

SYPHILIS INFECTION AMONG FEMALE SEX WORKERS AND SINGLE WOMEN IN LUSAKA: PERCEPTIONS, PRACTICES AND ASSOCIATED FACTORS

By

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DECLARATION

I, Mwaka Choongo, declare that the work presented in this dissertation I my own work and that it has been produced in accordance with the guidelines for the Master of Public Health in Health Promotion and Education dissertation for the University of Zambia. It has never been presented or submitted elsewhere in part or whole for the award of a degree or any qualification from my institution.

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APPROVAL

This dissertation authored by Mwaka Choongo has been approved as fulfilling the requirements for the award of the Masters of Public Health in Health Promotions and Education degree by the University of Zambia.

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ABSTRACT

Introduction: Syphilis is a sexually transmitted infection (STI) that remains a major global public health problem. Syphilis is caused by the bacterium called *Treponema pallidum*. There are 5.6 million new cases of syphilis worldwide each year and in Zambia the risk of acquiring HIV infection through sexual intercourse is increased 3–5 times in women who are infected with syphilis. The aim of this study was to identify the risk factors, experiences and perceptions associated with syphilis infection among female sex workers and single women in Lusaka.

Method: The study used a mixed sequential explanatory method to collect and analyze the data. 349 participants were eligible to participate in this study where 165 were FSW and 184 were SU5. Stata Version 14.0 was used for data analysis. Univariate logistic regression was used to determine the association with syphilis and multivariate adjusted odds ratios (AOR) together with their 95% confidence intervals (CI) were also reported. The qualitative part used expert opinion purposive sampling where those that tested syphilis positive within the inclusion criteria were selected to participate in the Focus Groups Discussions (FGDs). A FGD interview guide was used to collect the qualitative data and 3 FGDs were conducted, (FSW, SU5 and FSW/SU5).

Results: The results for unadjusted and adjusted logistic regression both showed strong evidence that women who had a ‘History of Syphilis’ were 15 times more likely to contract syphilis again once exposed to the bacterium. The qualitative analysis showed that alcohol abuse, poverty, lack of steady income and sex for gifts and money were some main themes that caused women to indulge in risky behaviours.

Conclusion: The findings of this study showed that women regardless of being a female sex worker or just a sexually active single woman were all at risk of acquiring Syphilis. The study showed that women that had a history of Syphilis were more likely to get infected again once exposed and understanding their experiences and perceptions for these behaviors is useful in developing effective syphilis public health campaigns.

Key Words: Female sex worker (FSW), Single Women from the under 5 clinics (SU5), Focus Group Discussion (FGD).

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
HIV	Human Immunodeficiency Virus
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
T. pallidum	Treponema pallidum
RPR	Rapid Plasma Regain
RST	Rapid Syphilis Test
HBM	Health Belief Model
ANC	Ante Natal Care
FSW	Female Sex Workers
SU5	Single women from the under 5 clinics
CSW	Commercial Sex Worker
NGO	Non - Governmental Organization
ZEHRP	Zambia Emory HIV research project
ZDHS	Zambia Demographic and Health Survey
RZHRG	Rwanda-Zambia HIV Research Group
IAVI	International Aids Vaccine Initiative
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Syphilis is a sexually transmitted infection (STI) that remains a major global public health problem. Syphilis is transmitted either by direct contact of mucal membranes, sexual intercourse or congenitally from a pregnant mother to her unborn foetus (EW Hook et al, 2004). Syphilis is caused by the bacterium called *Treponema Pallidum*. In the early stages, a person with syphilis may develop primary symptoms such as small painless sores known as chancres and can pass the infection to others. In the secondary stage the infected person may develop more symptoms including non- itchy rash on palms of the hands and soles of the feet, rashes may occur on other parts of the body, hair loss, white patches inside the mouth, genital warts, flu-like symptoms such as fever, swollen lymph glands, fatigue, sore throat, weight loss and muscle aches. The symptoms in the tertiary stage are more severe and include blindness, loss of motor skills, dementia and damage to the central nervous system, damage to internal organs such as the heart, brain, eyes, kidneys, and bones, mental illness and death. Other effects include Risk of HIV infection and in pregnant women it can cause miscarriage or stillbirth, congenital syphilis and abortions. Syphilis is treated by antibiotics mainly penicillin.

It is estimated that 36.4 million people are infected with syphilis worldwide. It is also estimated that there are more than 12 million new syphilis infections every year of which 90% of those cases are found in resource-limited countries (Mutagoma, 2016). The annual new cases of syphilis in the sub Saharan African region among adults aged 15 to 49 was 3.4 million (WHO, 2008) and 5.6 million worldwide (WHO, 2012) of which heterosexual transmission has been identified as the primary mode of transmission. This makes Syphilis infection a major STI due to its prevalence in transmission and toll on both infected individuals and the health systems. Estimates based upon literature reviews of prevalence data from 2005 through 2012 among general populations for genitourinary infections and sero-prevalence among antenatal care attendees for syphilis were estimated to be 6 million (4–8 million). However prevalence and incidence estimates have been varied region by region (Newman, 2015). Many countries have adopted the policy of universal antenatal syphilis screening to identify asymptomatic pregnant women with congenitally transmissible syphilis for treatment (Doroshenko et al, 2006) leaving

out other women in the general population. Other estimates of the global prevalence and incidence of syphilis in adult women were also stated to be high, with nearly one million new infections each day. The estimates highlighted the urgent need for the public health communities to ensure that well recognized effective interventions for syphilis prevention, screening, diagnosis, and treatment are made more widely available. Improved estimation methods are also needed to allow use of more varied data and generation of estimates at individual national levels (Newman, 2015).

In Sub-Saharan Africa syphilis in women contributes to approximately 20% of perinatal deaths, this means there is need to eliminate most of the threat of congenital syphilis by focusing a lot more on screening and treatment of women (*Kamb, 2010*). In Cameroon, a study by the (Johns Hopkins School of Public Health and Metabiota Cameroon, 2018) found that the Prevalence of active syphilis (3.5%) was higher among older Female Sex Workers. These results showed that there was early primary infections, misclassification of active infection due to unknown treatment history or alternatively late latent infection and most of these women had never been pregnant before and intended to have children in the future. These results highlighted the importance of access to syphilis testing among female sex workers and women in general, with the potential to mitigate both vertical transmission of HIV and congenital syphilis.

The researchers, from the Institute of Tropical Medicine in Belgium, commended the development of penicillin and how it had played an important role in the disease's decline after Second World War. Unfortunately, Countries in Sub-Saharan Africa which are still considered to be among the poorest in the world with lack of resources and well equipped health services for their citizens are still contributing to the high numbers of syphilis in the region (*Hira, Bhat et al., 1990*). In Zambia, the continued prevalence of syphilis is a risk to the health of women generally, pregnant women and newly born babies. In 2008, the WHO estimated that approximately 19,000 pregnant women had active syphilis in Zambia, many of whom passed the infection on to their newborns.

A study in Togo found that female sex workers were 3 time more likely to have syphilis than women that were living with a partner or married. The study also found that those that were syphilis infected were also associated with HIV infection (*Halatoko, 2011*). The rising rates of syphilis in recent years have been largely attributed to outbreaks among certain subsets of the population, especially HIV-positive individuals and female commercial sex workers (CSW) who remain a key population for prevention efforts among women. (*Johnston, 2016*). The benefit of identifying such risk factors would

be the ability to target clinical and educational resources toward individuals at highest risk of co-infection (CDC, 2011). Other risk factors include engaging in unprotected sex, having several sex partners and history of syphilis infection.

Positively, the national STI control programme in Zambia, which was established in 1980 as part of the national response to STIs works with clinical officers, who are the frontline health workers and these were trained to manage STI patients. Due to this program there has also been an improved supply of drugs for STI management. Job aids and information, education and communication materials were printed and distributed in more than 50 clinics around the country. This also included improvement of diagnostic facilities at higher level health facilities (secondary and tertiary hospitals). Referral systems were also being improved by sensitizing and training traditional healers. (Makasa et al., 2012). The government of Zambia has further shown commitment to eliminate syphilis, and has prioritized the introduction of new Rapid Syphilis Tests (RSTs), with an initial focus on regions where laboratory capacity is weak. Additionally, the Ministry of Health (MOH) has developed national guidelines for the use of RSTs. These services have been incorporated to the standard package of services provided during ANC, and in the prevention of mother-to-child transmission of HIV.

Researchers from Belgium reiterated that most researchers used figures from the testing of pregnant women for sexually transmitted infections (STIs) to generalize to the general population. These figures were thought to give a better idea of the prevalence of syphilis in the general public than data from STI screening, which can be biased towards high-risk populations (Johnstone, 2016). According to (Ansbro, 2015) Syphilis in Zambia is said to be under diagnosed and basing the results on pregnant women data to generalize to the general population may not give the true picture of the disease in the general population of women. It is for these reasons that this study sought to highlight the risk factors in female sex worker and single women from the under 5 clinics who may not have access to antenatal screening and treatment. The study also hoped to provide an overview of the current syphilis trends in women aged between 18 and 48 in Lusaka from the data that was collected from a cohort study at Zambia Emory HIV Research Project (ZEHRP).

1.2 Statement of the problem

Due to their biological nature women are more susceptible to contracting STI's and the lack of power to negotiate for safer sex with their partners constantly puts them at a greater risk of contracting Syphilis

and other STI's than men. Within sub-Saharan Africa, apart from data generated from antenatal syphilis non-Treponema antibody based screening programmes, reliable incidence data are few and far between for most STI pathogens. A search for incidence data among high risk groups also showed little results for female sex workers and even fewer results for single non-pregnant women. Accordingly, WHO estimates of new Syphilis cases in 1999 were 4,000,000 and 3,410,000 in 2005, these were calculated based on prevalence data, which rely heavily on selected peer-reviewed published research studies, which emanate from only a few African research groups and countries, as well as on access to non-peer-reviewed data and expert local knowledge (Lewis, 2011). Even though the estimation of incidence from the prevalence provides a useful approximation of a reduction in the incidence of syphilis in sub Saharan Africa, the figures are still significantly high.

