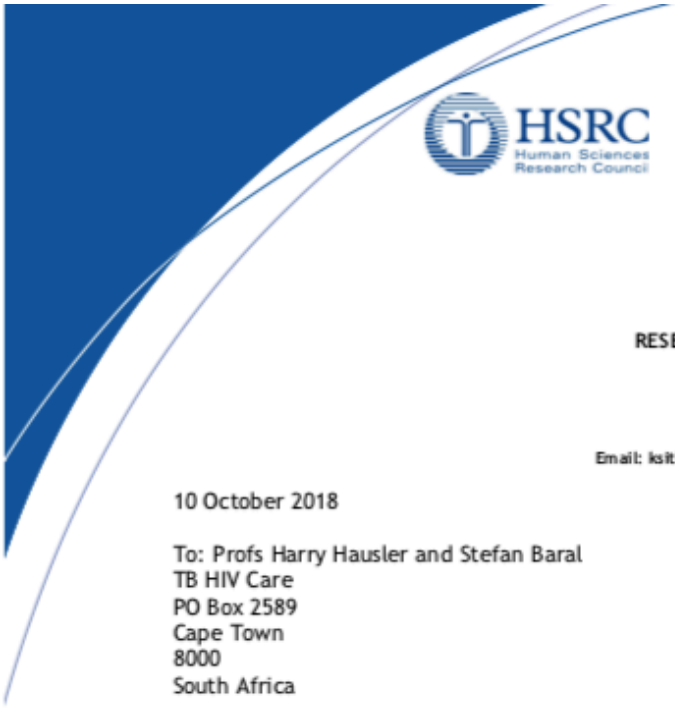
Yours sincerely,

Professor Jimmy Whitworth
Chair

ethics@lshtm.ac.uk
http://www.lshtm.ac.uk/ethics/

Improving health worldwide

8.10.3 HSRC ethical clearance



HSRC
Human Sciences Research Council

Human Sciences Research Council
Lekgotla la Dinyakisiso tsa Semahlale tša Setho
Raad vir Geesteswetenskaplike Navorsing
Umkhandlu Wezokucwaninga Ngezasayensi Yesintu
Ithunga Laphando Ngezaulu-Lwazi Kantu

Research Coordination, Ethics and Integrity (ReCEI)

RESEARCH ETHICS COMMITTEE ADMINISTRATION

Room 1345 - HSRC Building
134 Pretorius Street, Pretoria
Gauteng, South Africa
Tel: 27 12 3022012 - Fax: 27 12 3022005
Email: ksithole@hsrc.ac.za - Website: research.ethics@hsrc.ac.za
REC toll free no 0800 212 123

10 October 2018

To: Profs Harry Hausler and Stefan Baral
TB HIV Care
PO Box 2589
Cape Town
8000
South Africa

Dear Profs Hausler and Baral

Ethics Clearance of HSRC Research Ethics Committee Protocol REC No 5/21/02/18: Evaluation Of A Peer Mentor Mother Model for Women at High Risk for HIV Infection and Mother to Child Transmission

The HSRC REC has considered and noted your application dated 21 February 2018.

The study was provisionally approved pending appropriate responses to queries raised. Your responses dated 10 October 2018 to queries raised on 16 March 2018 have been noted by a sub-committee of the Research Ethics Committee.

The conditions have now been met and the study is given full ethics Approval and may begin as from 10 October 2018.

This approval is valid for one year from **(10 October 2018).** To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to the HSRC REC on the appropriate HSRC form 2-3 months before the expiry date. Failure to do so will lead to an automatic lapse of ethics approval which will need to be reported to study sponsors and relevant stakeholders.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by HSRC REC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2004), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with HSRC REC ethics requirements as contained in the HSRC REC Terms of Reference and Standard Operating Procedures, all available at
http://www.hsrc.ac.za/index.php?module=pagesetter&func=viewpub&tid=132&pid=167

The HSRC REC is registered with the South African National Health Research Ethics Council (REC-290808-015). The HSRC REC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA Organisation No. 0000 6347).

