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# FACILITATORS AND BARRIERS TO HIV SELF-TESTING AMONG FEMALE SEX WORKERS IN BULAWAYO PROVINCE 2021

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN THE FACULTY OF HEALTH SCIENCES OF AFRICA UNIVERSITY

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## Abstract

Zimbabwe is one of the countries with a high HIV burden in southern Africa with a prevalence of around 13% in the general population. Amongst the ten provinces in Zimbabwe, Bulawayo Province is in the top three provinces most affected by HIV. While HIV testing services in Bulawayo Province are widely available their accessibility has a bias towards the general population as opposed to the high-risk populations. HIV testing among female sex workers remains incommensurate with the need to continuously monitor HIV incidence. This is against the background of an HIV prevalence of 57.1% among female sex workers, 28% amongst prisoners, 23.5% in men who have sex with men and 15% in the general population.The aim of the study was to determine the facilitators and barriers to HIV self-testing among female sex workers at Bulawayo Province in 2021. The study used an unmatched case-control study design and was conducted among 177 convenience sampled female sex workers in Bulawayo Province in 2021. Univariate and multivariate logistic regression analysis was used to analyze the data. The following factors were emerged significant from the univariate analysis; employment status (OR = 3.3, $p<0.006$), knowledge of were to get tested (OR = 2.0, $p<0.030$), recent illness (OR = 2.9, $p<0.001$), having been treated for a sexually transmitted infection (STI) (OR = 2.0, $p<0.027$, perceived seriousness of HIV infection (OR = 3.3, $p<0.001$), delays in turnaround time (OR = 0.4, $p<0.001$), access to peer support (OR = 3.3, $p<0.001$) and access to HIV information (OR = 0.5, $p<0.001$). Findings from the multivariate logistic regression revealed several facilitators and barriers such as perceived seriousness of an HIV infection (aOR = 2.7, $p<0.01$), delays in turnaround time (aOR = 0.3, $p<0.001$), reporting that hospitals were a private space (aOR = 4.4, $p<0.001$) and having peer support to do an HIV test (aOR = 3.3, $p<0.001$). This study strengthens the idea that a more private and conducive hospital environment coupled by good turnaround times in getting test results could improve uptake of HIV self-testing services.



**Key Words:** Barriers; Bulawayo; Facilitators; Female sex workers; HIV self-testing;

## Declaration

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree

MANDLENKOSI KING MOYO

Student's Full Name

Student's Signature (22/01/2022)

Mr Chikaka

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Main Supervisor's Signature (Date)

## Copyright Page

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Finally, my sincere gratitude and appreciation is to the Almighty whose grace humbles and sustains me.

## List of Acronyms and Abbreviations

| | |
|---|---|
| AIDS | Acquired Immunodeficiency Syndrome |
| ANC | Antenatal Clinic |
| ART | Antiretroviral Therapy |
| AOR | Adjusted Odds Ratio |
| AUREC | Africa University Research Ethics Committee |
| CITC | Client-Initiated Testing and Counseling |
| CI | Confidence Interval |
| DSD | Differentiated Services Delivery |
| HBM | Health Belief Model |
| HIVST | HIV self-testing |
| HIV | Human Immunodeficiency Virus |
| HPV | Human Papilloma Virus |
| IDU | Injectable Drug User |
| MDGs | Millennium Development Goals |
| MoHCC | Ministry of Health and Childcare |
| NAC | National AIDS Council |
| OR | Odds Ratio |
| PITC | Provider-Initiated Testing and Counseling |
| RCT | Randomized Controlled Trial |
| RR | Relative Risks |

| | |
|---|---|
| SDGs | Sustainable Development Goals |
| STI | Sexually Transmitted Infection |
| WHO | World Health Organization |
| ZIMPHIA | Zimbabwe Population-based HIV Impact Assessment |
| ZIMSTAT | Zimbabwe Statistics Agency |
| ZNASP III | Zimbabwe National HIV and AIDS Strategic Plan |

## Dedication

"All I ever wanted was to reach out and touch another human being not just with my hands but with my heart"

Taheren Mafi

I dedicate this work to all those who have been infected or affected by HIV/AIDS. Every life that is lost or has been lost to this HIV pandemic should weigh heavily upon our hearts and compel us to fight ever more fervently to win against it.

## Definition of Key Terms

| | |
|---|---|
| AIDS | "a medical condition in which there is severe loss of the body's cellular immunity, greatly lowering a person's resistance to infection and malignancy" (Ministry of Health and Childcare , 2018, p. 8) |
| Health Belief Model | a theory developed by psychologists to understand the reasons why people were not participating in screening programs |
| HIV | "the virus that, left untreated, leads to AIDS" (Ministry of Health and Childcare , 2018, p. 16) |
| HIV self-testing | "is a process in which a person collects their own specimen (oral fluid or blood) using a simple rapid HIV test and then performs the test and interprets their result, when and where they want" (World Health Organisation, 2019, p. 2) |
| Key Population | "refers to groups at higher risk of HIV infection (Ministry of Health and Childcare , 2018, p. 17) |
| Female Sex Worker | "a female who engages in sex in exchange for an amount of money that is agreed on by the sex worker and the client/s before the sex takes place" (Ministry of Health and Childcare , 2018, p. 24) |
| Modifying factors | refers to a group of variables which indirectly affect the health-related behavior like demographics |

| | |
|---|---|
| Perceived barriers | are the impediments to undergo screening for a health condition |
| Perceived benefits | are the benefits in the virtues of taking action to prevent illness |
| Perceived threats | is a combination of perception about severity of a condition and perceived susceptibility to it |
| Perceived self-efficacy | refers to one's ability to carry out a behavior required for screening |

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# CHAPTER 1 INTRODUCTION

## 1.1 Introduction

Zimbabwe is one of the countries with a high HIV burden in southern Africa with a prevalence of around 13% in the general population (ZIMPHIA , 2020). Amongst the ten provinces in Zimbabwe, Bulawayo Province is in the top three provinces most affected by HIV. While HIV testing services in Bulawayo Province are widely available their accessibility has a bias towards the general population as opposed to the high-risk populations. Female sex workers remain largely underserved due to several barriers at the health facilities therefore access to HIV testing services continues to have a low coverage among them.

HIV self-testing holds promises to a more suitable testing alternative as compared to traditional testing approaches. HIV self-testing has been applauded for offering a low cost, empowering and high impact solution to the early diagnosis of key populations in many contexts (World Health Organization, 2016) (World Health Organisation, 2019).

In Zimbabwe a quartely HIV test is recommend amongst key populations and HIV self-testing has shown an increase in quarterly HIV testing in other studies. A study by Katz, Golden , Hughes, Farqukar, & Stekler (2015) in United States of America reported an increase in quaterly HIV among men who have sex with men

One of the benefits of HIV self-testing is its user-friendlyness to the clients. According to World Health Organisation (2019) it was revealed that many individuals were willing and able to competently perform HIV self-testing with no assistance. In addition, HIV self-testing was found to be highly acceptable in a variety of settings (World Health Organisation, 2019)

A better understanding of the factors that both facilitate and obstruct utilization of HIV self-testing will assist in tailoring client-oriented testing services. This study investigated the facilitators and barriers to HIV self-testing among female sex workers in Bulawayo Province.

We shall begin in this chapter by firstly giving a background of the HIV response then secondly will present the statement of the problem after which we will state the purpose of the study followed by the research questions. Lastly we will present the delimitations of the study and then summaries the chapter.

## 1.2 Background to the Study

### 1.2.1 Overview of Zimbabwe's HIV Response Strategy

At the international level, Zimbabwe has made commitments to implement various policy frameworks such as the Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs) and the UNAIDS Fast Track goals thus its HIV response strategy draws and aligns its targets from these frameworks. In the Millennium Development Goals (MDGs) under goal 6 and target 6A member states were to have halted HIV/AIDS by 2015 and began to reverse the spread of HIV/AIDS (MoHCC, 2015).

Zimbabwe has made great progress in achieving these targets as the prevalence of HIV has been consistently declining over the years since 2015 (MoHCC, 2015). As a member state of the United Nations, Zimbabwe has adopted the Sustainable Development Goals (SDGs) which focus on ending AIDS by 2030 and the UNAIDS Fast Track goals which aims to achieve the 90-90-90 targets by 2020, the 95-95-95 targets by 2030 and ending AIDS by 2030 (MoHCC, 2015) (UNAIDS, 2015a).

The UNAIDS Fast Track is the brainchild of the Joint United Nations Programme on HIV/AIDS which set the 90-90-90 targets. Its goal was that by 2020, 90% of the people living with HIV should be aware of their status, 90% of all those diagnosed with HIV should be initiated on Antiretroviral therapy (ART) and 90% of people on ART should be virally suppressed (UNAIDS, 2015a). To achieve the 90-90-90 goal an HIV test result is the first step towards achieving the first 90% that leads to the other 90s in the HIV continuum.

Under the Joint United Nations Programme, "business unusual" mantra, member states were called upon to employ novel and innovative approaches to scale up testing coverage such as self and home-based testing while also targeting the key populations. In response to this, the World Health Organization (2016) released the guidelines for HIV self-testing (HIVST) to supplement the available testing approaches.

The rationale behind introducing HIV self-testing was that it was empowering the target populations and was a creative way to close the first 90% gap. Also, the self-testing concept had demonstrated success in testing for other diseases and conditions such as diabetes and pregnancy (World Health Organization, 2016).

Regionally, the Abuja Declaration is the policy framework that guides the HIV response in Zimbabwe. In the Abuja Declaration, African states agreed to place HIV and AIDS as the highest priority in their national health strategies (MoHCC, 2015). Consequently, the National Health Strategy of Zimbabwe places HIV and AIDS highest among the eleven-priority disease control programs (MoHCC, 2015).

The National Health Strategy is the overarching health strategy of the country while the Extended Zimbabwe National HIV and AIDS Strategic Plan (ZNASP III) guides

the HIV response in achieving its goals in Zimbabwe. The National AIDS Council (NAC) has the mandate to coordinate and implement the Extended Zimbabwe National HIV and AIDS Strategic Plan (ZNASP III)

In line with the UNAIDS Fast Track goals, the vision of the Extended Zimbabwe National Aids Strategic Plan is "a Zimbabwe with zero new infections, zero discrimination and zero AIDS-related deaths leading towards ending AIDS by 2030" (MoHCC, 2015, p. 8). To date, Zimbabwe has made significant strides towards achieving its vision.

According to the Zimbabwe Population-Based HIV Impact Assessment in 2020, the country's UNAIDS Fast Track targets are at 86.8% - 97.0% - 90.3% (ZIMPHIA , 2020). This means that 86.8% of adults know there HIV status, 97% of the adults diagnosed are on antiretroviral therapy (ART) and 90.3% of adults on ART are virally suppressed (ZIMPHIA , 2020). The first 90% target remains the weakest link in the HIV treatment continuum owing to suboptimal interventions targeting hard to reach populations such as key populations.

Notwithstanding all the gains that have been made, Zimbabwe's HIV testing response has largely a bias towards the general population while neglecting the key populations. HIV testing services have been offered through the health facility-based testing and community-based testing. Health facility-based testing is done through Client-Initiated Testing and Counselling (CITC) and Provider-Initiated testing and Counselling (PITC) with entry points at places such as Antenatal Clinic (ANC), Tuberculosis and Sexually Transmitted Infection clinics. Community-Based HIV testing is mostly done on campaign occasions (MoHCC, 2015).

These interventions are not tailored for key populations as they offer limited access due to barriers such as health care worker stigmatization. The limited interventions towards key populations are being offered through a Differentiated Service Delivery (DSD) (Murai & Maphosa, 2019). Differentiated Services Delivery has a client-centred approach to delivering HIV testing services (Murai & Maphosa, 2019). Regardless of these efforts, there are still suboptimal services being offered. This has undermined the fact that Zimbabwe has a mixed epidemic meaning the general and key populations are important in sustaining transmission.

**Statement of the Problem**

According to the Extended Zimbabwe National HIV and AIDS Strategic Plan there is a "lack of baseline data on key populations to enable estimation of the magnitude of the problem …" (MoHCC and National AIDS Council, 2015, p. 13). Nevertheless, statistical data that was published as on 2015 showed that HIV still disproportionately affects female sex workers as compared to other subgroups in Zimbabwe (MoHCC and National AIDS Council, 2015). Figure 1-1 below shows the HIV prevalence among various sub-populations in Zimbabwe as captured in the Extended Zimbabwe National HIV and AIDS Strategic Plan (MoHCC and National AIDS Council, 2015).

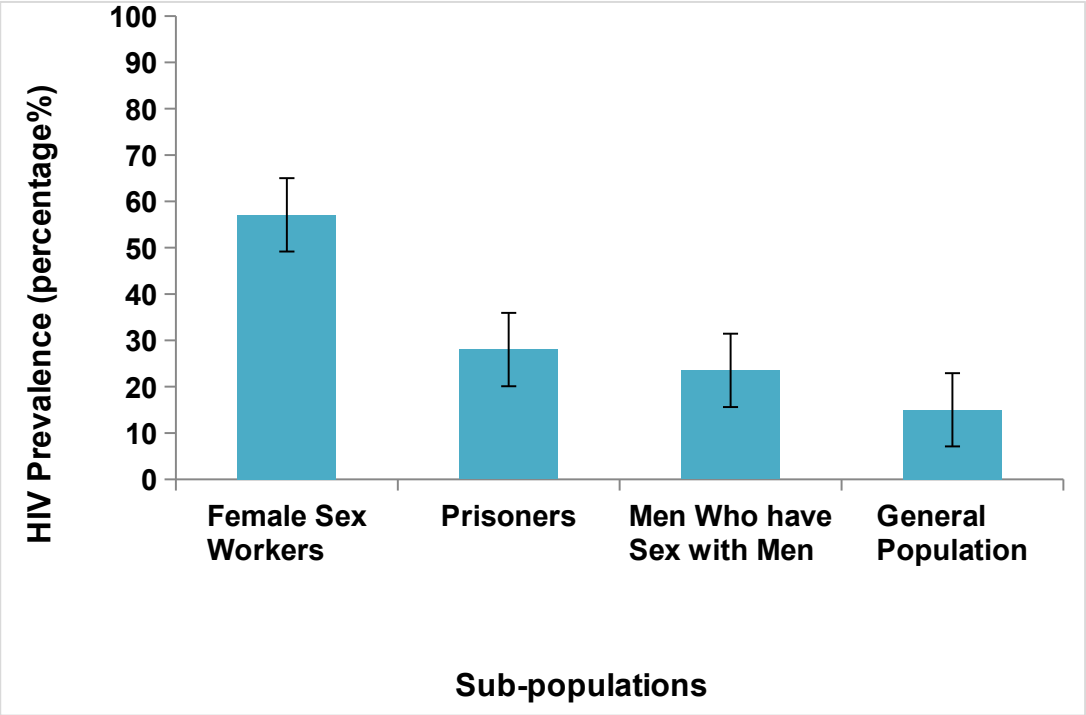


Figure 1-1 HIV prevalence among various sub-populations in Zimbabwe as on 2015.