Reports from the antenatal sentinel surveillance rounds between 1994 and 2008 showed declines in maternal syphilis prevalence in Zambia during that period and reports based on ZDHS data also indicated a decline in syphilis prevalence among men and women in the general population in Zambia. Data from the ZDHS data from 2001/2002 and found several gaps for syphilis among men and women in the general population. Some of these gaps were that 1 percent of women and men who reported they had never had sex were found to have syphilis which was evidence of underreporting of past sexual activity. The survey also noted that among the sexually active never-married population, women were found to be almost twice as likely to be infected with syphilis as men (5 percent versus 3 percent) (ZDHS, 2001/2002). Unfortunately this information may only show results of men and women in the communities with low to medium risks. There is need for such health surveys to include high risk groups such as the female sex workers and provide statistics for their prevalence and trends in low income communities where most of these sex workers are found.

Furthermore, it was estimated that there are over 200,000 cases of syphilis reported annually in the general population in Zambia and approximately 50% of all new infections occur in young people aged between 15 and 29 years of age (Makasa et al, 2012). Other studies conducted in Zambia through peer review have also shown that the risk of acquiring HIV infection through sexual intercourse is increased 3–5 times in women who are infected with syphilis compared to individuals who are not (Mutagoma, 2016). Since HIV testing is now mandatory in Zambia, there is need therefore to combine efforts in screening programs of HIV to include Syphilis as it is used as a biomarker for other STI's. The high prevalence of Syphilis among women shows that there is need to implement methods of early case

detection and prevention methods in order to curb the increase of new cases. This can only be done once studies like this one examines what the risk factors are and how the stakeholders can use this information in preventative and intervention programmes.

Heterosexual transmission is the primary mode of transmission for sexually transmitted diseases in Zambia. There is a need for more research that looks at the risk factors of Syphilis in women of reproductive age as opposed to waiting until they become pregnant for intervention to take place. It is necessary to study the risk factors of syphilis in female sex workers and single women as they offer a sample of the women from the general population and with the availability of treatment to prevent transmission of syphilis, this study has an important opportunity to avail information that will help in ensuring that syphilis does continue to plague women in Zambia and around the world.

1.3 Justification

Despite numerous interventions to reduce the numbers of STI's in Zambia, syphilis remains a significant health issue in women. A large reduction in congenital syphilis is feasible with relatively simple interventions focused on women in the reproductive age and the maternal and newborn healthcare (WHO, 2007a and 2007b), yet there is still a general under appreciation of the burden of syphilis in the general population of women who may not be pregnant. A search for syphilis studies conducted in Zambia shows that many studies conducted on women are focused on pregnant women and congenital syphilis in newly born babies hence this study sought to focus on the risk factors affecting female sex workers and single women who may not be pregnant.

Targeting female sex workers and sexually active women from the under 5 clinics, the researcher sought to understand their risk factors leading to poor health outcomes and subsequently their acquisition of syphilis. Female sex workers are well known to be high risk however sexually active single women are equally a high risk group compared to the married women. A study by (Reynolds et al, 2006) found that the unmarried women had a higher risk of syphilis infection compared to the married. They also noted from another research from India that unmarried women had (49.7%) higher risk of infection compared to the married women (44.5%). It was therefore important to analyze the data collected from the 2 cohorts at Zambia Emory HIV Research Project and provide sample results on the state of Syphilis infections in women for Lusaka as well as understand their risk factors, experiences and perceptions associated with the disease in the two groups of women.

The findings from this study are intended to help understand the risk factors among female sex workers and single women in the general population and how the two groups of women are influenced into sexual activities that put them at risk of syphilis. In discussing these issues with the women during the focus group discussion the researcher also sought to learn from their experiences and perceptions as well as enlighten them about their own behaviours and activities that put them at risk of syphilis and also show them that syphilis is a curable disease that can be cured with treatment. The study sought to bring out syphilis risk behaviours and prevalence that can help the policy makers in devising preventive measures and intervention programmes directed to this key population.

1.4 Research Objectives

1.4.1 Research questions

What are the main risk factors, experiences and perceptions associated with syphilis infection among female sex workers and single women aged 18-48.

1.4.2 Main objective

To determine the risk factors, experiences and perceptions associated with Syphilis infection among female sex workers and single women in Lusaka.

1.4.3 Specific objectives

To determine the prevalence of syphilis among female sex workers and single women aged 18-48 in Lusaka

To describe the participants' experiences and perceptions regarding the risk factors associated with Syphilis

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

After the advent of the human immunodeficiency virus (HIV) infection, the control of sexually transmitted disease (STDs) became a priority, as it was demonstrated that the prevention and control of these infections represent a unique opportunity to improve the sexual and reproductive life of women and men respectively. Active syphilis infection is associated with a three to five fold increased risk of HIV acquisition. In Zambia, in addition to HIV testing, syphilis was included for screening at antenatal clinics from among other sexually transmitted infections (STIs) because it is an important bio-marker of the prevalence of STIs which are a major risk factor in the heterosexual transmission of HIV in the general population (Dzekedzeke, 2002). The magnitude of Syphilis especially in women in the general population is however, not fully recognized because emphasis is placed on pregnant women who can pass the infections to their unborn babies (Hook, 2004).

2.2 Global prevalence of syphilis

It is estimated that more than a million people acquire a sexually transmitted infection (STI) every day. The WHO in 2005 estimated that 499 million new cases of curable STIs (gonorrhea, chlamydia, syphilis and Trichomoniasis) occur every year and in 2008 they reported that about 10.6 million new cases had occurred among the adult population. From 2013 to 2014, the CDC also reported an increased rate of syphilis among women from 0.9 to 1.1 cases per 100,000 women (CDC, 2016). WHO also estimated that in pregnant women Syphilis leads to 305 000 fetal and neonatal deaths, which also leaves 215 000 infants at an increased risk of dying from prematurity, low birth weight or congenital syphilis each year.

In the developed world, syphilis infections were on a decline until the 1980s and 1990s due to widespread use of antibiotics. Among the developed countries, China is however, among those countries that are suffering a mounting epidemic of syphilis (Zhou, 2007). Data from the China national information system for disease control and prevention has indicated that the reported incidence of primary and secondary syphilis increased in the recent years to 7.63 cases per 100 000 individuals in 2006. From a case-control study that was conducted among women attending antenatal clinics in Shenzhen City, South China, it was found that some of the risk factors identified included, unmarried

status, less education, multiple sex partners, travel of sex partner in the past 12 months, a history of induced abortion, and previous sexually transmitted infections. This study also found strong association of syphilis infection in pregnant women with the overnight travel of a sex partner during the past year as a major risk factor.

Another population-based study in China also revealed that 9% of Chinese men paid for sex in the past year and when having sex with a commercial sex worker they typically failed to use a condom. In light of this information the Chinese government resolved that in order to control the spread of syphilis, comprehensive preventive interventions ought to be provided in all clinical settings in addition to the existing procedures for syphilis screening among antenatal women (Zhou, 2007).

In Germany, a study on the prevalence of syphilis among drug users by Norbert Scherbaum et al, estimated that while the prevalence rate for syphilis in males was 1.9% that of women was 8.5%. The study found that female patients were 4.56 times more likely to have a syphilis positive TPHA test than males. Risky Sexual behaviours such as high number of sexual partners, sex for drugs/money, sex on the first day were associated with syphilis infection only in women. Females with frequent sex for drugs or money were 4.31 times more likely to have a reactive TPHA test than the male patients. The study suggested the need for screening for syphilis among those illicit drug users in inpatient settings and in more particular among sexually active women (scherbaum et al, 2005).

A household survey in the San Francisco Bay area also showed that men and women who had a history of an STI were associated with non-monogamous risky behaviour and also with having more than five sex partners in the last five years. These were also associated with drinking alcohol. The study found that at a minimum, these people were associated with three kinds of drinking behaviours which were (1) going to a bar at least monthly, (2) getting drunk at least annually, and (3) having five or more drinks at one sitting in the last year (Ericksen and Trocki, 1992). Excessive alcohol drinking is often associated with poor judgement of sexual behaviour and improper use of condoms which makes them to be more susceptible to STIs and syphilis respectively. Results from another study looking at drug users and syphilis also found that the rate of partner change was influenced by the exchange of sex for drugs that resulted from crack cocaine use (Marx et al., 1991).

Other studies in the US found that poverty and inadequate access to health care, substance use, and sexual abuse all increased women's risk for Syphilis. Lack of health insurance was particularly high among the younger women and minority ethnic groups who were at greatest risk of acquiring the

Syphilis and even for the insured, access to comprehensive STI-related services may have been difficult. According to the study, Sex workers, persons in detention facilities, the homeless, migrant workers, and other disenfranchised persons represented core transmitters of STIs and syphilis respectively in the population. Efforts to prevent Syphilis in the entire community were not likely to be successful unless these groups received appropriate STI-related services. However, the study also found that many Americans were reluctant or unwilling to discuss sexuality and STI-related issues openly or refused to have the issue appear in the public arena. Such reluctance was observed to have had devastating consequences for Syphilis and other STI prevention efforts (Edlin et al, 1994).

A study from Barcelona looking at the risk perceptions of STI's and HIV from Nigerian female sex workers found that the perception of risk in this group and their preventive behaviours were based on personal determinants, beliefs and experiences from their home country and influences from the host country. They considered themselves a risk factor for their partners and also considered their partners to be a potential source of infection. They admitted to fears about attending a health center when a condom broke, fear of what the health professionals would say to them at the health center when they go there with infections and fear of the results of the tests. However, the need to pay off acquired debts, the costs of everyday living, and family burdens, in Barcelona and in Nigeria, emerged as justifications for their trade. (Coma, 2015).