We wish you well with this study. We would appreciate receiving copies of all publications arising out of this study.

Yours sincerely

[redacted]

Professor D.R Wassenaar
Chair: HSRC Research Ethics Committee

8.10.4 JHSPH Ethical Clearance

FWA #00000287

Institutional Review Board Office

615 N. Wolfe Street / Room E1100
Baltimore, Maryland 21205-2179
Phone: 410-955-3193
Toll Free: 1-888-262-3242
Fax: 410-502-0584
Email: jhsph.irboffice@jhu.edu
Website: www.jhsph.edu/irb

INITIAL APPLICATION APPROVAL NOTICE

Date: November 21, 2018

To: Stefan Baral, MD
Department of Epidemiology

From: Joan Pettit, JD, MA
Chair, IRB-FC

IRB Approval Date: April 11, 2018

Approval Expiration Date: April 10, 2019

IRB No: 00008508

Study Title: "Evaluation of a Peer Mentor Mother Model for Women at High Risk for HIV Infection and Mother to Child Transmission"

Single Reviewer ☐ **Convened** ☒ DHHS 46.110 . . ☐ DHHS..... ☒ FDA 56.110 . . . ☐ FDA..... ☐ Category: **GWAS** ..... ☐	**Consent/Parental Permission Required From:** Adult Participant..... ☒ LAR ..... ☐ One Parent..... ☐ Two Parents..... ☐ Legal Guardian..... ☐ (Foster Care Children) Waiver of Parental Permission.. ☐ Waiver under .116..... ☐ Waiver under .408..... ☐ Minor consent as adult..... ☐	**Form of Consent/Permission:** Written Consent..... ☒ Waiver of Signature..... ☐ Waiver of Informed Consent.... ☐ HIPAA Authorization..... ☐ Disclosure Prep. To Research... ☐ HIPAA Alteration/Waiver..... ☐ LDS..... ☐ Compliance System Tracking Required..... ☐ No Longer Enrolling..... ☐	**Study Site(s):** U.S. ☐ International ☒ **List Country(ies):** **South Africa**
Vulnerable Populations: Children ..... ☐ Foster Care Children ..... ☐ **DHHS** **FDA** 46.404 . . . . ☐ 50.51 ..... ☐ 46.405. . . . ☐ 50.52 ..... ☐ 46.406 . . . . ☐ 50.53 ..... ☐	**Assent Required From:** Waived for all children..... ☐ Children aged:_____ ☐ **Form of Assent:** Written ..... ☐ Oral ..... ☐ Assent Statement in Parent Permission..... ☐	**Pregnant Women/Fetuses** 46.204..... ☒ **Neonates** 46.205..... ☐	**Sample Size:** (screened plus enrolled) **40** **Secondary Data Analysis:** (# specimens/participants)

This approval is inclusive of the following documentation:

- PE M2M: Research Plan – (version#2, March 5, 2018);
- PE M2M: Informed Consent Form – IDI with Mentee Mothers in Port Elizabeth – (version#1, April 11, 2018);
- PE M2M: Informed Consent Form – IDI with Mentee Mothers in Port Elizabeth – (vesion#1, April 11, 2018 - Xhosa);
- PE M2M: Informed Consent Form – IDI with Mentor Mothers in Port Elizabeth – (version#1, April 11, 2018);
- PE M2M: Informed Consent Form – IDI with Mentor Mothers in Port Elizabeth – (version#1, April 11, 2018 – Xhosa);
- PE M2M: In-Depth Interview Guide – Mentee Mother Experience - (version#1, January 25, 2018);
- PE M2M In-Depth Interview Guide – Mentee Mother Experience – (version#1, January 25, 2018 – Xhosa);
- PE M2M In-Depth Interview Guide – Mentor Mother Experience – (version#1, January 25, 2018).