Source: MoHCC and National AIDS Council 2015

Bulawayo Metropolitan Province is one of the provinces which are most affected by the HIV/AIDS pandemic. According to the 2015 Annual report of the Director of Health Services of Bulawayo Province, HIV/AIDS related deaths were the main causes of death accounting for around 15-20% of the crude deaths during that period (see figure1-2 below) (City of Bulawayo, 2015).

Given that Zimbabwe's HIV transmission is characterized by a mixed epidemic, its interventions should prioritize targeting most affected sub-populations that is to say female sex workers. However, the interventions targeted towards these groups such as HIV testing still remain incommensurate with the need to continuously monitor HIV incidence.

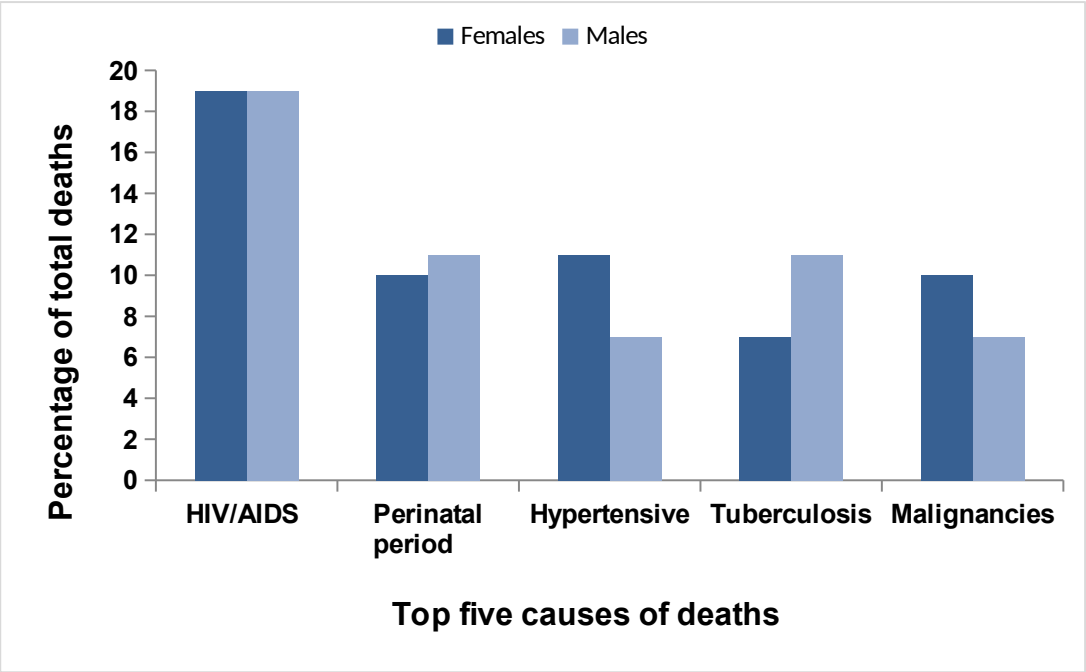


Figure 1-2 Main causes of death, Bulawayo Province - 2015. Source: City of Bulawayo 2021

### 1.3 Purpose of the Study

The intent of this study is to use the Health Belief Model to determine facilitators and barriers to HIV self-testing among female sex workers in Bulawayo Province in 2021. The Health Belief Model is defined by six constructs namely perceived threats, perceived benefits, perceived barriers, perceived self-efficacy, cues to action and modifying factors. These constructs were used in a case-control study to compare facilitators and barriers between female sex workers who have used HIV self-testing in the past three months and those who have not used it

#### 1.3.1 Broad Objectives

- To determine facilitators and barriers to HIV self-testing among Female Sex Workers at Bulawayo Province in 2021.

### 1.3.2 Specific Objectives

1 To determine modifying factors associated with the use of HIV self-testing among Female Sex Workers in Bulawayo Province 2021

2 To determine the perceived benefits of HIV self-testing among Female Sex Workers in Bulawayo Province 2021

3 To determine perceived threats of HIV self-testing among Female Sex Workers in Bulawayo Province 2021

4 To determine self-efficacy factors influencing HIV self-testing among Female Sex Workers in Bulawayo Province 2021

5 To determine cues to HIV self-testing uptake among Female Sex Workers in Bulawayo Province 2021

## 1.4 Research Questions

1. What are the modifying factors associated with uptake of HIV self-testing among female sex workers in Bulawayo Province in 2021?

2. What are the perceived benefits of HIV self-testing among female sex workers in Bulawayo Province in 2021?

3. What are the perceived threats to HIV self-testing among female sex workers in Bulawayo Province in 2021?

4. What are the self-efficacy factors associated with HIV self-testing among female sex workers in Bulawayo Province in 2021?

5. What are the cues influencing uptake of HIV self-testing among female sex workers in Bulawayo Province in 2021?

## 1.5 Significance of the Study

A study of the facilitators and barriers to HIV self-testing among female sex workers has importance for many reasons. Firstly, it will help to reveal the underlying logic why female sex workers choose to utilize HIV self-testing services. This will in turn inform policy makers and stakeholders such as the Ministry of Health and Childcare and Non-Governmental Organizations working with key populations on how to tailor testing services to the needs of these populations.

Secondly, understanding of the facilitators and barriers to HIV self-testing will assist in the rapid scaling up of HIV self-testing services and thus contribute to closing the gap towards the 95-95-95 UNAIDS goals. Thirdly, this study fills the literature gap that exists in the domain of HIV self-testing amongst a high-risk population in Bulawayo Province. Lastly, this study contributes to early diagnosis and initiation to antiretroviral drugs thereby reducing morbidity and mortality among female sex works.

## 1.6 Delimitations of the Study

Due to limitations in resources and time this study was confined to Bulawayo Metropolitan Province and did not include other provinces in Zimbabwe. The results of this study are therefore generalizable to Bulawayo Metropolitan Province only.

## 1.7 Summary

This chapter we gave a prologue of the central idea of this study. The idea behind it all is to attempt to offer a solution to the predicament of testing coverage among female sex workers. The Health Belief Model was used to inform our understanding of the facilitators and barriers to HIV self-testing among female sex workers.

In the next chapter we will give a closer look at how the Health Belief Model was operationalized into this study. Also in the next chapter we will do a literature review to explore potential facilitators and barriers to HIV testing using the Health Belief Model constructs as the guiding concept.

# CHAPTER 2 REVIEW OF RELATED LITERATURE

## 2.1 Introduction

In this chapter we are going to do a literature review to identify and begin to build a foundation for the variables which were used in this study. We will firstly offer an explanation to the choice of the theoretical framework; secondly we will look at susceptibility to HIV infection. Thirdly, we go on to discuss variables under severity of infection, then benefits of HIV testing, then barriers, then self-efficacy then cues to testing. Finally we will summaries the findings of the review at the end of this chapter.

## 2.2 Theoretical framework

According to Creswell (2009) “a theory is an interrelated set of constructs (variables) formed into propositions or hypothesis that specify the relationship among variables” (p. 61). In a research study, a theory may be used to support an argument or to explain or predict phenomena. In this study, the Health Belief Model (HBM) was used to assist in understanding why female sex workers participate or shun screening for HIV using HIV self-testing kits.

The Health Belief Model was developed by psychologists in the United States Public Health Service (Hochbaum, 1958) (Rosenstock, 1960) (Rosenstock, 1974). It was developed to understand the reasons why people were not participating in prevention or rather in Tuberculosis screening programs. Using the Health Belief Model constructs researchers were able to explain the lack of participation of individuals at risk of Tuberculosis in screening initiatives.

The Health Belief Model belongs to a broad set of theories known as the value-expectancy theories were value is the subjective value of a health-related outcome

and expectancy is the subjective likelihood that a behaviour will result in a given health outcome (Glanz, Rimer, & Viswanath, 2008).

The model posits that an individual values preventing illness and experts that specific health behaviour such as screening for a disease may prevent illness. Expectancy was further refined by splitting it to subjective measures of susceptibility, the severity of disease and self-efficacy to prevent the threat through behaviour (Glanz, Rimer, & Viswanath, 2008).

Thus the theory has developed to accommodate seven constructs that predict behaviour namely; perceived barriers, perceived self-efficacy, perceived benefits, perceived susceptibility, perceived severity, cues to action and modifying factors. To aid in the understanding of the theory brief definitions of the constructs are as follows; perceived benefits are the beliefs in the virtues of taking action to prevent illness, perceived susceptibility is the belief in the vulnerability of becoming ill.

In addition, perceived severity is a deep impression of the seriousness a disease or condition, perceived self-efficacy is assurance of one's own ability or resource to carry out the behaviour required for the intended outcome, cues to action are hints, notifications or intimations to initiate a given behaviour, perceived barriers are an apprehension of the impediments to perform a behaviour and lastly modifying factors are a group of variables which indirectly affect the health-related behaviour like demographics.

Rosenstock, as cited by Walker (2004), states that the Health Belief Model hypothesis that "an individual must feel threatened by his/her current behaviour, believe that a specific change in behaviour will be beneficial by resulting in a valued outcome at an acceptable cost and must feel that she or he is competent to implement

the recommended change" (p. 6). In this study, the Health Belief Model constructs are going to be operationalized as shown in figure 2-1 below.

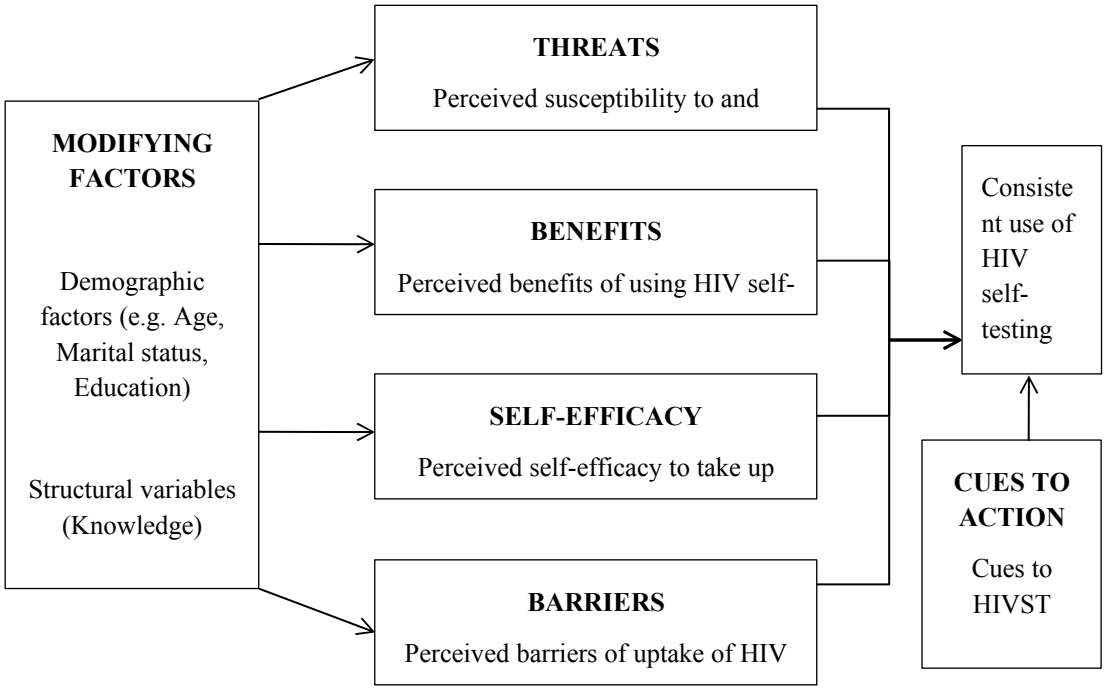


Figure 2-3 Operational description of the Health Belief Model

### 2.2.1 Relevance of Theoretical framework to Study

Similar to the non-participation of individuals towards Tuberculosis screening initiatives, today there are numerous opportunities for individuals at risk of HIV to participate in HIV screening for example HIV self-testing, nevertheless, there is still lack of participation in HIV screening services by female sex workers. Consequently, it is most appropriate to use the Health Belief Model and its constructs to understand the facilitators and barriers to HIV screening by female sex workers.

Perceived benefit is the belief in the virtues that HIV self-testing has to offer, perceived susceptibility is the belief in the vulnerability of being infected with HIV, perceived severity is a deep impression of the seriousness of an HIV infection or developing AIDS.

When perceived susceptibility and severity are considered in combination, they produce the construct; perceived threat of infection with HIV. Perceived self-efficacy is the assurance of one's ability or resource to carry out HIV self-testing successfully. Cues to action are the internal and external intimations to initiate HIV self-testing. Modifying factors are the variables that indirectly affect HIV self-testing like age, sex and marital status.