2.3 Burden of syphilis in Africa and Zambia

Statistics for Africa show that untreated Syphilis has a mortality rate of 8% to 58% with a greater death rate in males. The symptoms of syphilis have become less severe over the 19th and 20th century in part due to widespread availability of effective treatment and partly due to decreasing virulence of the spirochete and with early treatment fewer complications have resulted (Schulz et al, 1987). However, the largest absolute effect of syphilis in women is during pregnancy where probably spontaneous abortions occur during the middle trimester and early in the third trimester. Researchers in Ethiopia estimated that 5% of all pregnancies lost were attributed to syphilis, a total of 75 000 pregnancy losses each year, whereas in Zambia 19% of miscarriages were attributed to syphilis (Schulz et al, 1987).

According to a study by Torrone et al, that looked at the prevalence of sexually transmitted infections and bacterial vaginosis in sub Saharan Africa, the results for syphilis showed a higher prevalence among the women aged 25-49 than the younger ones aged 15-24. Among the 15-24 year old women, the summary estimates of syphilis prevalence from the women that tested positive for RPR and positive

treponema test was less than 2% in the clinics and community populations of both South Africa 1.2% and southern/Eastern Africa 1.4% and higher among higher risk populations in eastern Africa with 8.4%. The women aged 25-49 year olds had a higher prevalence of 2.5% from south Africa and 2.0% from southern/Eastern Africa and the higher risk group from eastern Africa had a slightly lower prevalence of 7.5% than the 15-24 age group (Torrone, 2018). The study showed that there is need to direct more screening efforts and preventive measures among the high risk groups as they have shown to be most affected by the disease and are more likely to infect others due to their high risk activities.

From a total of 1045 FSW that were screened for syphilis in a study from Burkina Faso, 5.6% of the participants had syphilis serological markers detected and 1.4% had active syphilis. The study also found that the prevalence of syphilis markers increased with age and decreased with education level. However, Low education level and high number of clients were factors associated with syphilis among the FSW (Ouedraogo, 2018). Another study conducted in Cameroon testing female sex workers for HIV and Syphilis also found that 3.5% of women tested were classified as having active syphilis, and 6.5% were classified as having past or current syphilis. The study found that women reached were at high risk of HIV and other STIs, with a substantial proportion of them testing due to potential risk exposure and many reporting inconsistent condom use, and very high self-reporting of STI symptoms (Johns Hopkins School of Public Health and Metabiota Cameroon, 2018). These studies show the need for constant screening, testing and treatment of high risk groups such as female sex worker and single women in order to mitigate the scourge of syphilis and reduce future infections.

Most cultures in Africa do not discuss sexual education between children and their parents and only a small number of young people will report to have gotten most of their information regarding STDs and reproductive health information from their parents or other family members hence you find that adolescents and young people start experimenting sexual activities without the full knowledge of the risks that are involved. In sub Saharan Africa where most of these young people come from rural areas or disadvantaged backgrounds, most of these adolescents and young adults in high-risk age groups for STDs do not even have health care coverage or access to medical care in their societies.

2.4 Previous research methods that influenced this study

Although the incidence of syphilis is generally low at present, it remains an important global public health problem, given its interaction with other sexually transmitted diseases (STDs). It has been shown that syphilis, due to the genital ulcers it produces, is a co-factor for acquiring other STDs, principally those of viral origin such as herpes simplex type 2, hepatitis B and HIV. Sexual behaviours and social interactions have been recognized as influential factors in acquiring STIs. From the Study that was conducted in Estonia which was looking at “*Syphilis as a social disease*”, the study found that the social aspects of an individual contributed to the acquisition of Syphilis across different age groups. The dynamics of the disease were governed by the prevalence of the syphilis infection itself as well as by other characteristics of the population. Any observed pattern of the incidences of Syphilis were influenced by a complex of social, behavioral and biological factors. Risk factors were described at individual as well as community levels. While the individual level factors are more or less under the control of a person (partner choice, frequency of partner change, use of condoms), community level factors are usually not led by the person, they are present in the society in which the individual lives (Shiboski et al, 1996).

A qualitative study that explored the perception of FSWs towards their work, their knowledge on HIV/AIDS and STIs and practice of condom negotiation skills among the FSWs in Pokhara city, Nepal (Sharma, 2016) found that condom use played an important role in the prevention of HIV and other STI's but little was known of its proper use and poor negotiation skills from the females to their clients also hindered its success. In Mexico, many female commercial sex workers (FCSW) were found to have acquired good levels of knowledge about Syphilis and other STI prevention. Nevertheless, they constitute a heterogeneous group in terms of socio-economic levels, health status and type of work site. These factors in turn appear to determine their attitudes, knowledge and behaviour related to acquiring and transmitting STIs, including syphilis. This study, therefore, focused on the factors associated with *Treponema pallidum* infection in this group of women (Hernández, 1998).

Individual behaviours have been shown to be influenced by societal norms, and persuaded by others' behaviours, contributing to the epidemiology of the diseases (Kooyman, Pierce & Zavadil, 2011). Women may rely on intimacy with men as a means for coping with social disadvantages and as a source of livelihood (Lightfoot & Milburn, 2009). Early intercourse, numerous sexual partners, lack of condom use, and substance abuse has been identified as behavioral risk factors for the occurrence of syphilis and other STIs (Walcott, et al., 2011).

In 2016, an organization called PATH undertook an assessment to understand why congenital syphilis was not being prioritized, given the health burden and possibility of elimination. It further identified ways to strengthen prioritization and policy of syphilis intervention programmes in three countries, Nigeria, Zambia, and India. The assessment was built on the work of PATH's and WHO's Dual Testing and Elimination of Congenital Syphilis (DTECS) project, an investment case study which was funded by the Bill & Melinda Gates Foundation and carried out in the same three countries from 2012 to 2014. In Zambia, these activities rekindled national commitment to Elimination of Mother To Child Transmission (EMTCT) of syphilis and forged agreement on key next steps in putting in place policies and intervention of syphilis not just for pregnant women but for women at whatever point they seek medical care. (Path, 2016). In light of such activities, this study hopes to highlight the risk factors of syphilis infections in female sex workers and single women. The study also hopes to contribute to the knowledge base of syphilis studies and provide points of reference for policy makers as well as all interested parties in the prevention of Syphilis.

2.5 Women's susceptibility to sexually transmitted infections

Although age and gender may influence risk for an STI, women and female adolescents are more susceptible to STI's compared to their male counterparts because of the biological characteristics of their anatomy (Cates, 1990). This is because in puberty and young adulthood, specific cells (columnar epithelium) that are especially sensitive to invasion by certain sexually transmitted organisms, such as Syphilis, chlamydial and gonococcus, extend from the inner cervix out over the vaginal surface of the cervix, where they are unprotected by cervical mucus. These cells eventually recede into the inner cervix with age (Cates, 1990).

In addition to biological factors, women and female adolescents may also find it more difficult than men to implement protective behaviours, partly because of the power imbalance between men and women (Elias and Heise, 1994; IOM, 1994). For example, condoms are the most effective protection against STIs for sexually active persons, but the decision whether to use a condom is mostly up to the male partner, and negotiating condom use may be difficult for women (Rosenberg and Gollub, 1992). Other biological factors that may increase risk for acquiring, transmitting, or developing complications of certain STIs and syphilis include vaginal douching, risky sexual practices, use of hormonal contraceptives or intrauterine contraceptive devices, cervical ectopy, immunity resulting from prior sexually transmitted or related infections, and nonspecific immunity conferred by normal vaginal flora.

The lack of conspicuous signs and symptoms manifested by infected persons especially women and the long lag time from initial infection to signs of severe complications tends to have more adverse effects in women (Moran and Peterman, 1989).

In summary, findings support the theory that syphilis is a serious disease, however more emphasis is placed on syphilis in pregnant women and congenital syphilis in babies leaving out the un-pregnant women who are at equal risk of the disease. Commitment by the governments around the world to screen pregnant women in the view to prevent congenital syphilis is encouraging but more needs to be done to scale up these interventions to all health facilities in order for the services to be offered not just to pregnant women but to all age groups and to both men and women. Casualness of sex especially with the new discoveries of social media plays a role in access to several partners from different geographical locations but it can also be taken advantage of and used to educate young people about the serious effects of Syphilis and how to seek help when affected. In Zambia it used to be tradition to educate the women who had reached menarche about health issues, sexual issues and hygiene however this tradition has almost died except for a few areas that still maintain the practice. These traditions need to be revisited and improved in that sexual education needs to be emphasized not just abstinence but also proper use of condoms and safer sexual practices in order to protect our women from Syphilis, others STI's and HIV. It is also imperative to incorporate risks of certain sexual behaviours not just for the prevention of HIV but for STI's in general and the adverse effects that these STI's such as syphilis have in the long term if they go untreated. In its quest to reduce the numbers of Syphilis in women, the World Health Organization outlined a four-pillar plan that could help countries eliminate or at least decrease the numbers of cases of syphilis. The four pillars are

- Ensure advocacy and sustained political commitment for a successful health initiative,
- Increase access to, and quality of, maternal and newborn health services,
- Screen and treat pregnant women and partners, and
- Establish surveillance, monitoring, and evaluation systems (*Kamb, M. 2010*).

Furthermore, the United Nations has also added goals related to the lowering of syphilis in the Millennium Development Goals. These goals include reducing infant death from syphilis and increasing the health of women and women with syphilis (*Simms, 2008*).