As principal investigator of the research, you are responsible for fulfilling the following requirements of approval:

1) The co-investigators listed on the application should be kept informed of the status of the research.
2) Submit an Amendment Request Form for any changes in research. These changes in research are required to be reviewed and approved prior to the activation of the changes, with the following exceptions:
    a) changes made to eliminate an apparent immediate hazard to the research participant may be instituted immediately and the JHSPH IRB should be informed of such changes promptly; and
    b) changes to IRB Approved questionnaires, interview or focus group guides, other data collection or recruitment materials – limited to rewording to clarify meaning, correcting grammatical or typographical errors, or removing items that will not be used in the research.
3) Unanticipated problems involving risk of harm to participants or others that are related to the study procedures must be reported to the JHSPH IRB within 10 days of the time that the PI learns of such problems. A Problem Event Report Form must be submitted to the IRB immediately.
4) Only consent forms with a valid JHSPH IRB approval stamp or logo, with the correct IRB Approved version number and approval date may be presented to participants unless otherwise approved by the IRB. All consent forms signed by subjects enrolled in the study should be stored securely, in paper or electronic form, until 3 years following study completion unless otherwise approved by the IRB.

5) Federal regulations require review of approved research not less than once a year, unless a shorter period is determined by the IRB. **Therefore, a Progress Report for continuing review must be submitted to the IRB Office no later than six weeks prior to the approval lapse date. This will allow sufficient time for review of the application to be completed prior to the approval lapse date.** Failure to submit a Progress Report prior to the approval lapse date will result in termination of the study, at which point new participants may not be enrolled and currently enrolled participants must discontinue participation in the study. All ongoing research activities must stop immediately, including data analysis.

6) If your research involves international travel, please don't forget to register with the International Travel Registry https://travelregistry.johnshopkins.edu/Travel so that the School may locate you in the event of an emergency.

JK/rch

8.10.5 AMREF Ethical Clearance

REF: AMREF – ESRC P862/2020 April 16, 2021

Dr. Griffins Manguro
International Centre for Reproductive Health - Kenya
3rd Avenue, Off Mahesh Doshi Rd, Nyali, Mombasa
P.O. Box 91109 - 80103 Kenya
Tel: 0722 208 652 | Mobile: 0729 788 686
Email: gmanguro@icrhk.org

Dear Dr. Manguro,

RESEARCH PROTOCOL: BARRIERS, FACILITATORS AND COSTS OF SEXUAL AND REPRODUCTIVE HEALTH SERVICES FOR FEMALE SEX WORKERS INTERVENTIONS IN MOMBASA AND KILIFI COUNTIES.

Thank you for submitting your protocol to the Amref Ethics and Scientific Review Committee (ESRC).

This is to inform you that the ESRC has reviewed and approved your protocol. The approval period is from April 16, 2021 to April 15, 2022, and is subject to compliance with the following requirements:

a) Only approved documents (including informed consents, study instruments, advertising materials, material transfer agreements etc.) will be used.
b) All changes including (amendments, deviations, violations etc.) are submitted for review and approval by Amref ESRC before implementation.
c) Death and life-threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the Amref ESRC within 72 hours of notification.
d) Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to Amref ESRC within 72 hours.
e) Clearance for export of biological specimen must be obtained from the relevant government authorities for each batch of shipment/export.
f) Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
g) In case of late renewal, the Amref ESRC shall not be held responsible for any severe adverse events (SAEs) that may occur as a result of research activities that were carried out after the expiry of approval.
h) Submission of an executive summary report within 90 days upon completion of the study to the Amref ESRC.
i) All government regulations for prevention and control of the spread of COVID-19 including social distancing, provision of personal protective equipment for participants and research assistants should be adhered to during data collection. All research assistants should be monitored for COVID 19 symptoms and referred for testing in case they present with symptoms.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and innovation (NACOSTI) https://oris.nacosti.go.ke/ and obtain other clearances needed.

Please do not hesitate to contact the ESRC Secretariat (esrc.kenya@amref.org) for any clarification or query.

Yours sincerely,

[redacted]

Prof. Mohamed Karama
Chair, Amref ESRC
CC: Samuel Muhula, Monitoring & Evaluation and Research Manager, Amref Health Africa in Kenya.

P O Box 30125-00100 Nairobi, Tel: +254 (0)20 699 4000, Fax: +254 (0)20 699 2531. www.amref.org