The logic of using the Health Belief Model is that if a female sex worker perceives the on-going threat of an HIV infection, perceives the pros and cons of to use HIV self-testing and feels competent to do HIV self-testing then the individual should consistently utilize the screening tool

### 2.3 Modifying factors of HIV self-testing

The modifying factors probable to influence the uptake of HIV self-testing where reviewed from literature and grouped into demographic variables and structural variables. They either facilitate uptake or are barriers to HIV self-testing.

#### 2.3.1 Demographic factors associated with HIV testing

##### 2.3.1.1 Age

A systematic review undertaken found that there is still no consensus as to whether young or old age is an enabling factor on HIV testing uptake among female sex workers (Tokar, Broerse, Blanchard, & Roura, 2018). For instance a study done in Botswana on HIV and female sex workers showed that individuals below twenty-four years where more likely to screen for HIV than older sex workers (Seltare & Manyeage , 2017). Likewise, Parriault, Basurrko, Masena, & Kerr (2015) found in a

different study that female sex workers over the age of thirty years where less likely to screen for HIV.

On the other hand, a study in the Filipina revealed that older age was associated with testing at an odds ratio of 1.06 (95% CI 1.03 – 1.09). In the same way, in China Hong , et al., (2012) found that older age was associated with testing with an adjusted odds ratio of 1.09 (95% CI 1.04 – 1.13). Nhurod , et al., (2010) found that there was no association between age and HIV testing.

#### 2.3.1.2 Level of Education

As far a level of education is concerned female sex workers generally do not have significant differences in their level of education (Tokar, Broerse, Blanchard, & Roura, 2018). Intuitively speaking, if they were bigger differences in education the highly educated female sex would probably have opportunities to a higher income than what sex work offers.

While it may make logical sense that higher level of education be associated with higher testing rates that is not always the case. The evidence shows conflicting results on the level of education and HIV testing. Chiao, Morisky, Ksobiech, & Malow (2008) demostrated in a Quasi-Experimental study that the more years of education a female sex worker has the more likely there were to have an HIV test. This conflicted with the findings by Hong , et al., (2012) which revealed that lower education level among female sex workers in Southwest China was associated with testing while higher levels were not.

#### 2.3.1.3 Marital status and HIV testing

Marital status has been demonstrated in many studies to influence the uptake of HIV testing, however it has inconsistent results when associated with HIV testing. In

China, female sex workers who were reportedly married were more likely to screen for HIV (Wang Y. , 2010). In contrast to the findings in China, Seltare & Manyeage (2017) found that being married or having a stable partner was associated with not testing and in some cases was coupled with inconsistent use of condoms.

These findings can be attributed to trust that may have been developed between married couples, thus the lack of testing is a token of faith in the fidelity to a spouse. In such situations therefore requesting use of a condom or having an HIV test may attract suspicion that there may have been infidelity thus detering testing (Chanda, et al., 2017).

#### 2.3.1.4 Effects of children on HIV testing

Society places high value on motherhood and women's role in nurturing of children. In the context of HIV, children seem to positively contribute to HIV testing as women are compelled by social norms and their need to live long enough to raise their children. Thus, they are tested to gain access to life prolonging antiretroviral drugs should they test HIV positive.

Seltare & Manyeage (2017) in their study in Botswana concluded that female sex workers with children were more likely to have an HIV test than those without children. In other studies that had high testing amongst women without children, it was cited that female sex workers tested for HIV to maintain their negative status and prospects of having children (Tokar, Broerse, Blanchard, & Roura, 2018). This further emphasized the enabling effect children have on the health behaviour of women.

#### 2.3.1.5 Impact of socioeconomic status on HIV testing

HIV has long been recognized as social disease in as much as it is a viral one. This is because certain cultural values and norms have been observed to increase the risk of contracting HIV while others limit an individual's options to reduce their risk (UNAIDS, 1999). Several investigators agree that gender is a significant contributor to the incidence of HIV and disproportionately affects women than men (UNAIDS, 1999) (Campbell, Foulis, Maimaine, & Sibiya, 2005) (Unicef, UNAIDS & IDS, 2010) (UNAIDS, 2017).

In addition, the world is generally patriarchal thus; women are socialized to defer to the authority of men. This tends to reduce women's negotiation power for safe sex and HIV prevention services. This lose in negotiation power is amplified when an individual is a sex worker as the economic pressure to make money makes it difficult to negotiate for safe sex.

Tran , Nguyen, & Phan (2013) found that economic pressure exerted by high paying clients to have unprotected sex was associated HIV testing. This was due to the lack of trust the sex workers had on the clients. Hong , et al., (2012) also revealed that female sex workers who worked in high income venues were more likely to test for HIV

Still on economic pressure, taking time to have an HIV test done has been cited to have a negative impact on the income of the sex workers (Ameyan, Jeffery, Negash, Biruk, & Taegtmeyer, 2015). The operation hours of the HIV testing services and those of sex work may conflict resulting in a lost opportunity to make money.

Futhermore, there may be other cost which may be incured while trying to access HIV testing services for instance xhospital user fees, travel costs and direct testing

service costs. Taking into consideration that sex workers usually have a low income these costs will dissuade access to HIV testing.

#### 2.3.1.6 Age of sex debut

Several publications have shown that there is a strong relationship between late sex debut (>18years) and HIV testing. In a study in Uzbekistan, Todd, Alibayeva, Khakimor, Sanchez, Bautista, & Earhart (2007) found that a late sex initiation (>18 years) was statistically associated with HIV testing at an adjusted OR = 2.00 (95% CI: 1.17-3.43).

These results corroborate with those found by Shokooki, Karamouzian , Khajekazemi, Osooli, Sharifi, & Haghdoost (2016) which revealed that being 18-24 years was statistically significant (aOR = 2.83, p<0.026) with HIV testing while being >24 years was also statistically significant (aOR = 2.76, p<0.030) with HIV testing.

Shokooki, Karamouzian , Khajekazemi, Osooli, Sharifi, & Haghdoost (2016) argue that sex workers with an early sex debut were less educated about HIV.

However, these findings are contrary to those found by Seltare & Manyeage (2017) in a study in Botswana as they found that there was no significant association between HIV testing and sex debut

### 2.3.2 Structural variable (HIV-related knowledge)

Literature revealed that knowledge about HIV transmission was found to be a potential structural variable to influence HIV self-testing. While level of education has been demonstrated to influence HIV testing Chiao, Morisky, Ksobiech, & Malow (2008) argued that it is actually the knowledge of HIV and its transmission that is more likely to influence HIV testing.

This issue has been considered by Hong , et al., (2012) and they suggest that correct knowledge about HIV prevention and risks of transmission like use of condoms, not sharing needles and abstinence were likely to result in testing. In their work in China, it was described that good knowledge of HIV was associated with HIV testing at an odds ratio of 3.25 (95% CI: 1.90- 5.55).

Another equally relevant facet about knowledge is the knowledge of where to access HIV testing services. Knowledge of testing sites is directly linked to HIV testing (Hong , Fang , Liu, & Li, 2008) (Hong , et al., 2012).

### 2.4 Perceived threats to associated with HIV testing

#### 2.4.1 Susceptibility to HIV infection and its association to testing

##### 2.4.1.1 Level of risk awareness of HIV infection

In the previous section, we considered how knowledge about HIV transmission could influence HIV testing. While this knowledge has been shown to contribute to HIV testing it still remains that some sex workers may have an abstract understanding of the risk of HIV and their susceptibility to it. For instance, there is evidence that some sex workers when they hear announcements in media of a reduction in HIV prevalence they interpret this as freedom from infection.

Nevertheless, whatever knowledge of HIV one possesses self-perceived risk has been shown to be associated with HIV testing (Shokooki, Karamouzian , Khajekazemi, Osooli, Sharifi, & Haghdoost, 2016). In a study by Nguyen , Aho, Diakite, Sow , Konsuik, & Rashed (2011) women who perceived themselves to be at high risk of infection were 2.7 times more likely to have an HIV test done and return to collect the results.

#### 2.4.1.2 Risk of multiple partners and its effects on HIV testing

It is common knowledge that having multiple concurrent sexual partners greatly increases the risk of HIV infection. If we add to this a long duration of being in sex work the chance of testing HIV positive is greatly amplified. Seltare & Manyeage (2017) in their study found that sex workers who reported high client turnover and long duration in sex worker were more likely to do HIV testing.

Nhurod , et al., (2010) findings also concurred with those of Seltare & Manyeage (2017) as they showed that sex workers who reported a high number of casual partners in the previous three months were more likely to have an HIV test done at a p value of $p<0.001$

#### 2.4.1.3 Relationship of condom use to HIV testing

Condom use is strongly affiliated to perceptions of susceptibility to HIV and other sexually transmitted infections. However, the relationship between condom use and HIV testing is a paradoxical one. In different circumstances, consistent and inconsistent uses of condoms have both demonstrated to be associated with testing and not testing. Studies by Nguyen , Aho, Diakite, Sow , Konsuik, & Rashed (2011), Chiao, Morisky, Ksobiech, & Malow (2008) and Hong , Fang , Liu, & Li (2008) revealed that consistent condom use was associated with HIV testing.

This makes logical sense if we take into account that an indiviidual who uses a condom consistently is risk conscience therefore is more likely to test regularly. On the contrary Wang , et al., (2009) found that individuals who consistently used a condom disregarded testing as a result of the false sense of security they had on the efficacy of a condom to protect against HIV infection.

Beattie, Bhattacharjee, Suresu, Isac, & Ramesh (2012), Chanda, et al., (2017) and Tran , Nguyen, & Phan (2013) found that inconsistent condom use with a client was associated with HIV testing. Lack of trust of the client was cited as the motivating reason for having an HIV test done.

However when inconsistent condom use was with a husband or intimate partner this was associated with not testing (Tran , Nguyen, & Phan, 2013). Seltare & Manyeage (2017) also found that inconsistent condom use with a stable partner was associated with not testing  and this was attrbuted to the trust amongst the couples.

#### 2.4.1.4 Risk of HIV infection associated with drug abuse, Alcohol

Alcohol and drug abuse is very rampant among female sex workers and has been singled out as a key contributor to risky sexual behavior (Bengston , L'Engle , Mwarogo, & King'ola, 2014). Various investigators have linked inconsistent condom use, unprotected sexual intercourse and sexual violence with use of drugs and alcohol (World Health Organization, 2000) (Kalichman, Simbayi, Kaufiman, Cain, & Jooste, 2007).

Alcohol increases the risk of acquiring an infection through impairing the judgment of an individual to take necessary protective measures. Other researchers such as Pitpitan E. V., Kalichman, Eaton, Sikkema, Watt, & Skinner (2012) have gone as far as to demostrate the association between failure to screen for HIV and alcohol use.

Female sex workers who are Injectable Drug Users (IDU) are susceptible to infection through sharing of needles. The risk may go unnoticed as the person selling of administering the drug may cause some users to share a needle without them being aware.

#### 2.4.1.5 Suggestive symptoms of sexually transmitted Infection and HIV testing

HIV infection is often accompanied by other sexually transmitted infections and tuberculosis. Symptoms of these infections have in many cases become suggestive of an infection with HIV and resulted in a test being done. Seltare & Manyeage's (2017) findings in Botswana revealed that female sex workers who had reported experiencing symptoms such as abdominal pain, burning urination and genital ulceration were more likely to test for HIV.

HIV/AIDS symptoms on a female sex worker, close friend or relative have also been observed to be linked to HIV testing. Ameyan, Jeffery, Negash, Biruk, & Taegtmeyer (2015) observed that female sex workers were more likely to test for HIV if they had a serious ailment. This was also confirmed in the study by (King , Maman , Dudina, Moracco, & Bowling , 2017)

### 2.4.2 Contribution of the severity of getting an HIV infection to testing

The section on severity of HIV infection explores the issues about the seriousness of getting infected with HIV and how they relate and contribute to HIV testing.

#### 2.4.2.1 Fear of dying from HIV/AIDS

In the earlier phase of the HIV/AIDS pandemic being HIV positive was viewed as a death sentence as there was no treatment available at the time. The progression from being HIV positive to developing full-blown AIDS was greatly feared. In many cases this resulted in severe weight loss, persistent opportunistic infections and eventually death. Inherently, testing HIV positive has been since received with fear. The arrival of the antiretroviral drugs has allayed some of these fears but there still exists some fear of being HIV positive

The thought of testing and turning out HIV positive still incapacitates many to procrastinate testing. A study in Botswana showed that a majority of female sex workers feared collecting their results of fear of being HIV positive (Seltare & Manyeage , 2017). Chiao, Morisky, Ksobiech, & Malow (2008) also found that female sex workers were showing concerns about testing positive thus testing positive tends to discourage testing.

#### 2.4.2.2 Influence of a recent illness on HIV testing

In many other studies a past experience with AIDS amongst a close family member or recent illness thereof has been associated with HIV testing. King , Maman , Dudina, Moracco & Bowling (2017) revealed that knowing someone who has HIV was associated with testing at an AOR = 6.75 (95% CI: 1.11 – 41.1). Similarly, Chanda, et al., (2017) showed that a family experience with HIV or seeing people demise from denial was associated with testing.

## 2.5 Benefits of using HIV self-testing

The promising results that HIV self-testing has rest mostly on the benefits that it offers. This section expounds more on the benefits of HIV self-testing

### 2.5.1 Privacy and Confidentiality of HIV self-testing on testing services

“Self-testing sounds more private, rather than going to the clinic everybody will find out” (brothel-based sex workers’ clients) (Wulandari, Ruddick, Guy, & Kaldor, 2019, p. 9). HIV self-testing has found its way into new settings that previous traditional testing could not reach thus increasing the testing coverage. In many parts of the world HIV self-testing can now be easily accessed from homes, vending machines, bars, pharmacies and supermarkets (Qin, et al., 2018). The privacy and confidentiality feature of self-testing facilitates this increase.