2.6 Risk Factors of Syphilis Conceptual Framework

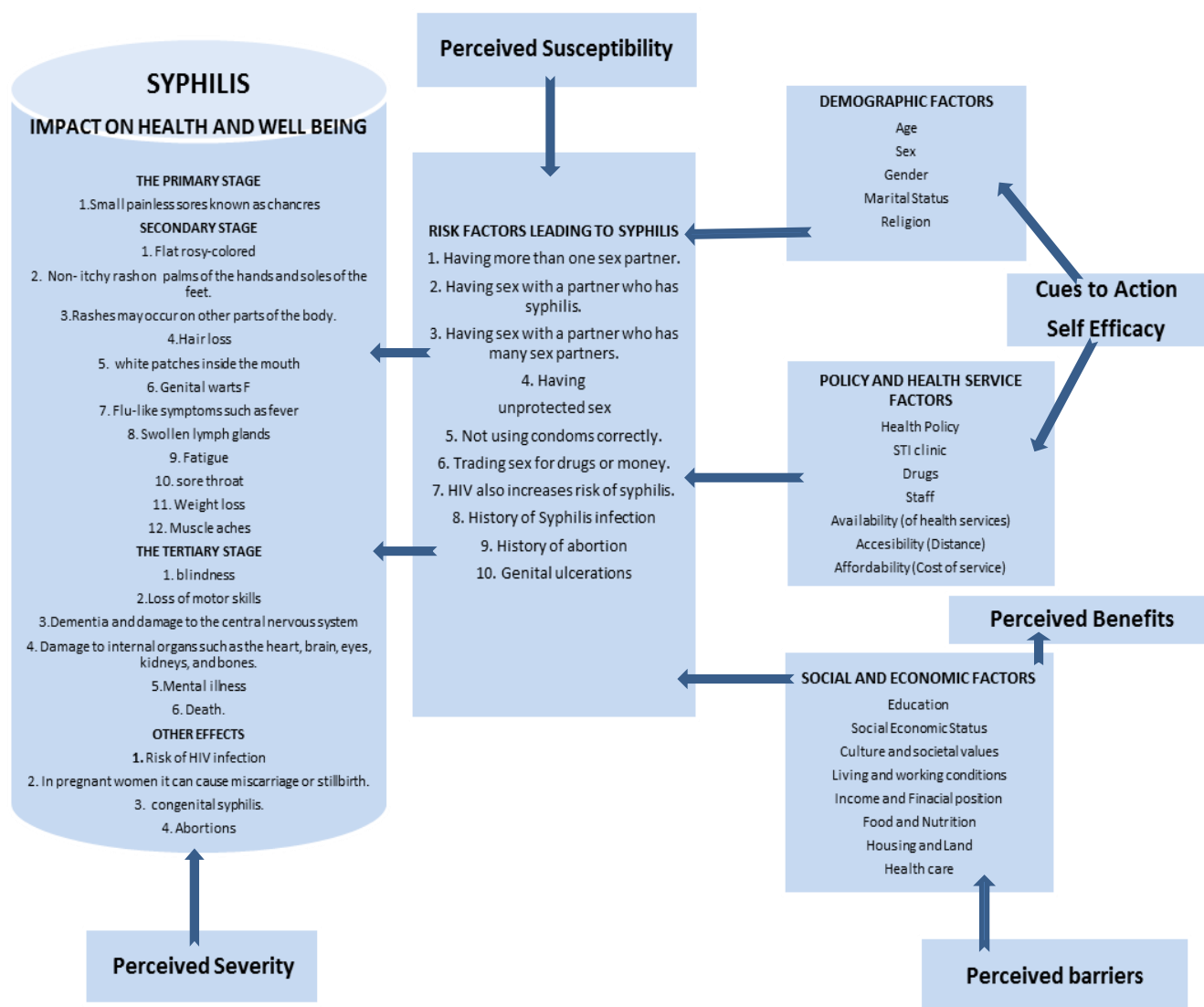


Figure 1. HBM Conceptual Framework Modified from: Glanz et al, 2002, p. 52

In Health Belief Model (HBM), people change their risky behaviour to healthy behaviours when they understand that the disease they are putting themselves at risk for, has serious consequences (Conner,

1996). The structures of the HBM model includes **perceived severity**, **perceived susceptibility**, **perceived benefits**, **perceived barriers**, **cues to action**, and **self-efficacy**.

In this study,

Perceived susceptibility - was used to evaluate women's perception about the extent to which they are at risk of Syphilis. It further looked at the risky behaviour that women engage in that puts them at risk of Syphilis.

Perceived severity of Syphilis looked at the effects and complications of the disease if not treated. This simply outlines the first, second and third stages of syphilis.

Perceived benefits – This referred to the knowledge that the women would have attained by participating in the study. This would also be of benefit to the policy makers who would use the knowledge derived from the study to come up with preventive measures and interventions for women in this target group. It also refers to the individual's analysis about the benefits of adopting preventive behaviours from Syphilis, such as having protected sex by using condoms, sticking to one faithful partner and seeking medical care if infected.

Perceived barriers – This refers to potential barriers to carry out preventive behaviours. It also refers to the factors affecting women's decision to comply with the preventive behaviours of Syphilis. Women's poor use of condoms, multiple partners, alcohol abuse, economic disadvantages, level of education and access to health services.

Cues to action – This refers to the incentives that affect women within and outside the family, such as friends, doctors, healthcare providers, media, and educational resources.

Self-efficacy – This refers to the knowledge that some of them will acquire after the discussions in the FDGs and how they can change their behaviour preventing future acquisition of syphilis.

This model is mostly used to collect data on individual behaviours. However, they also apply to behaviour associated with specific groups of people. In this case, behaviour modification and prevention programs can bear fruit if the target group and their susceptibility to certain behaviours are understood. The HBM assumes that the likelihood of performing specific health behaviour is related to people's conviction that they are threatened with certain diseases, their evaluation of the severity of these diseases, and to the conviction that the target health behaviour allows averting the risk of developing the

said disease (Sas-Nowosielski, 2016) is fundamental to these two groups of women that are considered to be high risk. Furthermore, Women are at higher risk of acquiring Syphilis and our traditional gender paradigms also lead to inequities in our society. Women therefore engage themselves in promiscuous behaviour and unsafe activities to earn a living or merely to please their male counterparts hence putting themselves at higher risk of STI's and Syphilis in particular. However other contributing factors and power imbalances in economic, social, and personal power cause women to fear negotiating about condom use. Other major factors that also play a role in the health of women include health policies, access to health care, affordability etc. it is also worth noting as indicated in the Conceptual framework that their demographics such as age, education, living conditions are some of the risk factors that contribute to women acquiring Syphilis.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Study design

The study used a mixed sequential explanatory method to collect and analyze the data. The sequential explanatory method looked at the quantitative data analysis which was followed by the qualitative data collection and analysis to support and enrich the quantitative findings. The study used a cross-sectional study design to look at the quantitative part using the secondary data from Zambia Emory HIV Research Project to generate frequencies and results that were generalized to the two groups of women. The Qualitative approach also used the secondary data to select participants from the study population and extract those that tested syphilis positive to participate in the focus group discussions. Contact details were retrieved from the study files to invite the participants for the focus group discussions. The focused ethnography study design was used to analyze the qualitative data.

3.2 Study setting and population

3.2.1 Background to original study

The study was conducted in Lusaka district at the Zambia Emory HIV Research Project premises. The women that were selected to participate in this study were drawn from the women in the two prospective cohort studies that were conducted at Zambia Emory HIV Research Project in Lusaka. Since October 2012 to 2016, the organization had enrolled FSW and single sexually active women (also known as single mothers) in a prospective cohort study to characterize risk factors for HIV infection and other STI's. The first cohort consists of Zambian Female Sex Workers who were recruited from known hotpots (bars, clubs, etc.) in Lusaka and the women in the second cohort consisted of Single women with children under five years of age who are sexually active and these were recruited from under 5 government clinics in Lusaka. Study participants were sexually active adult women who met the study inclusion criteria. This main study consisted of 455 HIV negative (-) eligible Female Sex Workers aged 18 - 48 at enrolment and 184 HIV negative (-) single women aged 18 – 48 at enrollment. However a total number of 349 were eligible to participate in this study after excluding those that did not meet the inclusion criteria.

Demographics, HIV and STI risk factors were obtained through interviewer administered questionnaires. Participants were tested quarterly for HIV and Syphilis using serology tests. In addition, they received HIV risk reduction, sexual reproductive health services and family planning (FP) counseling and services. STI treatment and risk reduction counseling was provided for women with STI infections, and condoms were supplied to all participants.

3.3.2 Inclusion criteria

The participants for this study were female sex workers and single women aged 18-48 years from the two prospective cohorts from Zambia Emory HIV Research Project (ZEHRP) that participated in serology Syphilis test.

3.3.3 Exclusion criteria

The study excluded female sex workers and single women that did not have the serology syphilis test results in their records.

3.4 Sample size

The quantitative approach used the data defined from the main study which consisted of 455 HIV negative (-) Female Sex Workers and 184 HIV negative (-) single women.

$$n = z^2 p(1-p) / d^2$$

Where n is the sample size

Z^2 standard deviation above or below the mean = $(1.96)^2$

d= degree of error i.e $(0.05)^2$

P = proportion of an item being selected i.e 50% or 0.5

Substituting the values into formula gave $n=384.16$ rounded off

The sample size was calculated to recruit 384 FSW and single women from the two groups of women, however only 349 women that met the inclusion criteria were enrolled of which 165 were FSW and 184 were SU5. The study was set on a confidence interval of 95% and a 5% acceptable margin of error.

The qualitative approach used purposive sampling where only those that tested syphilis positive were selected to participate in the focus group discussions. The study conducted 3 focus group discussions, one with the female sex workers only, the second group with the single women only and the third group with half the female sex workers and half the single women. 12 participants were assigned for each focus group giving the total sample size of 36 women.

3.5 Sampling Methods

Quantitative approach

The study used total enumeration from the secondary data that was provided. Since the database was provided, the study filtered, sorted and extracted participants aged 18-48 that had a serology syphilis test result for participation.

Qualitative approach

The participants for this study were selected using expert opinion purposive sampling because the women selected had prior experience to syphilis infection and the researcher felt that they would give more reliable information in the discussions. Since the two cohorts consisted of women that were tested for syphilis, of which some tested positive and others negative, only those that tested syphilis positive were considered for participation. From the participants that tested syphilis positive a nurse counselor helped in identifying the key informants to participate in the focus group discussions. This was done by selecting and sorting the data provided for those that tested syphilis positive and meet the 18 – 48 age group inclusion criteria. A total of 36 women were purposively selected from which 18 informative female sex workers and 18 single women were selected for the study. The study conducted 3 focus group discussions where one Focus group consisted of 12 female sex worker only, the second one consisted of 12 Single women only and the third one with 6 Female Sex Workers and 6 single women.

3.6 Data collection

Quantitative data

The study used secondary data for the quantitative part. A Microsoft access database with study data for the two cohorts was provided where those aged 18 – 48 were filtered, sorted and selected for participation.

Table 1: Description of Study Variables

CHARACTERISTICS	NAME OF VARIABLE	SCALE OF MEASURE	INDICATOR	VARIABLE TYPE
DEPENDENT	Syphilis	Dichotomous	Reactive or non-reactive	Binary
INDEPENDENT	Age	Ordinal	Range No of Years	Categorical
	Education level	Ordinal	Range (1-4)	Categorical
	Age at first Sex	Ordinal	Range No of Years	Categorical
	History of partners	Ordinal	Range (# Partners)	Categorical
	Sex for Gifts/Money	Dichotomous	Yes or No	Categorical
	Sex w/o condoms	Dichotomous	Yes or No	Categorical
	Sex under Alcohol	Ordinal	Range (1-4)	Categorical
	History of Syphilis	Dichotomous	Yes or No	Categorical

Qualitative

The study used a focus group discussion interview guide to collect the qualitative data. The study conducted 3 focus group discussion, one with the female sex workers only, the second group with the single women only and the third group with half the female sex workers and half the single women. 12 participants were selected for the focus group discussions that were tape recorded and later transcribed to retrieve the data. The nurse Counselor was the interviewer and the researcher was the note taker that took notes during the focus group discussions and adding comments where physical expressions that cannot be recorded were missing. The discussions were mainly conducted in Nyanja and later transcribed into English.

3.7 Data management/analysis

Quantitative

This study used the STI data collected specifically for syphilis from the two cohorts. The selected ID's or fields were exported to an Excel spreadsheet that was used for analysis. The study analyzed the data using STATA statistical software version 14.0 to generate the frequencies and percentages for the categorical variables. Associations were established using the Chi-squared test at the 5% significance level. A univariable logistic regression analysis was used to determine independent factors associated with Syphilis. Adjusted odds ratios (AOR) together with their 95% confidence intervals (CI) were generated using multivariable logistic regression.

Qualitative

The study transcribed the focus group discussions that were done in Nyanja and English. The Nyanja was translated to English and thematic analysis was used to make valid inferences and interpretations from the 3 FGDs. Thematic analysis was used to identify patterns in the data that were important and interesting in addressing the qualitative research question. The steps below were taken in the analysis.

Step 1- Understanding and getting familiar with the data

The researcher read and re-read the transcribed transcripts from the discussions in order to understand the data that was collected.

Step 2- Generate initial codes

Working through hardcopies of the transcripts with pens and highlighters, the researcher systematically organized the data into meaningful small segments in relation to the research question.

Step 3- Search for themes

The researcher examined the codes and identified themes and patterns that clearly fitted together and selected data and quotes that were relevant and significant to the research question.

Step 4- Review and Define themes

The researcher read the data associated with each theme and considered whether the data supported the themes. The themes were also reviewed to see if they related to each other in alignment with the research question.

Step 5: Write-up.

Finally the researcher compiled what was relevant to the study and added the report to the qualitative section of the results.

3.8 Ethical Consideration

The main cohort study was approved the University of Zambia Biomedical Research Ethics Committee (UNZABREC) and this study was also approved by University of Zambia Biomedical Research Ethics Committee (UNZABREC) to conduct further research which was granted on the 20th September 2017, **Ref No 049-06-17**. The purpose of the study was explained to the participants and they were informed that there was no monetary gain for participating in the study. Individual consent was obtained from each participant that took part in the Focus group discussions and confidentially issues together with numbering of the participants were discussed with the whole group before the focus group discussions commenced.

The participants were assured that their personal information was not to be disclosed to any third party and that this information was only be known to the participants and the researcher. The participants were also informed that their identity was to be kept anonymous by using identity numbers instead of actual names. The participants were also informed that participation in this study was entirely voluntary, therefore they were free to withdraw from this study at any time without any penalty or consequences.

The participants were assured that no physical harm was anticipated for participating however the researcher acknowledged that discussing sexual issues was a sensitive issue that may have caused some participants to feel uncomfortable and any decision by the participants to not discuss any such issues were to be respected. The researcher also informed the participants that that their participation was highly valued and appreciated.

3.9 Limitations

Using secondary data, there was **selection bias** in the study as it was restricted only to HIV negative Female Sex Workers and Single women making it difficult to generalize the results to all FSW and SU5 in Lusaka. 290 FSW had missing Syphilis results that greatly affected the power of the results for that cohort especially that Syphilis test was the outcome variable, furthermore the sample size calculated was 384 but the study only managed to enroll 349 participants that met the inclusion criteria, hence this also affected the power of the results. Other variables also had missing data that affected the overall validity of the results. There was also bias in combining the two groups of women as FSW due to the nature of their job are more higher risk than the single women. However, I believe these limitations di not outweigh the relative contribution of this study.

3.10 Dissemination

The results from this study were disseminated at the Graduate forum and to the University of Zambia school of public Health and are yet to be disseminated to the Rwanda-Zambia HIV Research Group (RZHRG), International AIDS Vaccine Initiative (IAVI) partners and the Ministry of Health. The researcher will further publish the results in credible peer reviewed journals and sites.

CHAPTER FOUR

RESULTS

4.1 Characteristics of Participants

The demographic characteristic of the participants are shown in table 2 below. The total number of participants in the FSW cohort were 165 while the total number of the participants in the SU5 were 184. The ages were categorized from 18-25, 26-30, 31-35, 36-40 and 41-48. The education level was categorized as “None” – 19, “Primary” – 113, “Secondary” – 209 and “Tertiary” – 8.

Most of the women in the study fell in 18-25 age range with 53% (88) FSW and 73% (134) in SU5. This age group also accounted for the largest number of 61% (30) having tested Syphilis positive. The 41-48 age range had the lowest number of participants accounting for 5% (9) in FSW and 2% (3) in SU5 with 6% (3) having tested syphilis positive. The SU5 had the lowest number of participants that had no education at 2% (3) with the same number of those that had attained tertiary education at 2% (3) while the participants in FSW had a much higher number of those that had no education accounting for 10% (16) and those that had attained tertiary education were only 5 at 3%. It is also interesting to note that participants that had secondary education from both groups had the highest number of syphilis positive accounting for 55% (27). The demographics characteristics are presented in Table 2 and the frequencies and percentages are presented in Table 3 below.

Table 2. Participants demographic Characteristics

N = 349	Number of FSW	Number of SU5
Total	165	184
AGE		
18-25	88	134
26-30	30	27
31-35	26	18
36-40	12	4
41-48	9	1
Education Level		
None	16	3
Primary	56	57
Secondary	88	121
Tertiary	5	3

QUANTITATIVE

Table 3. Frequencies and Percentages by Cohort and Syphilis Test. (* = Fisher's exact test)

Variable Name	Total No	FSW	SU5	Syphilis Positive	X² P-value
AGE	349				*0.248
18-25		88(53%)	134 (73%)	30 (61%)	
26-30		30 (18%)	27 (15%)	5 (10%)	
31-35		26 (16%)	18 (10%)	9 (18%)	
36-40		12 (7%)	4 (2%)	2 (4%)	
41-48		9 (5%)	1	3 (6%)	
Education Level	349				*0.588
None (1)		16 (10%)	3 (2%)	3 (6%)	
Primary(2)		56 (34%)	57 (30%)	19 (39%)	
Secondary (3)		88 (53%)	121 (66%)	27 (55%)	
Tertiary (4)		5 (3%)	3 (2%)	0	
Age at First Sex	347				*0.266
11-15 years		59 (36%)	20(11%)	14 (29%)	
16-20 years		93 (57%)	141 (77%)	33 (67%)	
20-29 years		11 (7%)	23(12%)	2 (4%)	
History of partners	347				*0.548
0-15		52 (32%)	184 (100%)	31 (63%)	
16-30		54 (33%)	0	10 (20%)	
31-45		14 (9%)	0	3 (6%)	
46>		43(26%)	0	5 (10%)	
Sex for Gifts & Money	347				3.888
Yes		92 (56%)	41 (22%)	25 (51%)	
Sex without condoms	201				*0.508
Yes		9 (15%)	18 (13%)	4 (15%)	
Sex under Alcohol	174				*0.500
Always		19 (16%)	1 (2%)	5 (16%)	
Most of the time		18 (15%)	1 (2%)	4 (13%)	
Sometimes		48 (40%)	7 (13%)	6 (19%)	
Rarely		28 (23%)	15 (28%)	9 (29%)	
Never		8 (7%)	29 (55%)	7 (23%)	
History of SYPHILIS	346				* 0.000
Yes		19 (12%)	3 (2%)	14 (29%)	
Syphilis	349				