In a literature review Krause, Subklew-Schume, Kenyon, & Colebunders (2013) revealed that in different conexts HIV self-testing has been perceived as being highly confidential and private. Many other investigators such as the World Health Organization (2019), Kumwenda, et al., (2014) and Bwalya, et al., (2020) just to mention a few have demostrated similar findings. Most attractive about HIV self-testing to female sex workers is that it moves testing from health facilities there by reducing concerns about stigmatization, embarasment and privacy

### 2.5.2 Potential of HIV self-testing to empowerment and increase convenience

HIV self-testing empowers its users and increases the efficiency of HIV testing. In a qualitative systematic review on HIV self-testing, one of the themes that were dominant was that HIV self-testing is convenient and empowering. While in a literature review article, convenience emerged as a major theme as to why self-testing was attractive (Figueroa, Johnson, Verster , & Baggaley, 2015).

HIV self-testing is superior to the facility-based testing in that it caters for the schedule and needs of female sex workers. It gives sex works control over issues such as location of testing, appointment for testing, and efficiency of getting test results (Qin, et al., 2018). In another study Wulandari, Ruddick, Guy, & Kaldor (2019) also demostrated that HIV self-testing empowered its clients on were and when to test.

### 2.5.3 Potential of a non-invasive HIV testing option

Another facet which makes HIV self-testing appealing is the fact that it is predominantly done using oral fluid. This means that it is a less invasive and painless than the previous test which required finger-prick for blood to conduct a test. Spielberg as cited by Krause, Subklew-Schume, Kenyon, & Colebunders (2013)

demostrates that there was greater acceptability of HIV testing services in the oral-fluid-based self-testing as compared to blood based testing. Hensen, et al., (2020) also found that individuals who chose HIV self-testing were more likely to repeat HIV testing than those who chose finger-prick HIV testing at an AOR = 10.56 (95% CI: 7.3 – 15.27).

### 2.6 Potential barriers to uptake of HIV self-testing

In this part of the literature review we look at the factors which act as obstacles to HIV testing among sex workers.

#### 2.6.1 Fear of testing HIV positive and its association to HIV testing

Testing HIV positive is no longer as severe as in the onset of the pandemic. Nowadays being HIV positive has different implications altogether. According to Chanda, et al., (2017) being found HIV positive is linked to the fear of queuing for antiretroviral drugs and the stigma of being seen by people one knows. In other words one runs the risk of disclosing their status while trying to access treatment.

This discourages some sex workers who may have good intention to get tested. Another consequence of having a chronic condition which deters testers is the thought of a lifelong commitment to taking treatment.

#### 2.6.2 Privacy offered at the health facilities

The arrangement of the space at the health facility if not designed to offer privacy may deter individuals from testing. King, Maman, Bowling , Moracco, & Dudina (2013) and Chanda, et al., (2017) concured that the arrangement or organization of the space at the health facility is a major determinant of access to HIV testing services among female sex workers. This was because in most times health facilities were congested and sex workers felt this deprived them of the privacy they desired.

In certain situations the operations at the health facility are such that it enables other patients to discover their status. Consider for example if you are found to be HIV positive then you have to be excluded from the rest of the clients leading bystanders to conclude on your status. The lack of trust between key populations and health workers has also caused them to question if confidentiality of their status can be adhered to thus undermining testing rates.

### 2.6.3 Stigmatization and HIV testing

According to Chanda, et al., (2017) stigmatization is the open action against an individual. Amidst female sex workers, stigma can be grouped into two main catergorizes namely internalized stigma also known as self-stigma and stigma by health workers. Internalized stigma is the kind were a victim has made the stigma their own or rather stigma that results in negative attitudes about self (Ministry of Health and Childcare , 2018).

Self-stigma is characterized by neglence of one's health such as indulgence in risky sexual behaviour. In a qualitative study by Beattie, Bhattacharjee, Suresu, Isac, & Ramesh (2012), self-stigma emerged as a major theme among key populations who were having challenges accessing HIV testing services. This was best captured by the words of a female peer educator who stated that;

"many people resort to their fate and decide to live as long as their fate permits them and one day die quietly. Everyone has to die one day, no one escapes. This is the kind of philosophy they follow" (Beattie, Bhattacharjee, Suresu, Isac, & Ramesh, 2012, p. 43)

Sex workers who have self-stigma have been shown to refuse to get tested for HIV as they believed that they will test positive because of knowing themselves to be sex

workers (Beattie, Bhattacharjee, Suresu, Isac, & Ramesh, 2012) (Seltare & Manyeage , 2017)

Stigmatization by health workers has been documented in many studies as a barrier to access testing services (Hong , et al., 2012) (Beattie, Bhattacharjee, Suresu, Isac, & Ramesh, 2012) (King, Maman, Bowling , Moracco, & Dudina , 2013) (Dugas , et al., 2015) (Deering , et al., 2015). Sex workers fear that disclosing their involvement in sex work prejudices health workers to conclude that they are HIV positive (Chanda, et al., 2017).

This then results in the health worker subjecting them to provider-initiated testing and counseling without prior consent. Provider-initiated testing and counseling has been cited as the reason women with history of sex work fear delivering in a health facility.

### 2.6.4 Inconvenience of getting tested and locating testing sites

Inconvenience is another commonly cited barrier to testing of female sex workers. Sites offering testing often have long waiting times and have inappropriate operating hours that compete with the working times of sex workers. Additionally, long distances to testing sites have also contributed in reducing testing coverage.

### 2.6.5 Intimate partner violence (IPV) and HIV testing

HIV testing does in some cases have social harms which prevent individuals from testing. Studies by Temmerman, Ndinya-Achola, Ambani, & Piot (1995), Grinstead, Gregorich, Choi, & Coates, (2001) and Maman, Mbwambo, & Hogan (2002) have shown HIV testing to be linked to physical violence, sexual violence and stigma by intimate partners.

However, it should be noted that evidence from these studies must be considered with care as they were from an earlier phase of the HIV pandemic when being infected was looked upon with fear. Also in as much as there are social harms, HIV testing has a greater good.

## 2.7 Self-efficacy to take up HIV self-testing

Self-efficacy looks at the factors which act as a proxy measure for self-efficacy. These factors show an individual's resource to carry out HIV self-testing.

### 2.7.1 Impact of health seeking behaviour on HIV testing

While stigmatization against female sex workers at health facilities remains high some sex workers still muster the courage to access health services such as checkups for sexually transmitted infections and family planning. This has been closely linked to having a higher self-efficacy which consequently leads to testing services as well.

Shokoohi, et al., (2017) revealed evidence that female sex workers who had a history of utilization of health services were more likely to have an HIV test done. It was also revealed that lack of self-efficacy was exhibited by blaming external factors such as lack of money, time and distance to testing sites (Shokoohi, et al., 2017).

## 2.8 Cues to HIV self-testing uptake

In the final section we make an examination of the elements that probe female sex workers to initiate HIV self-testing.

### 2.8.1 Peer support and HIV testing

Peer support has been noted to positively contribute to HIV testing and prevention among sex workers. Peers act as gatekeepers to marginalized communities and have shown success in reaching these communities. Chiao, Morisky, Ksobiech, & Malow

(2008) revealed evidence that peer educators were an effective stretegy to encouraging sex workers to engage in protective health behaviour as they reminded the sex workers of the need to get tested. King , Maman , Dudina, Moracco, & Bowling (2017) also found that HIV is a common discussion among female sex worker thus providing cues for testing.

### 2.8.2 Health Education as a cue to testing

The media plays a great role in providing information to sex workers on testing. Tran , Nguyen, & Phan (2013) found receing information media linked to HIV testing at an AOR = 13.28 p = 0.01.

## 2.9 Summary

Chapter 2 gives us a basis for the variables to be explored. The findings of the review showed us that while this area of study has been undertaken in different contexts globally it is still at its infancy in the Zimbabwean setting. Some of the major contributions on HIV self-testing in Zimbabwe where done by Sibanda et al., (2019), Dacombe et al., (2019) and Napriela et al., (2019). These studies all use qualitative research designs and thus this limits the generalizability of their findings. This study will make a contribution by using quantitative research methods, which I now turn to expound on in the next chapter.

# CHAPTER 3 METHODOLOGY

## 3.1 Introduction

This chapter offers a plan or rather a road map as to how this study was carried out. We begin this by discussing the study design then moving on to the population, then finally data collection and analysis.

## 3.2 Research Design

This study used a 1:2 unmatched case-control study design. There are several reasons why this study design was best suited for this study. Firstly, the population under investigation was a marginalized, minority and hard to reach group thus making it hard to effectively use other study designs. According to Hennekens & Buring (1987) case-control allow for researchers to use a low number of participants to investigate a phenomenon.

This unique adavantage of a case-control study design of its ability to use few participants makes it best suited for investigating rare phenomenon as other designs would have required a very large sample to investigate this. As mentioned earlier the population of female sex workers is a hard-to-reach population thus making it fit the description of rare and suitable to investigate using a case-control study design.

Secondly, the case-control design enabled the examination of multiple facilitators and barriers. Hennekens & Buring (1987) concur with this suggestion as they argue that a case-control study design allows researchers to investigate a wide variety of potential exposure linked to a disease as well as evaluationg confounding variables

This means a case-control study can be used to examine a variety of exposures which might be affecting individuals. In this study the design will assist in the exploration

of facilitators abd barriers which might be affecting female sex workers to use HIV self-testing

Hennekens & Buring (1987) also argue that this design is of paramount importance in the "early stages of development of knowledge about a particicular disease or outcome of interest" (p.132). This is certainly the case in this study as the knowledge on HIV self-testing among female sex workers is still at its infancy in the province.

Thirdly, a case-control study allows the findings of the study to be generalized from the sample to the population. Many scholars concur that analytical studies are superior forms of study designs as compared to descriptive studies (Hennekens & Buring , 1987) (CDC, 2012). Analytic studies allow for their research findings to be generalized to a wide population

Finally, a case-control study design is cost effective and relatively simple to implement in a limited timeframe. Hennekens & Buring (1987) have also argued that a case-control study design allows for evaluation of phenomenon with longer latency periods to be investigated therefore being effective in terms of time and cost.

**3.3 Study setting**

The study site was Bulawayo Metropolitan Province. Bulawayo Metropolitan Province is home to the second largest city of Zimbabwe – Bulawayo – which has an estimated population of 738 600 residents (ZIMSTAT, 2017). Bulawayo is traditionally known as the industrial hub of Zimbabwe and is centrally located between two major trade routes connecting the Bietbridge and Plumtree border posts.

This economic activity makes Bulawayo Metropolitan Province a destination of choice for sex work. In addition, the city is located at close proximity to two tourist

attraction centres namely; Victoria Falls and Matopos Hills. This attracts sex workers to the province.

### 3.4 Study Population

The population in this study was the female sex workers in Bulawayo Province. A case was a female sex worker who has used HIV self-testing in the past three months. A control was a female sex worker who has not used HIV self-testing in the past three months.

As mentioned earlier in chapter one female sex workers have a high prevalence of HIV as compared to other categories of populations therefore this makes them the population of choice if one is to make a significant contribution towards ending AIDS by 2030 through research (MoHCC and National AIDS Council, 2015)

### 3.5 Sample Size and Sampling Procedure

The sample size was calculated using Epi Info 7 statistical package. Assuming a 95% confidence level, 80% power, 1:2 ratio of cases to controls, 58.9% of cases with exposure to knowledge about HIV self-testing, 35% of controls exposed to knowledge about HIV self-testing and an attrition rate 10% the minimum sample size obtained was 168 participants using the Fleiss method.

Convenience sampling was used to select the participants. To gain access into the target population key informants were interviewed and these constituted of female sex workers. They were selected using purposive sampling and snowballing techniques.

### 3.6 Data Collection Instrument

The study used a questionnaire for data collection. This instrument was designed for this particular study. The main sections of the instrument consisted of a cover letter, section A, section B, section C up to section F. Section A covers modifying factors with subsections on demographic and structural variables.

The variables of interest on demographics included age, marital status, level of education to mention a few while the section under structural variables consisted of knowledge of HIV. Section B was on perceived threats with subsections on perceived susceptibility and perceived severity.

Section C was on perceived benefits and consisted of variables that were facilitators to HIV self-testing. Section D looked at perceived barriers and collected data on variables that have been implicated to cause barriers to HIV testing.

Lastly section E, on perceived self-efficacy, covered health seeking behavior while section F, on cues to action, collected data on variables that were likely to cause initiation of HIV testing. Refer to the appendix 1 and 2 for samples of the questionnaire. The questionnaire had responses to questions in binary scales.

### 3.7 Pretesting of Instrument

Pre-testing was done at the community amongst 12 female sex workers. The data from the pretest was be used to check for inappropriate questions in the questionnaire. However the participants who participated in the pretest were not excluded in the main study.

### 3.7.1 Validity and Reliability

The study instruments were validated for content validity. A panel of health experts who work with key populations were used to assess content validity. To ensure reliability the interviewers who administered the questionnaire were trained on how to conduct an interview with key populations to standardize how the interviews were done. Furthermore, a disguised test retest using multiple forms is going to be done.

## 3.8 Data Collection Procedure

An in-depth interview was conducted to gain knowledge on how to conducted interviews with the target population. On identification of the target population an interviewer-administered questionnaire was then be used to collect data

## 3.9 Analysis and Organization of Data

The analysis of the data consists of a bivariate and multivariate logistic regression analysis. In many case-control studies multivariate logistic regression analysis is the method of choice for many scholars (Hennekens & Buring , 1987). This is because multivariate regression allows for the calculation of the magnitude of association while controlling or adjusting for numerous potential confounders (Hennekens & Buring , 1987).

Some variables were collapsed and transformed to make them categorical or dichotomous such as age, marital status and duration of sex work for example. A z-test was used to investigate if there were any significant differences in proportions between cases and controls in the demographic characteristics.