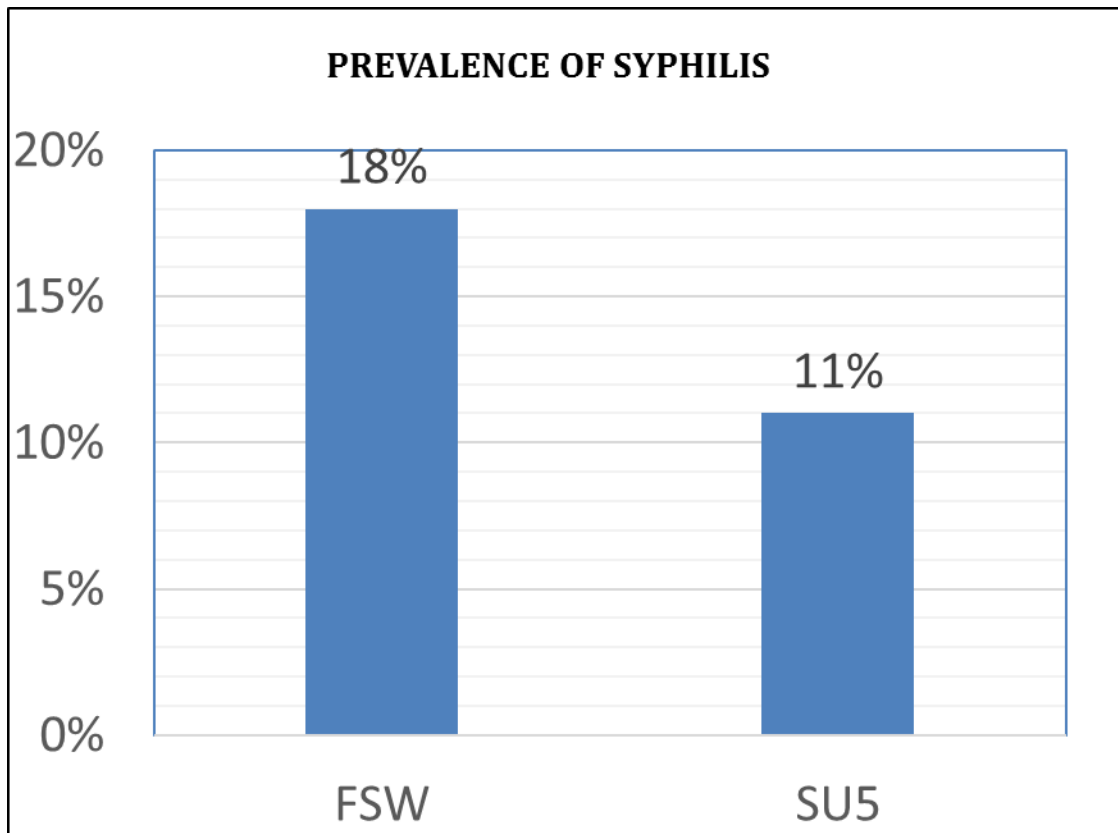


Figure 2. Prevalence of Syphilis in the sample size by cohort.

The prevalence of syphilis in comparison between the two groups showed that female sex workers had a prevalence of 17.58% (29) while the single women had a prevalence of 10.87% (20).

4.2 Univariable and Multivariable Models

The univariate test to find the association between the individual variables and the outcome variable Syphilis did not show much association with the rest of the variables tested except for “History of Syphilis” that was significant with P-value (<0.001) OR:(14.50) and CI:(5.68-37.00). The other variables were not statistically significant as their P-values were above 0.05 cut off point. However, the results for “Age” showed that the older women in the 41-48 age were OR: (2.74) P-value (0.16) and CI: (0.67-11.19) less likely to acquire syphilis than the women in the 18-25 age range. See Table 4 and 5 with the rest of the unadjusted univariable and multivariable odds ratios, confidence intervals and p-values.

Table 4. Unadjusted Univariable and Adjusted Multivariable Odds Ratios

Unadjusted Odds Ratios					Adjusted odds ratios			
	OR	95% CI		P-VALUE	OR	95% CI		P-VALUE
AGE								
18-25	<i>Ref</i>				<i>Ref</i>			
26-30	0.62	0.23	1.66	0.34	2.33	.	.	0.992
31-35	1.65	0.72	3.76	0.24	7.05	.	.	0.279
36-40	0.91	0.19	4.23	0.90	9.30	0.21	242.02	0.996
41-48	2.74	0.67	11.19	0.16	766.37	.	.	.
COHORT								
FSW	<i>Ref</i>				<i>Ref</i>			
SU5	0.57	0.31	1.06	0.074	1.97	0.08	50.07	0.682
Education Level								
None (1)	<i>Ref</i>				<i>Ref</i>			
Primary(2)	1.08	0.29	4.07	0.912	8.95	0.06	130.08	0.11
Secondary (3)	0.79	0.22	2.90	0.724	29.52	2.03	429.12	0.01
Tertiary (4)								
Age at First Sex								
11-15 years	<i>Ref</i>				<i>Ref</i>			
16-20 years	0.72	0.38	1.51	0.44	0.83	0.05	13.64	0.90
20-29 years	0.29	0.06	1.35	0.12	1.23	0	0	1.00
History of partners								
0-15	<i>Ref</i>				<i>Ref</i>			
16-30	1.50	0.69	3.29	0.31	1.66	0.03	97.44	0.81
31-45	1.80	0.48	6.83	0.38	1.33	0	.	1.00
46>	0.87	0.32	2.38	0.79	1.68	0	.	1.00
Sex for Gifts & Money								
Yes	<i>Ref</i>				<i>Ref</i>			
No	0.55	0.30	1.00	0.051	0.03	0.00	0.39	0.01
Sex without condoms								
Yes	<i>Ref</i>				<i>Ref</i>			
No	0.88	0.28	2.76	0.821	0.26	0.02	3.51	0.31
Sex under								

Alcohol								
Always	<i>Ref</i>				<i>Ref</i>			
Most of the time	0.80	0.18	3.57	0.77				0.997
Sometimes	0.37	0.10	1.38	0.137	.	.	.	0.991
Rarely	0.79	0.23	2.77	0.718	0.13	0.00	5.26	0.283
Never	0.70	0.19	2.58	0.592	0.74	0.01	50.10	0.890
History of SYPHILIS								
Yes	<i>14.5</i>	5.68	37.00	<0.001	3.53	0	.	0.989
No	<i>Ref</i>				<i>Ref</i>			

After adjusting for confounders, the multivariable adjusted Odds ratio test failed to show sufficient evidence to prove that the other variables had a strong association to the acquisition of syphilis except for the History of Syphilis. The results after adjusting for other variables showed strong evidence that women who had a history of Syphilis were 15 times more likely to contract syphilis again once exposed to the bacterium (P<0.001), (OR:14.52, 95% CI: 5.63 - 37.45) more than the women who had no history of Syphilis. See Table 5 below.

Table 5. Multivariable Adjusted Odds Ratios

The table shows the last model after adjusting for confounders.

	OR	95% CI		P-VALUE
	Odds Ratio	[95% Conf.	Interval]	P>z
Sex for gifts & money	0.544	0.28	1.05	0.069
History of Syphilis	14.52	5.63	37.45	<0.001

QUALITATIVE

4.3 Experiences and Perceptions on Risk Factors for Syphilis Infection.

The participants discussed the themes positively and negatively depending on how they affected them in their personal lives. The women gave their experiences and perceptions from their communities and backgrounds. They also showed understanding that some of their behaviours put them at risk to attain Syphilis and other sexually transmitted Infections. They also expressed helplessness as some of these

activities helped them to make ends meet as well as access free things such as alcohol and better standards of living. The health belief model was better applied to the qualitative part where the researcher interacted with the participants and discussed their risky behaviour and barriers, cues to action and benefits to change their behaviour for a better health.

4.3.1 Alcohol Abuse

The women from the FSW cohort discussed how alcohol abuse lead them to sleeping with men whose health status they did not know. They also talked about how lack of control due to alcohol intoxication lead the women to having sex without protection and sometimes putting themselves at risk of being raped. This behaviour was not very common among the single women, However this behaviour has serious severe consequences as it impairs the judgement of the women when intoxicated leading to poor condom use, sex without condoms and unsafe sexual practices that may put them at constant risk of acquiring syphilis and other STIs.

“...And when you are drunk you can’t refuse because your thinking is impaired. Even when he demands it without a condom you just go ahead and do it without thinking properly” (FSW/SU5 ID 2).

“...sometimes when you get drunk as a woman you can get abused or raped and contract various diseases such as Syphilis because you don’t know where that man is coming from” (FSW ID 8).

4.3.2 Poverty/Lack of Steady Income

Lack of a steady income and poverty was also discussed as one of the reasons that lead women to indulge in risky behaviour. Due to lack of education and failure to secure proper jobs that can help them sustain their families most female sex workers expressed how they became dependent on men in exchange with sex for money to make ends meet. They explained that prostitution was an easier gateway for them to pay their rentals and bills. This behaviour was mostly prevalent with the female sex workers, however some single women also expressed dependency on men where they depend on their baby’s fathers for money to buy food and meet the baby’s needs. The women understood their behavioral susceptibility to syphilis but due to the barriers in their everyday lives they still go for the risk behaviours.

” ...Especially women that are struggling, they are often forced to find men to help them pay their bills and pay their rentals. Most of the time when you live by yourself, and you don’t have a decent job, you don’t think much about your health. Unfortunately it becomes a habit where every time you want money, you go back to the bars, fraternizing with different men in the hope that you can exchange sex for money just so that you can make ends meet” (FSW ID 6).

4.3.3 Sex for Gifts and Money

Even though this was discussed by women from both cohorts, it seemed more prevalent among the single women group. Though both groups of women sought gifts and money from men, the single women discussed how they indulged into risky behaviour of having affairs with married men, older men and sugar daddies commonly known as “blessers” to improve their Lifestyle and acquire things such as expensive shoes, clothes, phones, and cosmetics that their families would normally not be able to provide for them. The women understood the severity of their actions and risks they present to them, unfortunately Peer pressure from friends lead some of them to acquire Syphilis and other STI’s from these older men who usually have multiple partners.

“...Some of us women like high life, for example when I try to advise my friend she says “No”... you are jealous of me, because I wear nice clothes, I buy expensive shoes and so on.. She will even say that stop being jealous of me, if you want you can also follow and make your own money” (SU5 ID 7)

4.3.4 Symptoms of Syphilis

Some participants had several misconceptions about how Syphilis symptoms present. Some women mentioned swelling of private parts as a sign that they had syphilis while others said smelly discharge coming from the private parts was a symptom of Syphilis. At the end of the discussions, a nurse helped to explain the correct symptoms of Syphilis and gave more education on the infection. In line with the cues to action and self-efficacy it is important for the women to have the correction information about the symptoms of syphilis so that they take correct steps in seeking treatment early.