### 3.10 Ethical Considerations

Permission to conduct the study was obtained from the Health Services Directorate of Bulawayo Metropolitan Province. Ethical approval was obtained from the Africa University Research Ethics Committee (AUREC). Please refer to appendix 8 and 9 for copies of written permission granting permission for the study to be carried out. Written informed consents were obtained from every participant and all information gathered from this study will be kept confidential and anonymous.

### 3.11 Summary

In this chapter we looked at the research methods this study used. Quantitative study designs have not been used to investigate HIV self-testing and female sex workers in the context of Zimbabwe. Thus this study contributes to our understanding of the facilitators and barriers to HIV self-testing using new methods.

# CHAPTER 4 DATA ANALYSIS AND PRESENTATION

## 4.1 Introduction

This chapter consists of the analysis, presentation and interpretation of the results of the study in reference to the research questions. The author will begin by presenting the demographic characteristics of the female sex workers, then modifying factors, then perceived benefits of HIV self-testing, then perceived barriers, then perceived threats. This will be followed by looking at the results of self-efficacy factors associated with HIV self-testing. Finally, the author will turn to the cues to HIV self-testing then give a summary of the chapter.

## 4.2 Demographic characteristics of respondents

A total of 177 female sex workers were sampled in this study. 66 of the participants were cases while 111 were controls. From the z-test carried out on the demographic characteristics there was no evidence to suggest that there was a significant difference between cases and controls among age, marital status, level education, duration of sex work, number of children, age of sex debut and living arrangement.

However, there was sufficient evidence from the analysis to support a significant difference between cases and controls in employment as the z-test was statistically significant at $p<0.006$.

The mean age of the respondents was 27.8 years (SD=5.76). About three in five of the participants belonged to the 15 to 29 years age group from amongst the cases (59.1%) and controls (62.2%). Two in five of the cases (40.9%) and controls (37.8%) belonged to the 30 to 44 years age group (see Table 4-1).

A majority (81.8%) of the cases were single while a few were married (7.6%), co-habiting (6.1%), divorced (1.5%) and widowed (3.0%). Also amongst the controls a majority of the controls were single while minorities were married (4.5%), co-habiting (8.1%), divorced (0.9%) and widowed (3.6%).

An overwhelming majority of both the cases (93.9%) and controls (97.3%) attained a secondary level education. Only 4.6% and 1.5% had attained primary level and tertiary level education respectively from amongst the cases. Amongst the controls only 0.9% and 1.8% had attained primary and tertiary level education respectively.

With respect to employment status, an overwhelming majority (91.9%) of the controls were unemployed while majorities (77.3%) of the cases were also unemployed. This left only 8.1% of the controls and 22.7% of the cases reporting employment.

From the cases, about half (50.9%) of the respondents reported that they had had a duration of sex work longer than two years. While from the controls about three in five of the respondents reported duration of sex work longer than two years.

With reference to number of children a majority of the cases (67.2%) and controls (59.6%) had less than two children while in relation to age of sex debut a majority of cases (73.9%) and controls (75.0%) had a sex debut when they were over eighteen years old. Less than one in five of the cases (19.1%) and controls (18.5%) were living alone (Table 4-1)

Table 4-1 Demographic characteristics of respondents

| VARIABLES | RESPONSES | CASES N (%) | CONTROLS N (%) | $Z_{calc}$ | P-value |
|---|---|---|---|---|---|
| **Age** | 15 – <30 | 39(59.1) | 69(62.2) | ±0.41 | 0.659 |

| | | | | | |
|---|---|---|---|---|---|
| | 30 – <45 | 27(40.9) | 42(37.8) | | |
| **Marital Status** | Married/Cohabiting | 9(13.6) | 14(12.6) | ±0.20 | 0.841 |
| | Single/Div/ Widowed | 57(86.4) | 97(87.4) | | |
| **Level of Education** | None/Primary | 3(4.6) | 1(0.9) | ±1.58 | 0.114 |
| | Secondary/Tertiary | 63(95.5) | 110(99.1) | | |
| **Employment** | Employed | 15(22.7) | 9(8.1) | ±2.75 | 0.006* |
| | Unemployed | 51(77.3) | 102(91.9) | | |
| **Duration of sex work** | <2 year | 29(49.2) | 41(40.6) | ±1.05 | 0.293 |
| | 2 year + | 30(50.9) | 60(59.4) | | |
| **Number of Children** | <2 children | 43(67.2) | 65(59.6) | ±0.99 | 0.322 |
| | 2 children + | 21(32.8) | 44(40.4) | | |
| **Age of sex debut** | <18 years | 17(26.2) | 27(25.0) | ±0.17 | 0.865 |
| | 18 years + | 48(73.9) | 81(75.0) | | |
| **Living arrangement** | Alone | 12(19.1) | 20(18.5) | ±0.09 | 0.928 |
| | (friends, family etc.) | 51(81.0) | 88(81.5) | | |

Asterisks * = $p<0.05$; $Z_{cal}$ = Z statistic

### 4.3 Modifying factors associated with HIV self-testing

Table 4-2 below presents the bivariate and multivariate logistic regression analysis for the female sex workers in Bulawayo Province in 2021. Only about a third (33.0%) of the participants reported having heard about HIV/AIDS while the rest of the two thirds (67.0%) responded than they have never heard about HIV/AIDS. Just

over half (52.0%) of participants reported that they had received counselling with 48.0% responding that they had not received counselling.

Less than two-fifths (38.4%) reported having participated in an HIV campaign or outreach program while a majority of (61.6%) have never participated in any campaign or outreach program. More than half (54.9%) responded that they knew where to be test for HIV, the rest (45.1%) of the participants did not know where to be tested.

On the subject of knowledge of HIV routes of transmission, a majority reported that abstinence (78.5%) and using condoms (73.5%) are not routes of HIV transmission. However, 40.7% and 46.3% reported that sharing needles and unprotected sex, respectively, were routes of HIV transmission.

Bivariate regression analysis showed that the modifying factors which were significantly ($p<0.05$) associated with HIV self-testing were employment status (OR = 3.3, $p<0.006$) and knowing where to be tested for HIV (OR = 2.1, $p<0.03$) using HIV self-testing kits.

The demographic characteristics factors that were not statistically significant included age (OR = 0.9, $p<0.685$), marital status (OR = 1.1, $p<0.845$), level of education (OR = 5.2, $p<0.147$), duration of sex work (OR = 1.4, $p<0.292$), number of children (OR = 1.4, $p<0.322$), age of sex debut (OR = 1.1, $p<0.866$) and living arrangement (OR = 1.0, $p<0.931$).

Under the structural variables, the factors that were not statistically significant included reporting having heard about HIV/AIDS (OR = 0.5, $p<0.072$), receiving counselling (OR = 1.4, $p<0.250$), participation in outreach campaigns (OR = 1.0,

p<0.909), abstinence to be a source of infection (OR = 0.7, P<0.374), using condoms to be source of infection (OR = 0.7, p<0.374).

In addition reporting needle sharing to be a route of HIV transmission (OR = 1.1, p<0.715) and reporting unprotected sex to be a route of HIV transmission (OR = 1.2, p<0.657) were not significantly associated with HIV self-testing.

All the modifying factors with p<0.25 were then considered in the multivariate model. The logistic regression analysis after being adjusted for age and employment status revealed that all the modifying factors, which had been considered, were not significantly associated with HIV self-testing in this category.

**4.4 Perceived benefits of HIV self-testing**

Only 35.8% of participants reported knowing one's HIV status as being beneficial (Table 4-2). The majority (64.2%) of the participants responded that it was not beneficial to know one's HIV status. Over a third (39.0%) of the participants reported that privacy was one of the benefits of HIV self-testing with the rest of the majority (61.0%) responding that HIV self-testing was not private. Other benefits of HIV self-testing that were reported were confidentiality (37.9%), convenience (42.9%) and empowerment (31.1%). However, a majority of the respondents reported that confidentiality (62.1%), convenience (57.1%) and empowerment (68.9%) were not beneficial.

In the bivariate analysis, only privacy was significantly associated with HIV self-testing (OR = 2.3, p<0.008). Confidentiality was only marginally non-significant to HIV self-testing at OR = 1.9, p<0.054. Reporting that knowing your HIV status was beneficial (OR = 0.8, p<0.598), reporting convenience was a benefit of HIV self-

testing (OR = 1.6, p<0.143) and reporting that HIV self-testing was empowering were all non-significant results.

All the factors which were significantly (p<0.05) associated with HIV self-testing or with a p<0.25 were considered in the multivariate model. This included privacy, confidentiality and convenience. Following multivariate analysis, all factors were excluded from the multivariate model.

**4.5 Perceived barriers which deterred HIV testing**

A majority (65.5%) of the respondents reported that they had not experienced stigmatization when trying to access HIV testing sites. Fewer than 35.0% of the participants reported having experienced stigmatization before. More than half of the participants reported that they did not experience intimate partner violence for HIV testing (58.8%), waiting for HIV results was stressful (54.2%) and hospitals were a private space for HIV testing (56.8%)

On carrying out the bivariate analysis it was revealed that participants were likely not to test for HIV if they reported that waiting for results was stressful at OR = 0.4, p<0.005. In addition, private spaces in hospitals was 4.9 times (p<0.001) associated with HIV self-testing. However, some of the factors revealed non-significant results such as stigmatization (OR = 1.4, p<0.287) and reporting to have experienced intimate partner violence (OR = 0.8, p<0.483).

In the multivariate analysis waiting for results was significantly associated with testing at aOR = 0.3, p<0.001 while reporting private spaces at hospitals was significantly associated with testing at aOR = 4.4, p<0.001 (Table 4-2).

### 4.6 Perceived threats of HIV self-testing

Above half (52.5%) of the respondents said there was a chance of getting HIV/AIDS through sex work. On the other hand, 47.5% of the respondents said there was no chance of getting HIV/AIDS through sex work. Consistent condom use was reported by 34.5% of the study participants while a majority (65.5%) responded that there were some inconsistencies in the use of condoms.

More than half of the respondents reported been recently ill (55.1%) and being treated for a sexually transmitted infection (51.4%). About three-tenths of the participants used condoms with the following, ordinary client (33.3%), regular clients (30.5%) and partner (31.1%). Condom use was reported to be lower when used with a boyfriend or lover (23.7%).

Almost half (45.2%) of the female sex workers responded that they had used alcohol before or during sexual intercourse while just above half responded that they did not use alcohol before or during sexual intercourse. About 53% of the participants reported fearing to test HIV positive with the rest of the 46.9% of the participants stating that they had no fear of obtaining a positive result.

Only 38.4% of the respondents reported knowing someone who was HIV positive with the remaining 61.6% of the respondents stating that they did not know anyone who was HIV positive. Just about half (52.0%) of the participants perceived HIV to be a serious condition to be infected with. Two-fifths (40%) of the participants said they would rather be ill with another condition than HIV

The bivariate analysis revealed that there was a 52% chance of not testing if a female sex worker was using a condom with a regular client at $p<0.0383$. Fearing to test HIV positive was also significantly associated with using HIV self-testing, OR = 4.2,

p<0.001. Perceiving HIV to be a serious condition was associated with testing for HIV at OR = 3.3, p<0.001. Also significantly associated with HIV self-testing was being recently ill (OR = 2.9, p<0.001) and being treated for an STI (OR = 2.0, p<0.03).

Factors that were not statistically significant included reporting that there was a chance of being infected with HIV (OR = 1.5, p<0.179), reporting consistent use of a condom (OR = 0.7, p<0.220), use of a condom with boyfriend (OR = 1.4, p<0.393), use of condom with partner (OR = 1.1, p<0.869). In addition reporting use of condom with ordinary client, use of alcohol before or during sexual intercourse knowing someone who is HIV positive and preferring being ill with another condition than HIV were all not significant.

In the multivariate analysis, perceiving HIV to be a serious condition was significantly associated with HIV self-testing at an aOR = 2.7, p<0.01. Other factors, which were considered for the multivariate model, were consistent condom use, use of condom with regular client, fearing testing HIV positive, being recently ill and being treated for an STI. However, these were excluded from the final model

**4.7 Self-Efficacy factors associated with HIV self-testing**

Utilization of family planning services was reported by 55.9% of the participants in the study. While 44.1% of the participants were reported not utilizing family planning services. A majority (61.0%) of the participants reported not doing health check-ups while fewer than 39.0% responded that they have done health check-ups. None of the factors had significant results with utilization of family planning at OR = 1.5, p<0.201 and reporting health check-ups at OR = 1.1, p<0.685. Nevertheless,

utilizing family planning was considered for multivariate analysis but was excluded from the final model.

### 4.8 Cues to HIV self-testing

Only 40% of the participants reported that they had peer support to be tested for HIV and three in five participants reported they did not have peer support to aid them in HIV testing. About 43.2% participants had access to HIV information while 56.8% stated that they did not have access to information on HIV. The bivariate analysis revealed that peer support was associated with HIV testing (OR = 3.3, $p<0.001$) as well as having access to HIV information (OR = 0.5, $p<0.002$). In the multivariate analysis, peer support was associated with HIV self-testing at aOR = 2.3, $p<0.049$.

Table 4-2 Bivariate and Multivariate Regression Analysis for Female Sex Workers

| | | | Bivariate Analysis | | Multivariate Logistic regression Analysis | |
|---|---|---|---|---|---|---|
| **Variable / Construct** | **Response** | **N (%)** | **OR (95% CI)** | **P-value** | **aOR (95% CI)** | **P-value** |
| **MODIFYING FACTORS** | | | | | | |
| AGE | <30years | 108(61.0) | 0.9(0.4-1.6) | 0.685 | - | - |
| | 30 years + | 69(39.0) | | | | |
| Marital Status | Married/Co-habiting | 23(13.0) | 1.1(0.5-2.7) | 0.845 | - | - |
| | Single/Div/Widowed | 154(87.0) | | | | |
| Level of Education | None/Primary | 4(2.3) | 5.2(0.5-51.4) | 0.147 | - | - |
| | Secondary/Tertiary | 173(97.7) | | | | |
| Employment Status | Employed | 24(13.6) | 3.3(1.4-8.1) | 0.006* | Excluded | Excluded |
| | Unemployed | 153(86.4) | | | | |
| Duration of sex work | <2 year | 70(43.8) | 1.4(0.7-2.7) | 0.292 | - | - |
| | 2 year+ | 90(56.3) | | | | |
| Number of children | <2 children | 108(62.4) | 1.4(0.7-2.7) | 0.322 | - | - |
| | 2 children+ | 65(37.6) | | | | |
| Age of sex Debut | <18 years | 44(25.4) | 1.1(0.5-2.2) | 0.866 | - | - |
| | 18 years+ | 129(74.6) | | | | |
| Living Arrangement | Alone | 32(18.7) | 0.9(0.4-2.1) | 0.931 | - | - |
| | (Friends, Family, etc.) | 139(81.3) | | | | |

Table 4-2 Continued

| Variable / Construct | Response | N (%) | Bivariate Analysis | | Multivariate Logistic regression Analysis | |
|---|---|---|---|---|---|---|
| | | | OR (95% CI) | P-value | aOR (95% CI) | P-value |
| **MODIFYING FACTORS** | | | | | | |
| Heard about HIV? | Yes | 58(33.0) | 0.5(0.3-1.0) | 0.071 | Excluded | Excluded |
| | No | 118(67.0) | | | | |
| Received counselling? | Yes | 92(52.0) | 1.4(0.8-2.7) | 0.250 | - | - |
| | No | 85(48.0) | | | | |
| Participation in outreaches / campaign | Yes | 68(38.4) | 0.9(0.5-1.8) | 0.909 | - | - |
| | No | 109(61.6) | | | | |
| Where to get tested | Yes | 96(54.9) | 2.0(1.1-3.8) | 0.030* | Excluded | Excluded |
| | No | 79(45.1) | | | | |
| Routes of transmission | | | | | | |
| No sexual contact | Yes | 38(21.5) | 0.7(0.3-1.6) | 0.412 | - | - |
| | No | 139(78.5) | | | | |
| Using condoms | Yes | 47(26.6) | 0.7(0.4-1.4) | 0.374 | - | - |
| | No | 130(73.5) | | | | |
| Sharing needles | Yes | 72(40.7) | 1.1(0.6-2.1) | 0.715 | - | - |
| | No | 105(59.3) | | | | |
| Unprotected sex | Yes | 82(46.3) | 1.2(0.6-2.1) | 0.657 | - | - |
| | No | 95(53.7) | | | | |

Table 4-2 Continued

| Variable / Construct | Response | N (%) | Bivariate Analysis | | Multivariate Logistic regression Analysis | |
|---|---|---|---|---|---|---|
| | | | OR (95% CI) | P-value | aOR (95% CI) | P-value |
| **PERCEIVED THREATS** | | | | | | |
| Chance of getting HIV/AIDS? | Yes | 61(34.5) | 0.7(0.3-1.3) | 0.221 | Excluded | Excluded |
| | No | 116(65.5) | | | | |
| Use of condom with? | | | | | | |
| Lover | Yes | 42(23.7) | 1.4(0.7-2.8) | 0.393 | - | - |
| | No | 135(76.3) | | | | |
| Partner | Yes | 55(31.0) | 1.1(0.6-2.0) | 0.869 | - | - |
| | No | 122(68.9) | | | | |
| Regular Client | Yes | 54(30.5) | 0.5(0.2-1.0) | 0.038* | Excluded | Excluded |
| | No | 123(69.5) | | | | |
| Ordinary client | Yes | 59(33.3) | 0.80(0.4-1.5) | 0.510 | - | - |
| | No | 118(66.7) | | | | |
| Use of Alcohol? | Yes | 80(45.2) | 1.0(0.6-1.9) | 0.958 | - | - |
| | No | 97(54.8) | | | | |
| Been ill recently | Yes | 97(55.1) | 2.9(1.5-5.5) | 0.001* | Excluded | Excluded |
| | No | 79(44.9) | | | | |
| Treated for an STI | Yes | 91(51.4) | 2.0(1.0-3.7) | 0.027* | Excluded | Excluded |
| | No | 86(48.6) | | | | |

Table 4-2 Continued

| Variable / Construct | Response | N (%) | Bivariate Analysis | | Multivariate Logistic regression Analysis | |
|---|---|---|---|---|---|---|
| | | | OR (95% CI) | P-value | aOR (95% CI) | P-value |
| Fear testing positive | Yes | 94(53.1) | 4.2(2.2-8.3) | <0.001* | Excluded | Excluded |
| | No | 83(46.9) | | | | |
| Know someone positive | Yes | 68(38.4) | 1.1(0.6-2.0) | 0.837 | - | - |
| | No | 109(61.6) | | | | |
| Is HIV serious? | Yes | 92(52.0) | 3.3(1.7-6.2) | <0.001* | 2.7(1.3-5.9) | <0.01* |
| | No | 85(48.0) | | | | |
| Rather be ill with other condition than HIV | Yes | 70(40.0) | 1.0(0.5-1.8) | 0.899 | - | - |
| | No | 105(60.0) | | | | |
| **PERCEIVED BENEFITS** | | | | | | |
| Knowing HIV status? | Yes | 63(35.8) | 0.8(0.4-1.6) | 0.598 | - | - |
| | No | 113(64.2) | | | | |
| Privacy? | Yes | 69(39.0) | 2.3(1.2-4.3) | 0.008* | Excluded | Excluded |
| | No | 108(61.0) | | | | |
| Confidentiality? | Yes | 67(37.9) | 1.8(1.0-3.4) | 0.054 | Excluded | Excluded |
| | No | 110(62.2) | | | | |
| Convenience? | Yes | 76(42.9) | 1.6(0.9-2.9) | 0.143 | Excluded | Excluded |
| | No | 101(57.1) | | | | |
| Empowering? | Yes | 55(31.1) | 0.6(0.0-1.2) | 0.130 | Excluded | Excluded |
| | No | 122(68.9) | | | | |

Table 4-2 Continued

| Variable / Construct | Response | N (%) | Bivariate Analysis | | Multivariate Logistic regression Analysis | |
|---|---|---|---|---|---|---|
| | | | OR (95% CI) | P-value | aOR (95% CI) | P-value |
| **PERCEIVED BARRIERS** | | | | | | |
| Stigmatization? | Yes | 61(34.5) | 1.4(0.8-2.7) | 0.287 | - | - |
| | No | 116(65.5) | | | | |
| Intimate partner violence | Yes | 73(41.2) | 0.8(0.4-1.5) | 0.483 | - | - |
| | No | 104(58.8) | | | | |
| Waiting for results | Yes | 81(45.2) | 0.4(0.2-0.7) | 0.001* | 0.3(0.1-.06) | <0.001* |
| | No | 96(54.2) | | | | |
| Are hospitals a private space? | Yes | 76(43.2) | 4.9(2.5-9.4) | <0.001* | 4.4(1.9-10.3) | <0.001* |
| | No | 100(56.8) | | | | |
| **PERCEIVED SELF-EFFICACY** | | | | | | |
| Utilization of family planning? | Yes | 99(55.9) | 1.5(0.8-2.8) | 0.200 | Excluded | Excluded |
| | No | 78(44.1) | | | | |
| Health check-ups? | Yes | 69(39.0) | 1.1(0.6-2.1) | 0.685 | - | - |
| | No | 108(61.0) | | | | |
| **CUES TO ACTION** | | | | | | |
| Peer support to test | Yes | 70(40.0) | 3.3(1.7-6.2) | 0.001* | 2.3(1.0-5.3) | 0.046* |
| | No | 105(60.0) | | | | |
| Do you have access to HIV info | Yes | 76(43.2) | 0.5(0.3-0.9) | 0.001* | Excluded | Excluded |
| | No | 100(56.8) | | | | |

Table 4-2 Continued

OR = Odds Ratio; CI = Confidence Interval; aOR = Adjusted Odds Ratio (Adjusted for Age and Employment); Asterisks * = p < 0.05

Excluded = Removed from the final Logistic regression model

### 4.9 Summary

This chapter presented the findings of the study using the research questions and the Health Belief Model constructs as the guiding concept for the organization of the chapter. The findings revealed a key number of facilitators and barriers that enhance the uptake of HIV self-testing among the female sex workers.

In the next chapter, we shall discuss the implications of these findings as well as look at how these results fit in with the broader literature in this domain. Also in the next chapter, based on the findings, we shall make an attempt to draw conclusions and make recommendations

# CHAPTER 5 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

## 5.1 Introduction

The purpose of this chapter is to give an interpretive insight into the results of the study thereby providing a holistic understanding of the results. The main objective of the study was to determine the facilitators and barriers to HIV self-testing among female sex workers at Bulawayo Province. The study was based on the following five research questions;

1. What are the modifying factors associated with the use of HIV self-testing among female sex workers in Bulawayo Province 2021
2. What are the perceived benefits of HIV self-testing among female sex workers in Bulawayo Province 2021
3. What are the perceived threats of HIV self-testing among female sex workers in Bulawayo Province 2021
4. What are the self-efficacy factors influencing HIV self-testing among female sex workers in Bulawayo Province 2021
5. What are the cues to HIV self-testing uptake among female sex workers in Bulawayo Province 2021

The chapter begins with a discussion section. The organization of the section is such that it aligns with the order of the above-mentioned research questions. The next section is the limitations to the study followed by conclusions and implications to practice. The chapter then concludes by giving recommendations and the dissemination of results.

## 5.2 Discussion

The first research question in this study sought to determine the modifying factors associated with the use of HIV self-testing among female sex workers. All things considered, this study was unable to demonstrate that any of the factors considered were significantly associated with HIV self-testing. For instance, concerning age as a modifying factor this study did not demonstrate any significant relationship with HIV testing.

This result accords with the observation made by Nhurod , et al., (2010) which showed that there was no association between age and HIV testing. However, the finding is contrary to other studies by Seltare & Manyeage (2017) and Parriault, Basurrko, Masena, & Kerr (2015), which suggested that younger age was more likely to screen for HIV than older age. Also a systematic review evaluating the association of age and HIV testing observed inconsistent results on this subject matter.

Concerning marital status, the study findings showed no association between being married participants and HIV testing. Prior studies which considered marital status have observed contradicting evidence to this regard. Wang (2010) in a study in china found that reporting being married was significantly associated with HIV testing.

On the other hand, Seltare & Manyeage (2017) found that being married or being in a stable relationship did not demostrate any association with HIV testing. This finding is likely related to the fact that requesting for an HIV test from a spouse invites suspicion that there may have been infidelity in the relationship which now warrants an HIV test to be done.

It is a well founded fact that higher levels of education are a good predictor of positive health outcomes (Chiao, Morisky, Ksobiech, & Malow, 2008). Contrary to

expectations, this study did not find a relationship between level of education and HIV self-testing. This result may be explained by the fact that there were few (2.3%) respondents in the category of none or primary level eduaction thus lowering the statistical power to observe a significant result.

On the subject of employment status, the bivariate analysis results showed that employment was associated with HIV testing at an OR = 3.3, $p<0.006$. However, the multivarite analysis showed that these results were not statistically significant. A possible explanation for this might be that age was a confounding variable thus after adjusting for age the results were not significant.

Another possible explanation for the bivariate results may just be the fact that a higher level of income is associated with positive health outcomes. As mentioned in the literature Hong , et al., (2012) demostrated that female sex workers with more income were more likely to screen for HIV. This is consistent with the notion of a high income being linked to more positive lhealth outcomes such as HIV screening and a good health seeking behaviour.

Duration of sex work was not significantly associated to HIV self-testing. This finding was unexpected and implies that there is no evidence to suggest a relationship between the two. In reviewing the literature, previous studies revealed that higher duration in sex work was associated with HIV testing. This makes for a plausible explaination as the risk of infection with HIV is amplified by a long duration in sex work

Tran , Nguyen, & Phan (2013), Wang (2010) and Dandona, Dandona, Kumar, Gutierrez, McPhersons, & Bertozzi (2005) as cited by Putra & Januraga (2020)

found that sex work of durations greater than three years was significantly associated with HIV testing among female sex workers.

With reference to number of children, the study findings did nto demostrate a relationship between the number of children and HIV self-testing. As cited in the literature such a result has not been previously described as an overwhelming number of prior studies had demostrated a relationship between number of children and HIV testing (Seltare & Manyeage , 2017) (Tokar, Broerse, Blanchard, & Roura, 2018) (Chanda, et al., 2017)

However other scholars such as Bengston , L'Engle , Mwarogo, & King'ola (2014) and Ameyan, Jeffery, Negash, Biruk, & Taegtmeyer (2015) have suggested that this relationship may be partly explained by the fact that female sex workers with children may be tested due to mandatory provider-initiated testing and counselling at the antenatal clinics.

Living alone also did not demostrate any evidence of being related HIV testing. However, it has been suggested that couples living separately have been linked to an increased HIV incidence as family and marital ties are disrupted leading to establishment of extra-marital relations thereby increasing uptake of HIV testing (UNAIDS, 1999). This does not appear to be the case in this study as there was no significant association.

Other modifying factors were grouped into structural variables on knowledge about HIV/AIDS. Some researchers such as Putra & Januraga (2020) have cited that knowledge about HIV may have a positive effect in increasing uptake of HIV testing. Important to note was that in the bivariate analysis knowledge of where to get tested for HIV was significantly associated with HIV self-testing at OR = 2.0, $p<0.03$.

One of the issues that emerges from this finding is the issue of access to HIV self-testing devices. Only those who knew where to get test reported to have been tested. Surprisingly, knowledge of where to get tested was not statistically significant in the multivariate analysis.