“...Someone that has Syphilis, fails to walk, he walks with legs apart because of the pain from the bottom.” (FSW/SU5 ID 4)

4.3.5 Treatment

Another theme that came out of these discussions was treatment. The women from both groups mentioned clinic and hospital as the first place to go to seek treatment when infected with Syphilis. However, Private clinics and traditional herbalist/healers were also discussed as some of the places where treatment is sought when they suspected to have Syphilis. Through education sessions such as these focus group discussions and other health campaigns, the women learnt the cues to action, such that when they suspect to be infected they go to see seek help from clinics and hospitals. This is important as it shows that they understood the perceived benefits of seeking treatment early.

“...When you have contracted Syphilis you can go first to the nearest clinic, maybe Matero Clinic for some of us that live in Matero or chingwere level 1 Hospital but if your condition is very serious that’s when they refer you to UTH” (University Teaching Hospital) (FSW ID 6).

On a negative side some women expressed fear to seek treatment from the government clinics due to fear of being seen or identified by their neighbors and friends as attending the STI clinic while others said they shunned seeking treatment immediately due to the embarrassment of the infection. In relation to the conceptual framework, these are some of the perceived barriers that hinder women from taking corrective action for their own health. It is gratifying to note that in Zambia these STI clinics have been incorporated with the general clinic at government clinics to minimize and prevent stigmatization of those seeking STI treatment.

“...Some time back I didn’t want to go to the government clinic because I was scared that my neighbor who works there will see me” (FSW ID 1).

The misconception that arose regarding treatment was that Syphilis doesn’t finish in the blood unless combined with traditional medicine.

“...You have to take the conventional medicine and also add the traditional medicine to cure it completely” (FSW/SU5 ID 5)

“...They say that the English medicine doesn’t cure completely but when you take the traditional medicine that’s when you get cured completely.” (SU5 ID 3)

Another misconception that arose with treatment was that the injection can paralyze your legs. The women discussed how they had heard from their friends that the injection used to treat syphilis can

paralyze your legs. At the end of the discussions the nurse also explained how the injection could cause the leg to feel numb where the injection was administered for a little while and that it does not paralyze the legs at all.

“...A friend told me that the injection for syphilis can paralyze your legs.... ” (FSW ID 9).

CHAPTER FIVE

DISCUSSION

Syphilis is a serious infection that has long term adverse effects if not treated. In women it has even more effects that will not only affect the woman but also their pregnancy and unborn child when they conceive. Focus is mainly paid to syphilis in pregnancy and preventing congenital syphilis in newly born babies. It is for that reason that this study hoped to look at a different angle and focus more on women in high risk groups such the female sex workers and the single women who are sexually active and are at a constant risk of acquiring syphilis. The study also sought to have discussions with these women and share information on their risk factors, perceived susceptibilities and offer education on perceived severity and perceived benefits to behavior change and how best they can protect themselves in the future.

Even though some literature such as the study conducted by (Makasa et al, 2012) in Zambia, show that there is tremendous decline in the prevalence of syphilis in Zambia, the (WHO, 2008) still contains that the numbers of Syphilis infections especially in women are still reasonably high. It also states that Syphilis is a major causer of still births, unplanned abortions and congenital syphilis in newly born babies around the world, hence attention needs to be paid to all women in scaling up interventions to curb the numbers of syphilis infection in women. In this study of female sex workers (FSW) and single women from the Under 5 clinic (SU5) the results showed that having a history of Syphilis was statistically significant as a risk factor to acquiring Syphilis again once exposed. The study found that all women that engage in risky behavior from both groups are all at risk of contracting Syphilis. It was noted that female sex workers due to the nature of their work were more likely to contract Syphilis than the single women.

As the results show in this study women that had a history of Syphilis were most likely to get infected again once exposed hence the need to treat their partners and incorporate them in prevention efforts to avoid re-infection. One of (WHO, 2009) strategies, which is a cue to action on Syphilis in women includes treatment of partners of seropositive women, promotion of condom use, education and counseling to prevent infection and reinfection. It is therefore imperative to incorporate the partners to these women in these campaigns so that they can work together in preventing the infections. As much as

that may be the best way to reduce the numbers it still may not be so easy in cases of the female sex workers who have several partners that are not constant.

The results of this study showed no significance for the women that engaged in sex without condoms, however, a qualitative study in Pokhara city, Nepal (Sharma, 2016) found that condom use played an important role in the prevention of HIV and other STI's and furthermore it is important to promote proper condom use and safer sex in the high risk groups of women to prevent future infections.

It is also worth noting that Women who have access to higher education may have better knowledge and perceptions of severity and benefits to screening, treatment and prevention to STIs like syphilis and HIV/AIDS. (Reynolds et al, 2006), also wrote that women with higher education observe some precautions before, during and after their sexual activities thereby putting themselves at lower risk of infection. However in this study, that finding was not significant as women that had attained secondary education had the highest numbers of syphilis infection (See table 3).

Furthermore, in the same study by (Reynolds et al, 2006), they found that Marital status was also not a predictive factor for syphilis infection. However, the unmarried women had a higher risk of syphilis infection compared to the married. They also noted from another research from India that unmarried women had (49.7%) higher risk of infection compared to the married women (44.5%). This information is comparatively very important to this study that is focused on female sex workers and the single women from the under 5 clinics. The findings show that unmarried and single women are at a higher risk of syphilis infection. It is therefore imperative to stress the need for interventions and safer sex education in this group of women as they have been proven to be high risk in the acquisition of Syphilis and other STI's.

This study also found that the younger women aged 18-25 were at a higher risk of being infected, than the older women. The results showed no statistical evidence that age was a predictor in the acquisition of syphilis. However, the study conducted by (Liao et al, 2017) found that most women in the reproductive age group from 21-44 are all at equal risk of acquiring syphilis. Even though the results for these age groups were not significant in the study, the prevalence of syphilis was mostly high in this reproductive age group of women.

Subsequently, the age at which the women first encountered sex did not show any statistical evidence in the acquisition of syphilis but it was worth noting that the highest number of the women with Syphilis in this group were associated with the women that encountered sex at the stage of 16-20 years of age. The

results from this study were also synonymous with a case-control study that was conducted among women attending antenatal clinics in Shenzhen City, South China, where some of the risk factors identified there included, unmarried status, less education, multiple sex partners, and previous sexually transmitted infections (Zhou et al, 2007) which are the same risk factors as what this study found.

The Qualitative discussions however showed that ‘alcohol abuse, Poverty, Lack of steady income and sex for gifts and money were major themes as risk factors associated with Syphilis. Even though Sex for gifts and money was not statistically significant in the quantitative tests, it was mostly prominent with the single women who regardless of having a decent source of income showed that these women engage in multiple partners or sex with older men for money, gifts, better standards of living and access to luxurious things such as expensive phones, clothes and accessories.

On the contrary female sex workers engaged in sex work more as a means to their livelihood which unfortunately also pose as a perceived barrier to their health. The women talked about how they engaged in the trade to pay rentals, pay for children’s school fees as well as put food on the table for their families. These results were consistent with the findings from a qualitative study by (Sharma et al, 2016) where FSWs gave similar reasons for their work in that they engaged in sex work to pay their debts, pay school tuition fees for their brother, sister, children and support their family. The study also reported that FSW were not doing the job for fun but rather because of hard times, to survive and help their families. Similarly (Lightfoot & Milburn, 2009) also reported in their study that women may rely on intimacy with men as a means for coping with social disadvantages and as a source of livelihood.

Among this group there were those that loved alcohol and hence engaged in risky behavior to access free alcohol which in turn they paid for in kind. However it is this risky behaviour that put them at risk of acquiring syphilis and other STI’s. (Ericksen and Trocki, 1992) in their study of San Francisco households agreed with this finding that they found that men and women associated with (1) going to a bar at least monthly, (2) getting drunk at least annually, and (3) having five or more drinks at one sitting in the last year were most likely to have a history of a Sexually transmitted disease due to the risky behaviour.

Some of the experiences that came up in this study were fear to seek help and treatment when they suspected to be having symptoms of syphilis. The women expressed shame and embarrassment of the infection as prohibiting them to seek medical treatment. This phenomenon was also reported in a study from Barcelona among Nigerian sex workers, who admitted to fears of attending a health centre when a

condom broke because they were afraid of what the health professionals would say to them at the health centers when they go there with infections and even fear of the results of the tests (Coma, 2015). This barrier is caused by their inner fear of how other people will perceive them when they present with symptoms of syphilis and other STIs. However is it important for the women to have self-efficacy and confidence in seeking treatment as the benefits of such action are way more greater for their health.

The Focus group discussions also brought out some perceptions and misconceptions that the women had about Syphilis such as what they perceived the symptoms of Syphilis to be. Some women perceived symptoms of other STIs to be those of Syphilis while others believed that Syphilis can only be cured completely with traditional medicine. These misconceptions highlighted the need for constant and continuous education to women from all sectors of society on the symptoms of Syphilis and access to treatment. It also showed that these women understand the severity of the infection and the benefits of having the infection cured completely hence the desire to seek both conventional and traditional medicine. However, Continuous campaigns on Syphilis will help provide cues to action and self-efficacy for the women to identify the symptoms correctly when afflicted and seek treatment early.

The Study conducted by (Punguyire, 2015) in Ghana, however reiterated that most of the interventions and syphilis prevention campaigns targeted at women could be achieved in urban areas because women in those parts of the country are served by clinics and hospitals where screening coverage is high and unfortunately achieving similar results in rural communities can prove difficult because such communities are served more by Community Health Persons and health centers where syphilis screening capacity is limited. Furthermore, the benefit of identifying such risk factors among high risk groups would be the ability to target clinical and educational resources toward these individuals at highest risk of co-infection (CDC, 2011) and even though the (WHO, 2009) key strategies in the elimination of Syphilis are mostly focused in eliminating congenital Syphilis, these strategies can be extended to all women in prevention efforts and curb the infection for this high risk population of women.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The findings of this study show that women regardless of either cohort they belonged to, were all at risk of acquiring Syphilis. The study showed that women that had a history of Syphilis were more likely to get infected again once exposed. The study also showed that poverty, lack of a steady income, love for alcohol and desire to access gifts and money from older men were some risk factors that lead women to acquire Syphilis. Female sex workers however took their risky behavior more as a means of livelihood while single women indulged in risky behaviour to access money and a better lifestyle hence putting themselves at risk of getting Syphilis. Understanding these risk factors, their experiences and perceptions for these behaviors is useful in developing effective public health campaigns. The study also showed that women from different segments of society have different needs that all need to be incorporated and addressed when planning prevention strategies and interventions.

6.2 Recommendations

Continuous education on the effects of syphilis to women is very important as it can save their lives and that of their babies when pregnant. Ensuring availability of information on syphilis being a curable disease is important and the women need to be informed that treatment is available to all, at Govt clinics, Private clinics and hospitals. It is also important to ensure that these women, especially single women, bring their partners for treatment to avoid re-infection. It is also important to ensure that the women learn the correct ways of using condoms, especially Female sex workers in order to also protect themselves from future infections. Continuing research on high risk groups such as female sex workers in comparison to other groups of women is a crucial factor in reducing the prevalence of Syphilis and achieving equitable sexual and reproductive health for all women and additional studies need to be conducted that are inclusive of both HIV negative and positive women in order to achieve results that can be better generalized to the women in the general population.

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APPENDICES

Appendix A

INFORMATION SHEET

Introduction

The principal investigator of this study Ms. Mwaka Choongo, is a student of the University of Zambia, School of Public Health. This research is part of her requirement to the completion of her Master of Public Health studies where she would like to find out the risk factors of syphilis in female sex workers and single women. This consent will be applicable only to the participants that will take part in the focus group discussions.

Purpose of the study

Syphilis is a serious sexually transmitted disease that if not treated causes serious problems to the infected persons. Pregnant women with Syphilis end up passing it on to their unborn babies and this has led these women to have still births and miscarriages while others born with syphilis suffer from various deformities. This study is therefore interested in identifying the risk factors of syphilis in women in order to provide evidence and knowledge for future interventions in women.

Benefits

There will be no monetary benefits for participating in the study however, your participation in this study will contribute to the knowledge that will be attained and that information will help the government to formulate policies that will help women like you in the fight against syphilis.

Risk

We do not expect you to be harmed from taking part in this study however there is a risk that you may share personal and confidential information. We also acknowledge that discussing sexual issues is a sensitive issue in our culture and our society hence your decision to not discuss any topic that may make you uncomfortable will be respected.

Voluntariness

Participation in this study is entirely voluntary, therefore you are free to withdraw from this study at any time without any penalty or consequences.

Confidentiality

The information collected during this study will be kept strictly confidential to the extent permitted by law. Your personal information will not be disclosed to any third party. Your identity will be kept anonymous by not using your actual names but instead you will be identified by a unique identity number known only to you and the researcher.

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Appendix B

INFORMED CONSENT FORM

Participant: I have been told about the study and what I will need to do and I understand and agree. I understand that it is my choice to be in the study and that I may stop being in the study at any time for any reason, and that this will not affect my legal rights.

Woman's Signature _____

Name _____ Date _____

Witness (if participant is illiterate): I sign here as a witness to the consent process. I have participated in the discussion and witnessed the participant's consent to study participation. All of the writing required of the participant on this informed consent form (initials, indication of left/right thumb print, date, and time) was written by me on behalf of the participant:

Impartial witness Signature _____

Name _____ Date _____

Investigator's Signature: I have explained the nature of the above research to the participant:

Signature of person obtaining consent _____

Name _____ Date _____

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Appendix C

Focus Group Discussion Guide

Consent Process

Consent forms for focus group participants are completed in advance by all those seeking to participate.

Thank you for agreeing to participate. We are very interested to hear your valuable opinion on how the Ministry of Health can create policies to retain a strong health workforce.

The purpose of this study is to learn about the risks that women are involved that lead them to acquire syphilis. Syphilis is a serious sexually transmitted disease that if not treated causes serious problems to the infected persons including mental illness, damage to important organs like the heart and still births and miscarriages and even death of a child in pregnant women. This study is therefore interested in identifying the risk factors of syphilis in women in order to provide evidence and knowledge for future interventions in women.

Confidentiality

- The information you give us is completely confidential, and we will not associate your name with anything you say in the focus group.
- We would like to tape the focus groups so that we can make sure to capture the thoughts, opinions, and ideas we hear from the group. No names will be attached to the focus groups and the tapes will be destroyed as soon as they are transcribed.
- You may refuse to answer any question or withdraw from the study at any time.
- We understand how important it is that this information is kept private and confidential. We will ask participants to respect each other's confidentiality.
- If you have any questions now or after you have completed the questionnaire, you can always contact a study team member like me, or you can call the ZEHRP project team leaders whose names and phone numbers are on this form.
- Please sign to show you agree to participate in this focus group.

Materials and supplies for focus groups

- Sign-in sheet
- Consent forms (one copy for participants, one copy for the team)
- Writing Pads & Pens
- Focus Group Discussion Guide for Facilitator
- 1 recording device
- Batteries for recording device
- Extra tapes for recording device
- Permanent marker for marking tapes with FGD name, facility, and date
- Notebook for note-taking
- Refreshments and snacks

1. Welcome

Introduce yourself and the note taker, and send the Sign-In Sheet with a few quick demographic questions (age, Compound you come from) around to the group while you are introducing the focus group.

Review the following:

- Who we are and what we're trying to do
- What will be done with this information
- Why we asked you to participate

2. Explanation of the process

Ask the group if anyone has participated in a focus group before. Explain that focus groups are being used more and more often in health and research.

About focus groups

- We learn from you (positive and negative)
- Not trying to achieve consensus, we're gathering information

- No virtue in long lists: we're looking for priorities
- In this project, we are doing focus group discussions. The reason for this tool so that we can get more in-depth information from a smaller group of people in focus groups.

Logistics

- Focus group will last about one hour
- Feel free to go to the bathroom if need be
- Where is the bathroom? Exit?
- Help yourself to refreshments

3. Ground Rules

Ask the group to suggest some ground rules. After they brainstorm some, make sure the following are on the list.

- Everyone should participate.
- Information provided in the focus group must be kept confidential
- Stay with the group and please don't have side conversations
- Turn off cell phones if possible
- Have fun

4. Turn on Tape Recorder

Ask the group if there are any questions before we get started, and address those questions.

Discussion begins, make sure to give people time to think before answering the questions and don't move too quickly. Use the probes to make sure that all issues are addressed, but move on when you feel you are starting to hear repetitive information.

Questions:

1. What are the risk factors for Syphilis?
2. What are reasons that some people get Syphilis?
Explore: individual's age, multiple partners, history
3. What can keep people from getting Syphilis?
Explore: behaviour, attitudes
4. If we want to avoid getting Syphilis, what can women do?
Explore: use of condoms
5. What conditions are likely to be associated with Syphilis?
Explore: Social, environmental and behavioral?
6. How does acquiring Syphilis affect one's life
Explore: Lifestyle
7. Where can one seek treatment if they are found to have been infected with Syphilis
8. What advice can you give to other women in regards to prevention of Syphilis
9. What have we learnt about Syphilis today

That concludes our focus group. Thank you so much for coming and sharing your thoughts and opinions with us.

Appendix D

Permission Letter

Emory University
School of Medicine
Dr. Susan Allen, MD MPH
101 Woodruff Circle, Suite 7300
Atlanta, Georgia 30322
United States of America

Zambia-Emory HIV Research Project
B22/F737 Mwembelelo Rd
POST NET Box 412
P/Bag E 891
Lusaka, Zambia

Chairperson
Biomedical Research Ethics Committee
The University of Zambia
Ridgeway Campus
P.O Box 50110
Lusaka, Zambia

5th June 2017

Dear Dr. Maimbolwa

Re: Permission granted that Mwaka Choongo utilizes data from UNZABREC approved study for Masters in Public Health Project.

Zambia Emory HIV Research Project (ZEHRP) has fully granted Mwaka Choongo permission to utilize data collected in an UNZABREC approved protocol: **“A prospective cohort study to determine the incidence and risk factors of HIV amongst female sex workers and single pregnant women in urban areas in Rwanda and Zambia”** (v 3.0, 11May16); (Ref. No. 011-01-14), for her MPH project. Her research study on *“Risk factors associated with syphilis among female sex workers and Single women.”*

Sincerely,



William Kilembe MD, MSc

ZEHRP Project Director

wkilembe@rzhrg-mail.org,

+260966862787

Appendix E

Ethics Approval Letter



THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260-1-250753
E-mail: unzarec@unza.zm
Assurance No. FWA00000338
IRB00001131 of IORG0000774

Ridgeway Campus
P.O. Box 50110
Lusaka, Zambia

28th September, 2017.

Your Ref: 049-06-17.

Ms. Mwaka Choongo,
University of Zambia,
School of Public Health,
P.O Box 50110,
Lusaka.

Dear Ms. Choongo,

RE: RESUBMITTED RESEARCH PROPOSAL: "RISK FACTORS ASSOCIATED WITH SYPHILIS INFECTION AMONG FEMALE SEX WORKERS AND SINGLE WOMEN IN LUSAKA"
(REF. No.049-06-17)

The above-mentioned research proposal was presented to the Biomedical Research Ethics Committee on 20th September, 2017. The proposal is approved.

CONDITIONS:

- This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.
- If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a detailed progress report of your study to this Committee every six months and a final copy of your report at the end of the study.
- Any serious adverse events must be reported at once to this Committee.
- Please note that when your approval expires you may need to request for renewal. The request should be accompanied by a Progress Report (Progress Report Forms can be obtained from the Secretariat).
- Where appropriate apply in writing to National Health Research Authority for permission before you embark on the study.
- **Ensure that a final copy of the results is submitted to this Committee.**

Yours sincerely,

Dr. S. H Nzala PhD
VICE-CHAIRPERSON

Date of approval: 28th September, 2017.

Date of expiry: 27th September, 2018.