With respect to the second research question on perceived benefits of HIV self-testing among female sex workers it was found that none of the factors were significantly associated with HIV self-testing. In the preliminary analysis privacy had turned up to be statistically significant with HIV self-testing (OR = 2.3, $p<0.008$)

This was consistent with the literature, as many previous studies have demostrated that privacy when using HIV self testing reduced concerns about stigmatization and embarasment therefore encouraging testing (Wulandari, Ruddick, Guy, & Kaldor, 2019) (Qin, et al., 2018) (Krause, Subklew-Schume, Kenyon, & Colebunders, 2013) (World Health Organisation, 2019) (Bwalya, et al., 2020)

One unanticipated finding was that privacy as a benefit of HIV self-testing was not statistically significant in the multivariate model. However, this rather contradictory finding may be due to the differences that are in the implementation and distribution of HIV self-testing devices in different contexts.

In Bulawayo Province HIV self-testing unlike in other contexts reported in literature is distributed largely using facility-based distribution. One may argue that distribution of testing devices at health facilities retains the concerns over stigmatization and embarrasment therefore this could partly explain the anomaly.

Confidentiality was close to the margins of being significantly associated with HIV self-testing (OR = 1.9, $p<0.053$) in the bivariate analysis. A possible explanation for

this could be that the study lacked sufficient statistical power to detect a significant result.

In reviewing the literature it was revealed that previous studies demostrated a relationship between confidentiality and HIV testing (World Health Organisation, 2019) (Qin, et al., 2018). In the multivariate model, confidentiality was excluded along with other factors such as convenience and empowerment which had been considered.

The third research question in this study was to determine perceived threats of HIV self-testing among female sex workers. Several factors were associated with HIV self-testing in both the bivariate and multivariate analysis. These included reporting that waiting for results was stressful (aOR = 0.3, $p<0.001$), reporting hospitals were a private space (aOR = 4.4, $p<0.001$), reporting that HIV is a serious condition (aOR = 2.7, $p<0.01$).

Concerning the findings of waiting for HIV results the study demostrated evidence that waiting for results was associated with HIV self-testing at aOR = 0.3, $p<0.001$. This implies that reporting that waiting for results was stressful was associated with not testing for HIV thus long waiting times are a barrier for HIV self-testing. These results corroborate with the findings of a systematic literature review on HIV testing and counseling among female sex workers (Tokar, Broerse, Blanchard, & Roura, 2018).

Privacy in the organization of the hospital space for HIV testing was significantly associated with HIV self-testing (aOR = 4.4, $p<0.001$). These results are likely to be related to the fact that separating testing sites of key populations from the general population minimizes the stigma associated with being seen taking an HIV test.

Hospital space organization should not be organized such that other patients can conclude on another's status. The implication of these findings is that a private space encourages testing

Perceiving HIV to be a serious condition was significantly associated with HIV self-testing (aOR = 2.7, p<0.009). HIV was in its earlier stages of the pandemic deemed a death sentence thus it has inherently been viewed as a serious condition to be ill with. Therrefore those who view the condition to be a serious one will tend to have a better health seeking behaviour than the other counterparts.

The results are in agreement with those obtained by Tokar, Broerse, Blanchard, & Roura (2018) in a systematic literature review as they demostrate that reporting HIV to be a serious condition was associated with HIV testing.

In the bivariate analysis, reporting fearing to test HIV positive was significantly associated to HIV self-testing (OR = 4.2, p<0.001). However, this finding was not supported by previous studies such as that by Chiao, Morisky, Ksobiech, & Malow (2008) as they suggested that concerns over a posistive HIV outcome discouraged testing. It is challenging to explain this contradiction, but it may be due to the reason that some individuals respond to fear of a health crisis by engaging in protective health behaviour.

One interesting finding to emerge from the bivariate analysis of perceived threats to HIV self-testing was reporting consistent condom use with regular client which revealed statistically significant results (OR = 0.5, p<0.038). This implies that using a condom consistently was associated not testing for HIV. The finding could be explained by the fact that sex workers could be viewing a condom as being adequate enough to protect from HIV infection thus not warranting a reason for HIV testing

The fourth research question sought to determine the self-efficacy factors influencing HIV self-testing among female sex workers. The analysis revealed that none of the factors considered for self-efficacy had significant results. In a systematic review, utilization of family planning was cited as a facilitator for HIV testing (Tokar, Broerse, Blanchard, & Roura, 2018)

Chanda, et al., (2017) in a study in Zambia also revealed that birth control and family planning was a crucial entry point for HIV testing and was facilitator for testing. Nvertheless this was not observed in this study. Reporting to have done health checkups was also not statistically significant for HIV self-testing (OR = 1.1, $p<0.685$).

This finding is contrary to the findings by Shokoohi, et al., (2017) which suggest that utilization of health services by female sex workers was likely linked to HIV testing. One possible objection this may be that the female sex workers who were utilizing health services were being subjected to presumptive or provider-initiated testing thereby relucantly testing.

With regard to the fifth research question, it was revealed that reporting peer support was a factor associated with HIV self-testing (aOR = 2.3, $p<0.049$). A strong relaionship exists between peer support and HIV testing among female sex workers and has been reported in the literature in several articles (Chiao, Morisky, Ksobiech, & Malow, 2008) (Wang Y. , 2010) (Tokar, Broerse, Blanchard, & Roura, 2018).

An implication of this is the possibility of use of peer educators to facilitate demand creation for HIV self-testing. Peer educators have in previous studies been cruacial in the success of many HIV testing programs (Tokar, Broerse, Blanchard, & Roura, 2018)

### 5.3 Limitations to study

These results do however have to be interpreted with caution, as there were some limitations to this study. Firstly, gatekeepers working with these key populations could not allow the study to be carried out in their respective institutions hence the participants could not be randomized during the selection process due to unavailability of population registers.

The participants had to be selected from the community using convenience-sampling methods. This increased the potential for selection bias in this study. Secondly, due to a low number of female sex workers using HIV self-testing, a one to two ratio of cases to controls had to be used.

### 5.4 Conclusions

The purpose of the study was to determine the facilitators and barriers to HIV self-testing among female sex workers at Bulawayo Province in 2021. The multivariate regression analysis revealed that a number of facilitators and barriers such as reporting HIV to be a serious condition, reporting that waiting for results was stressful, reporting that hospitals were a private space and reporting to be having peer support encouraging testing.

Taken together, these results suggest that there are some gaps in the service delivery of HIV testing services to female sex workers. For instance, this study strengthens the idea that a more private and conducive hospital environment coupled by good turnaround times in getting test results could improve uptake of HIV self-testing services

This study has been amongst the first to use quantitative methods to understanding the facilitators and barriers to HIV self-testing. This contributes to our understanding of the factors, which promote HIV testing among the female sex workers.

### 5.5 Implications to practice

The findings point to the need to strengthen on the operational policy and guidelines for HIV testing services for key populations to end AIDS by 2030.

### 5.6 Recommendations

#### 5.6.1 Recommendations for the MoHCC

- A key policy priority would be for HIV prevention programs to use peer educators and peer support to scale up HIV self-testing.
- Government needs to ensure that appropriate and private testing sites are made available for key populations
- Also access to HIV self-testing devices may have to liberalize HIV self-testing for key populations to access

#### 5.6.2 Recommendations for Director of Health Services, Bulawayo

- More outreach campaigns and health promotion needs to be implemented as the study found knowledge about the seriousness of HIV to enhance testing
- More private HIV testing sites may need to be established to encourage uptake of HIV self-testing
- Social networks may need to be established using peers for the distribution of HIV self-testing devices

### 5.6.3 Recommendations for further Research

- A natural progression of this study is to conduct a cross-national study of this nature to make the findings generalizable to the whole country
- Future studies could also consider the use of different theoretical and conceptual models to explore other variables

## 5.7 Dissemination of results and Actions taken

The findings of this investigation will be presented to the Director of Health Services, the Provincial Health Executives, and District Health Executives. Soft copy will be emailed to the Director of Health Services in Bulawayo Province and the College of Health, Agriculture and Natural Science at Africa University

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**APPENDICES**

Appendix 1. Sample questionnaire (English version)

Questionnaire No.

**SECTION A: MODIFYING FACTORS**

**Demographic Characteristics**

How old are you? (*Please state in years)*

*1*. What is your marital status? *(Tick one that best describes your status)*

| | |
|---|---|
| | Single |
| | Married |
| | Co-habiting |
| | Divorcee |
| | Widowed |

2. What is your highest level of education? *(Tick one that is applicable)*

| | |
|---|---|
| | None |
| | Primary |
| | Secondary |
| | Tertiary |

3. Are you currently employed? *(Tick one that is applicable)*

| | |
|---|---|
| | Employed |
| | |

Unemployed

4. How long have you been into sex work? *(State in months or years)*

| |
|---|
| |

5. How old were you when you first had sex? *(State in years)*

| |
|---|
| |

6. How many children do you have? *(State "none" if without)*

| |
|---|
| |

7. Who do you live with? *(Tick on the applicable box/es)*

| | |
|---|---|
| | Alone |
| | Friends |
| | Family |
| | Husband |
| | Partner |

**Structural variables**

8. Have you done an HIV test in the past 3 months? ***(This question is compulsory)***

| | |
|---|---|
| | Yes |
| | |

No

9. Have you heard about HIV/AIDS? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

10. Have you ever received counseling on HIV? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

11. Have you ever participated in an HIV campaign or Outreach Programme? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

12. Do you know where to get tested for HIV? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

13. Which of the following reduces HIV transmission *(Tick on applicable box/es)*

| | |
|---|---|
| | Not having sexual contact |
| | Sharing needles |
| | Using a condom when having sex |
| | Having unprotected sex |

## SECTION B: PERCEIVED THREATS

### Perceived Susceptibility

14. Is there a chance that you can get HIV/AIDS? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

15. Do you always use a condom during sex? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

16. Would you use a condom with the following?

| | |
|---|---|
| | Husband |
| | Boyfriend / Lover |
| | Partner |
| | Regular Client |
| | Ordinary Client |

17. Have you ever used alcohol before or during sex? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

18. Have you been ill or unwell recently? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

19. Have you ever been treated for the following STIs? *(Tick all that are applicable)*

| | |
|---|---|
| ☐ | Vaginal Discharge |
| ☐ | Abdominal pains |
| ☐ | Burning sensation during urination |
| ☐ | Genital ulceration |
| ☐ | Syphilis |
| ☐ | Gonorrhea (drip) |
| ☐ | Genital warts (HPV) |

**Perceived Severity**

20. Do you fear or worry about testing HIV positive? *(Tick one box that is applicable)*

| | |
|---|---|
| ☐ | Yes |
| ☐ | No |

21. Do you know someone who is HIV positive or has developed AIDS? *(Tick one box that is applicable)*

| | |
|---|---|
| ☐ | Yes |
| ☐ | No |

22. Is HIV/AIDS a serious condition? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

23. Is HIV/AIDS the worst condition to get? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

24. Would you rather be ill of another condition than HIV? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

**SECTION C: PERCEIVED BENEFITS**

25. Is there a benefit to knowing your HIV status? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

26. Which of the following HIV testing options do you prefer? *(Tick one box that is applicable)*

| | |
|---|---|
| | Hospital-based HIV testing |
| | HIV self-testing |

27. Which of the following is a benefit of Hospital-based HIV testing? *(Tick all that are applicable)*

| | |
|---|---|
| | Privacy |
| | Lack of privacy |
| | Confidentiality |
| | Inconvenience |
| | Convenience |
| | Empowering |

28. Which of the following is a benefit of HIV self-testing? *(Tick all that are applicable)*

| | |
|---|---|
| | Privacy |
| | Lack of privacy |
| | Confidentiality |
| | Inconvenience |
| | Convenience |
| | Empowering |

## SECTION D: PERCEIVED BARRIERS

29. Would it affect you if someone you know saw you having an HIV test? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

30. Would it insult your partner if you asked for any of you to do HIV self-testing? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

31. Is waiting for results stressful? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

32. Do you consider a hospital / clinic to be a private space for HIV testing? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

33. What would prevent you from testing for HIV? *(Tick all that are applicable)*

| | |
|---|---|
| | Time to have the test done |
| | Distance to the testing site |
| | Healthcare workers |
| | Disclosure of involvement in sex work |
| | Money |
| | Procedures which use needles |

## SECTION E: PERCEIVED SELF-EFFICACY

34. Have you ever utilized family planning services? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

35. Have you ever had any kind of health checkups? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

36. Where do you prefer to be admitted if ill? *(Tick one box that is applicable)*

| | |
|---|---|
| | Public hospital |
| | Private hospital |
| | None of the above |

## SECTION F: CUES TO ACTION

37. Would your peers encourage you to have an HIV test done? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

38. Do you have access to HIV information? *(Tick one box that is applicable)*

| | |
|---|---|
| | Yes |
| | No |

Appendix 2. Sample questionnaire (Ndebele version)

Questionnaire No.

## SECTION A: MODIFYING FACTORS

### Demographic Characteristics

1. Uleminyaka emingaki? (*Bhala iminyaka)*

2. Utshadile? *(Khetha ibhokisi)*

| | |
|---|---|
| | Angikathathwa |
| | Ngitshadile |
| | Sihlalisene |
| | Sehlukana |
| | Ngafelwa |

3.Waphelela ngaphi ngokufunda? (*khetha ibhokisi )*

| | |
|---|---|
| | Angiyanga esikolo |
| | ePrimary |
| | eSecondary |
| | eZikolweni eziphezulu |

4.Uyasebenza? *(khetha ibhokisi)*

| | |
|---|---|
| | Ngiyasebenza |
| | Angisebenzi |

5.Waqala nini umsebenzi wocansi? *(bhala iminyaka loba izinyanga)*

6.Wawule minyaka emingaki uqala ucansi? *(bhala iminyaka)*

7.Ulaba ntwana abangaki? *(nxa ungela bhala ukuthi awula)*

8.Uhlala lobani? *(khetha amabhokisi)*

| | |
|---|---|
| | Ngedwa |
| | labangani |
| | Lemuli |
| | Lomukami |
| | Lomuntu engihlalisana laye |

**Structural variables**

9.Ukewahlolwa igciwane leHIV enyangeni ezintathu ezihlulileyo? ***(Lombuzo kumele uphendulwe)***

| | |
|---|---|
| | Yebo |
| | Hayi |

10. Ukewezwa ngegciwane leHIV/AIDS? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

11.Sewake wathola icounseling ngegciwane leHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

12.Ukewaba semihlanganweni lemibuthano yokufaka ngegciwane leHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

13.Uyakwazi indawo zokuhlolwa igciwane leHIV? *(khetha ibhokisi )*

| | |
|---|---|
| | Yebo |
| | |

Hayi

14.Yiziphi indlela zokuzivikela kuHIV? *(khetha amabhokisi)*

| | |
|---|---|
| | Ukungange emacansini |
| | Ukusebanzi selana amanariti |
| | Ukusebenzi iCondom emacansini |
| | Ukungena ecansini ungavikelekanga |

## SECTION B: PERCEIVED THREATS

### Perceived Susceptibility

15.Kungenzeka ukuthi ethole igciwane leHIV/AIDS? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

16.Uyasebenzisa iCondom emacansini sikhathi sonke? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

| | |
|---|---|
| | 17.Uyasebenzisa iCondom labantu laba? *(khetha ibhokisi)* |
| | Umkakho |
| | iBoyfriend/Isithandwa sakho |
| | |
| | |

omunye wakho

iClient oyijwayeleyo

iClient nje

18.Uyake ungene emacansini udakiwe? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

19.Ukewagula emavikini loba emyangeni ezidlulileyo? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

| | |
|---|---|
| | |
| | |
| | |
| | 20.Wakewelatshwa imikhuhlane leyi? *(khetha ibhokisi)* |
| | iVaginal Discharge |
| | |
| | |

Ubuhlungu esiswini

Ubuhlungu nxa usiya esambusini

iGenital ulceration

iSyphilis

iGonorrhea (drip)

amaGenital warts (HPV)

**Perceived Severity**

21.Uyakwesaba ukutholakala ulegciwane leHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

22.Kulomuntu omaziyo olegciwane leHIV loba ogula ngeAIDS? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

23.iHIV/AIDS ngumkhuhlane oyesabekayo? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | |

Hayi

24.iHIV/AIDS ngumkhuhlane omubi ukudlula yonke? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

25.Uzwa kuncono ukugula umunye umkhuhlane kuleHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

**SECTION C: PERCEIVED BENEFITS**

26.Kuloncedo ukwazi isimosakho segciwane leHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

27.Nxa ungahlolwa igciwane leHIV ukhetha ukuhlolwa njani? *(khetha ibhokisi)*

| | |
|---|---|
| | Esibhedlela |
| | ngeHIV self-testing |

28.Yikuphi okuphathisa ngokuhlolelwa esibhedlela? *(khetha ibhokisi)*

| | |
|---|---|
| | Kucatshile |

Akucatshanga

Kufihlakele

Akukholula

Kulula

Kuyakhuthaza

29.Yikuphi okuphathisa ngokuhlolwa ngeHIV self-testing? *(khetha ibhokisi)*

| | |
|---|---|
| | Kucatshile |
| | Akucatshanga |
| | Kufihlakele |
| | Akukholula |
| | Kulula |
| | Kuyakhuthaza |

**SECTION D: PERCEIVED BARRIERS**

30.Kungakuhlupha ukubonakala uhlolwa igciwane leHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

31.Kungahlukumeza omuhle wakho nxa ungathi lihlolwe iHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

32.Kuyahlukumeza ukumelela umpumela yokuhlolwa iHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

33.Amagceke ezibhehlela afihlakele ukuthi umuntu ahlolwe iHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

34.Kuyini okungakuvimba ukuhlolwa iHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Isikhathi sokuhlolwa |
| | Umango wokuyahlolwa |
| | Izisebenzi zesibhedlela |
| | Ukwaziwa ukuthi uyiSex worker |
| | Imali |
| | Kuhlatshwa amanariti |

**SECTION E: PERCEIVED SELF-EFFICACY**

35.Uyake usebenzise ifamily planning ? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

36.Uyake uyenze amaCheckups? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

37.Nxa ugula ukhetha ukuya kusiphi isibhedlela? *(khetha ibhokisi)*

| | |
|---|---|
| | Izibhedlela zikaHulumede |
| | Izibhedlela eziPrivate |
| | Akula |

**SECTION F: CUES TO ACTION**

38.Abangani bayakukhuthaza ukuhlolwa iHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | Hayi |

39.Uyayi thola imfundiso ngeHIV? *(khetha ibhokisi)*

| | |
|---|---|
| | Yebo |
| | |

Hayi

Appendix 3. Key Informant Interview Guide

## KEY INFORMANT INTERVIEW

### Facilitators and barriers to HIV self-testing among female sex workers in Bulawayo Province

**General Information**

The key informant interviews will be conducted among various individuals and stakeholders these many include but are not limited to; Government Officials, Non-Governmental Organization program managers and their staff, Health promotion officers, Female sex workers etc.

| | |
|---|---|
| Title | |
| Gender | |
| Time interview started | |
| Time interview ended | |
| Name of Interviewer | |

Entry into the target population

- How do you go about identifying female sex workers in the community?
- Do you have a database of female sex workers in this area?
- Are you able to mobilize the female sex workers for an interview?
- Do you know of an individual who could be helpful in facilitating this study or being an informant?

Communication strategies

- Are female sex workers comfortable with being identified as sex workers?
- Any advice on how to conducting interviews with this population?
- In the questionnaire are there questions that are inappropriately phrased?

Additional Information

- Any comments or suggestions you would like to make concerning this study?

Appendix 4. Consent Form (English version)

**Informed Consent Form**

Dear Madam,

My name is Mandlenkosi Moyo, a final year Master of Public Health student from Africa University. I am carrying out a study on HIV self-testing in the Province. I am kindly asking you to participate in this study by answering some questions

Purpose of the study

The main purpose of this study is to find ways to promote HIV self-testing. This will assist in providing optimal HIV testing services in the Province. You were selected for the study because it is believed your participation will assist in understanding why people choose to use HIV self-testing

Procedure and duration

If you decide to participate in this study what is expected of you is to give us your time to respond to interview questions. It is expected that this interview will take about 5-10 minutes of your time.

Risks and discomforts

There are no risks anticipated as due diligence was done to ensure that no harm is done. However, some discomfort may or may not be experienced in responding to certain questions.

Benefits and/or compensation

The benefit which will results from this study is the promotion and scaling up of HIV testing services. No compensation will be given for participation in this study.

Confidentiality

Information obtained in this study that can be identified with your participation will not be disclosed without your permission. Names and any other identification will not be asked for in the questionnaire.

Voluntary participation

Participation in this study is voluntary. If you decide not to participate in this study, your decision will not affect your relationship with any organization or authority. If you choose to participate, you are free to withdraw your consent and to discontinue participation without penalty.

Any questions that you may have?

Before you sign this form, do you have any questions on any aspects of this study that are unclear to you? You may take as much time as necessary to think it over.

Authorisation

If you have decided to participate in this study please sign this form in the space provided below as an indication that you have read and understood the information provided above and have agreed to participate

_____ _____

Name of Participant/Key Informant Participant's Signature (Date)

_____ _____

Name of Study Interviewer Study Interviewer's Signature

(Date)

| | |
|---|---|
| Name of Legal representative | Legal Representative's Signature (Date) |

If you have any questions concerning this study or consent form beyond those answered by the researcher including questions about the research, your rights as a research participant, or if you feel that you have been treated unfairly and would like to talk to someone other than the researcher, please feel free to contact the Africa University Research Ethics Committee on telephone (020) 60075 or 60026 extension 1156 email aurec@africau.edu

Appendix 5. Consent form (Ndebele version)

**Incwadi yokupha imvumo**

Kuwe Dadewethu,

Ibizo lami nguMandlenkosi Moyo, ngiyenza umnyaka wokucina wezifundo zeMaster of Public Health eAfrica University. Ngiyenza isifundo esimayelana leHIV self-testing esigabeni sako Bulawayo. Uyanxuswa ukuthi uphatheke esifundwenilesi ngokuphendula imibuzo ethile.

Isizatho salesisifundo

Inhloso yalesi sifundo yikuthola izizatho ezenza abantu bakhethe ukusebenzisa iHIV self-testing lezizatho ezibavimbayo. Lokhu kuza phathisa ukuthuthukisa uhlelo lokuhlolwa kwegciwane leHIV esigabeni sako Bulawayo. Ukhethiwe kulesisifundo ukuthi ngoba silethemba lokuthi ungaphathisa ukwembula izizatho zokukhetha iHIV self-testing.

Isikhathi esizosithatha lokumele ukwenze

Ungakhetha ukupahatheka kulesisifundo ukhangelelwe ukuthi uphendule imibuzo. Imibuzo leyi ingathatha imizuzu engango5 isiyaku10 minutes

Izingozi lokungaphatheki ekungenzakala

Akula ngozi ekhangelelelwe ukuthi engenzakala ngoba konke okusemandleni kuyenziwe ukuzivimba. Sekungenzeka ukuzizwa ungaphathekanga nxa uphendula imibuzo kodwa akusiyo inhloso

Inzuzo lokubhadalwa

Inzuzo engavela kulesisifundo yikuthuthukisa lokuphakamisa uhlelo lokuhlolwa kwegciwane leHIV. Akula kubhadalwa okuzayenzakala kulesisifundo

Ukuvikeleka kwamabizo lempendulo

Yonke impendulo yalesisifundo engaveza ibizo lakho izabe ivikelekile njalo ayisoze ivezwe kungela mvumo yakho. Amabizo awayikucelwa emibuzweni

Ukubakulesi sisifundo kusentandweni yakho

Ukubakulesi sifundo kusentandweni yakho. Ukukhetha ukungabi lesisifundo akusoze kuphambanise ubudlelwane bakho laloba yiyiphi inhlanganiso loba uHulumende. Ungakhetha ukuba kulesisifundo ukhululekile ukuthi uthathe isinqumo sokuphuma kulesisifundo kungela kujeziswa

Kungabe kulemibuzo olayo?

Ungakafaki uphawo lwakho olutshengisa imvumo ungabalemibuzo mayelana ngalesisifundo. Thatha isikhathi ukucabangisisa lokhu

Imvumo

Nxa usuthethe isiqumo sokuba kulesisifundo faka uphawu lwakho endaweni efaneleyo ukuthi utshengise ukuthi usubalile njalo wazwisisa okubhalwephezulu futhi uyavuma

_____ _____

Ibizo lakho Uphawu lwakho (Usuku)

| | |
|---|---|
| Ibizo lomphathi wesifundo | Uphawu lomphathi (Usuku) |
| Ibizo lomeli ngokusemthethweni | Uphawu lomeli ngokusemthethweni (Usuku) |

Nxa uleminye imibuzo ngalesisifundo loba ngalencwadi yemvumo eyedlula leyo ephedulwe ngumphathi walesisifundo egoqela isifundo, amalungelo akho kulesisifundo, loba nxa amalungelo akho enavikelwanga njalo ufuna ukukhuluma lomunye umuntu ongasomphathi wesifundo, ukhululekile ukukhulumisana labeAfrica University Research Ethics Committee ecingweni lwabo (020) 60075 or 60026 extension 1156 email aurec@africau.edu

Appendix 6. City of Bulawayo approval letter

**CITY OF BULAWAYO**

All correspondence to be
Addressed to
Director of Health Services
P.O. Box 1946
**BULAWAYO**
ZIMBABWE

Health Services Department
Municipal Buildings
L/Takawira & J/Tongogara
**BULAWAYO**
Tel: (09) 75011
Fax (263-9) 63650
E-mail: hsdept@citybyo.co.zw

Your Reference:
Our Reference: S23

4 June 2021

**TO WHOM IT MAY CONCERN**

**REQUEST FOR PERMISSION TO CONDUCT A RESEARCH ON FACILITATORS AND BARRIERS TO HIV SELF TESTING AMONG FEMALE SEX WORKERS IN BULAWAYO PROVINCE**

This letter serves to inform you that Mandlenkosi Moyo an MPH student with Africa University is granted permission to carry out his study subject to the following conditions:

i) You seek and obtain approval from the Medical Research Council of Zimbabwe and other relevant regulatory bodies.

ii) You should submit a copy of your research findings after completing the research exercise,

iii) Council is to be indemnified against any accidents/mishaps which may occur during the conduct of the research.

Yours faithfully,

**DIRECTOR OF HEALTH SERVICES**
ES/sn

CITY OF BULAWAYO
HEALTH DEPARTMENT
04 JUN 2021

***Bulawayo must not run dry – Every drop counts***

Appendix 7. AUREC approval letter

AFRICA UNIVERSITY
A United Methodist Related Institution
Investing in Africa's future

**AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)**

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU2145/21 26 August, 2021

MANDLENKOSI KING MOYO
C/O CHANS
Africa University
Box 1320
**Mutare**

**RE:** FACILITATORS AND BARRIERS TO HIV SELF-TESTING AMONG FEMALE SEX WORKERS IN BULAWAYO PROVINCE 2021

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.
a) Research proposal
b) Data collection instruments
c) Informed consent guide

- **APPROVAL NUMBER** AUREC 2145/21
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** August 26, 2021
- **EXPIRATION DATE** August 26, 2022
- **TYPE OF MEETING** Expedited
  After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

**Yours Faithfully**

**MARY CHINZOU – A/AUREC ADMINISTRATORFOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE**