

**DETERMINANTS OF THE LOW PREVALENCE OF HIV/AIDS IN  
MWINILUNGA DISTRICT IN NORTHWESTERN PROVINCE,  
ZAMBIA**

**By**

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master of public health**

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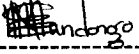


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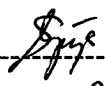
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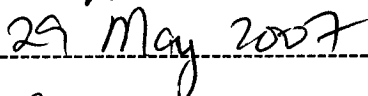
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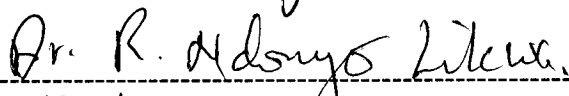
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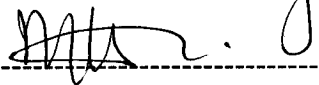
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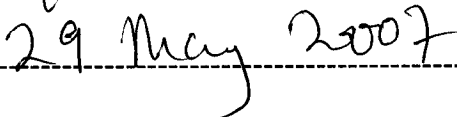
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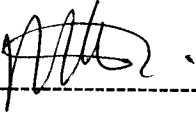
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## ABSTRACT

HIV/AIDS is a major public health problem all over the world. It is a threat to economies and to the very fabric of our societies. In badly affected countries, the socioeconomic effect of this most destructive disease is measured in loss of productivity and deteriorating public health services such as health and education as key staff fall ill and die. The virus is increasingly targeting women, babies and young people. However, the distribution of the rates of infection is not equal around the globe. There are puzzling discrepancies in HIV/AIDS prevalence between different countries and regions, despite the presence of what seems to be similar risk factors. Within countries, there are variations in prevalence rates by region.

The purpose of this study was to determine the factors associated with low prevalence of HIV/AIDS in Mwinilunga district in Northwestern province. A cross-sectional comparative descriptive study was conducted in Mwinilunga and Solwezi districts with Mwinilunga having had a moderately lower prevalence of HIV/AIDS than Solwezi.

The study was conducted in all the 5 high schools of the two districts. The study population included male and female students from grade ten to grade twelve. The age range was from 16 to 24 years. The sample was selected using a systematic sampling method. Data was collected using a structured questionnaire administered to 130 students and a focus group discussion guide which was administered to 120 students. Five FGDs were conducted in each district. Each FGD comprised of 12 discussants.

Data was analyzed using SPSS computer software package. The Chi-square ( $X^2$ ) test was used to test for significant associations. Statistical significance was achieved if  $P < 0.05$ . Multivariate logistic regression analysis was used to control for confounding factors.

The results revealed a significant association between ethnicity (tribe) and low prevalence rate of HIV/AIDS with more respondents from Mwinilunga (64.6%) than Solwezi (18.5%) belonging to the Lunda tribe. The respondents who were Lunda by tribe were 6.24 times more likely to have been from Mwinilunga district than the respondents who were of other tribes like Lenje, Ngoni, Bemba, kaonde, Tonga, Tumbuka and Lozi.

Furthermore, a significant association was observed between male circumcision and low prevalence of HIV/AIDS with more males (69.2%) from Mwinilunga than Solwezi (30.8%) among the respondents who said they were circumcised.

Another significant association was observed between initiation ceremonies and low prevalence of HIV/AIDS with more from Mwinilunga (90.85%) than Solwezi (61.5%) among the respondents who said young people in the district went through initiation ceremonies. Those who said young people in the district went through initiation ceremonies were 3.16 times more likely to have been from Mwinilunga than those who said that young people did not go through initiation ceremonies.

Additionally, a significant association was observed between Christian religious denomination and low prevalence of HIV/AIDS with more respondents in Mwinilunga than Solwezi among the respondents who said they belonged to the CMML Church.

Consequently, we conclude that tribe, male circumcision initiation ceremonies and Christian religious denomination may be the major factors influencing the prevalence of HIV/AIDS in Mwinilunga district in Northwestern province.

However, the descriptive study design used in the current study is a weak study design. There is need for stronger study designs to be used so as to establish the cause-effect relationships among the factors identified in the current study. Therefore, since we are now aware of the association between HIV/AIDS and male circumcision, a controlled trial of circumcision is needed to see if male circumcision would help to control the HIV/AIDS epidemic.

From the findings of the study, we can see that to scale down the prevalence of HIV/AIDS, we need to take a holistic view towards its prevention by considering some social, cultural and religious factors. Male circumcision might only be one component in the fight against HIV/AIDS.

## **DEDICATION**

This research work is dedicated to my husband Mr. T. Mushinkula who gave me moral support and encouragement and without whose love, patience and prayers my studies and this work would not have been possible.

To my beloved children Chinyama and Kyembe who were denied adequate motherly love at the time when they needed it most and without whose understanding and patience, my studies would not have been successful.

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## **ABBREVIATIONS**

ADB:	African Development Bank of Zambia
AIDS:	Acquired Immune Deficiency Syndrome
ARVs:	Anti-Retro Viral drugs
CBoH:	Central Board of Health
CMML:	Christian Mission in Many Lands
CSO:	Central Statistical Office
FGD:	Focus Group Discussion
GRZ:	Government of the Republic of Zambia
HIV:	Human Immune Deficiency Virus
IEC:	Information Education and Communication
MC:	Male Circumcision
MoH:	Ministry of Health
MTCT:	Mother To Child Transmission
NGO:	Non-Governmental Organization
SDA:	Seventh Day Adventist
SPSS:	Statistical Package for Social Sciences
SSS:	Sentinel Surveillance System
STD:	Sexually Transmitted Disease
STI:	Sexually Transmitted Infections
UNAIDS:	Joint United Nations Programmed on HIV/AIDS
UNZA:	University of Zambia
USAID:	United States Agency for International Development
VCT:	Voluntary Counseling and Testing
WHO:	World Health Organization
ZDHS:	Zambia Demographic Health Survey

## CHAPTER 1

### 1.0. INTRODUCTION

#### 1.1. Background information

The acquired immuno-deficiency syndrome (AIDS) is a fatal illness caused by a retrovirus known as the human immuno deficiency virus (HIV), which is spread through blood, semen, vaginal secretions and breast milk. The most common method of transmission is unprotected sexual intercourse with an HIV-infected partner. Other routes include transfusions of HIV-infected blood or blood products or organ transplants; use of contaminated needles and syringes (or other skin-piercing equipment); and mother-to-child transmission during pregnancy, birth, or breast feeding.

There are two types of HIV virus: HIV-1 and HIV-2. HIV-1 accounts for the majority of infections in the world, and has at least 10 genetic subtypes. HIV-2 is found primarily in West Africa.

HIV kills by weakening the body's immune system until it can no longer fight infection. As HIV compromises the immune system, opportunistic infections such as pneumonia, meningitis, cancers, and tuberculosis (TB) easily attack the body.

HIV/AIDS generally progresses over a decade to its final stage. However, an infected person can be free of signs and symptoms for about ten years. The infected person may feel healthy, but he or she can infect others with the disease during this stage. Early AIDS symptoms include chronic fatigue, diarrhoea, fever, weight loss, persistent cough, skin rashes, herpes and other oral infections, swelling of the lymph nodes, and memory loss or other mental changes.

AIDS is always fatal, although a few individuals have survived AIDS for up to 20 years. The disease is believed to progress more slowly in industrialized countries

than in less developed countries largely because residents of industrialized countries have greater access to anti-retroviral (ARV) drugs and high quality health care. Current drug treatments, such as highly active antiretroviral therapy (HAART), slow the virus replication in the body. Slower replication rates lessen the burden on the immune system, thereby reducing HIV-related illnesses and allowing patients to live longer with high quality lives. However, there is no cure for AIDS; despite the effectiveness of HAART, termination of treatment leads to resurgence of the disease.

The distribution of the rates of infection is not equal around the globe. Ninety five percent (95%) of the people who are infected with HIV live in developed countries (Alder, 2000). The highest concentration of people with HIV infection is in Africa, which accounts for 69% of the cases of HIV infection.

Sub-Saharan Africa has the highest infection rates of HIV in Africa. One in every 3 people is infected with HIV (WHO, 2001). Since the start of the epidemic an estimated 34 million people in the region have been infected with HIV and of these 11.5 million people have died. The hardest hit countries in sub-Saharan Africa are Burkina Faso, Burundi, Central African Republic, Congo, Ivory Cost, Kenya, Malawi, Rwanda, Swaziland, South Africa, Tanzania, Uganda, Zambia and Zimbabwe.

UNAIDS (1999) estimated that by the end of 1999 the epidemic would have left behind a cumulative total of 13.2 million AIDS orphans at family level. Traditional family structures and extended families are breaking down under the strain of HIV. Street kids are increasing in number probably due to the fact that they are orphans. Life expectance in the hardest hit countries in the region is expected to see an average reduction of 17 years by 2010-2015. Young highly productive adults die at the peak of their output resulting in a considerable impact on a country's economy.

In Zambia sufficient information exists from the different sources to draw a reasonably reliable picture of what is happening with HIV/AIDS in Zambia. The HIV/AIDS epidemic has left no corners of Zambia untouched.

## 1.2. **The statement of the problem**

Recognized as an emerging disease only in the early 1980s, AIDS has rapidly established itself throughout the world. We are entering the third decade of what may be the most devastating epidemic in human history: HIV/AIDS. The Acquired Immuno Deficiency Syndrome (AIDS) is a profound human tragedy. But it is much more besides; it is a threat to economies and to the very fabric of our societies. In badly affected countries, the socioeconomic effect of this most destructive disease is measured in declining per capita incomes, shrinking profits in labour intensive business, loss of productivity from cultivated land, and deteriorating public services such as health and education, as key staff fall ill and die. As the human immunodeficiency virus (HIV) continues its devastating spread, blighting the lives of another 16,000 people every day, the virus is increasingly targeting women, babies and young people (UNAIDS, 2004).

HIV/AIDS epidemic is an extremely serious public health problem in Zambia. The HIV situation in Zambia dates as far back as the early 1980s when Professor Anne Bayley noticed changes in the characteristics of Kaposi sarcoma in forty-one of her patients. By 1992, 27,901 cases were reported based on hospital notifications and sentinel surveillance. The prevalence rate at this moment was 14.4% (MoH/CBoH, 1997). In 1998, the estimated HIV prevalence rate for the entire country was 19.7%. The overall rate is exceedingly high and shows that Zambia is undergoing one of the worst HIV/AIDS epidemics in the entire world (MoH/CBoH, 1997). The most recent data of 16 percent is not a significant reduction in the prevalence of HIV.

However, there are puzzling discrepancies in HIV prevalence between different countries and regions, despite the presence of what seems to be similar risk

factors. For example, rates of HIV infection continue to be much lower in the Philippines (0.06% of the adult population) and Bangladesh (0.03%) than in Thailand (2.2%) and Cambodia (2.4%). Infection rates are also lower in Nigeria (4.1%) and Ghana (3.8%) (Wilson, 2003), than in Zambia (16%). The distribution of the rates of infection is not equal around the globe. It is this startling disparity between Western and Southern Africa that has led some researchers into concluding that there is a missing link in the prevention of HIV/AIDS.

Within countries, there can be variations in prevalence by region. It has long been recognized that in most countries HIV infection levels are higher in urban than in rural areas. A review of national community-based studies shows that HIV prevalence in urban areas is about twice as high as in rural areas (UNAIDS, 2004).

Similarly, the HIV prevalence rates in Zambia differ within provinces and within districts. Estimated HIV prevalence is highest in Lusaka and Copperbelt, where more than one out of every four adults in the 15 to 49 year old age group is HIV infected. Prevalence rates are in the 15 to 19 percent range in five of the remaining provinces – Luapula, Eastern, Central, Southern and Western. Prevalence is modestly lower in the two remaining provinces, Northern and North-western as shown in table 1.

**TABLE 1: Zambia's HIV prevalence estimates by province**

PROVINCE	HIV PREVALENCE
Central	15.3%
Copperbelt	19.9%
Eastern	13.7%
Luapula	11.2%
Lusaka	22.0%
Northern	8.3%
North-western	9.2%
Southern	17.6%
Western	13.1%

**Source:** ZDHS (2002)-Prevalence of HIV among Women and Men Aged 15-49 years.

The prevalence rates in Zambia show geographic differentials from province to province. There are provinces with higher levels of HIV prevalence and others with low levels of HIV prevalence. A comparison would have been done between a province with a higher level of HIV prevalence and a province with a lower level of HIV prevalence rate. However, due to insufficient funds, the researcher compared two districts within the same province. This is so because within the same province like Northwestern, some districts have high prevalence rates while others have low rates. A comparison between two districts with high and low prevalence rates of HIV/AIDS might bring out the determinants of low prevalence rates of HIV/AIDS in the province.

Looking at the above figures, a problem exists because there is a discrepancy between “what is” and “what should be”. There are puzzling discrepancies in HIV prevalence rates between different provinces and districts in Zambia despite the presence of what seems to be similar risk factors. It is this startling disparity between Northwestern, Northern and other provinces in Zambia that has prompted the researcher to embark on this study to identify the determinants of

the low prevalence rate of HIV/AIDS in Mwinilunga and Solwezi districts in Northwestern province. The information/results that have been collected from the study will be useful in the development of education materials for the prevention of HIV/AIDS, thereby helping to improve the health of the people. The information from the study may also facilitate reduction of HIV/AIDS prevalence in the other provinces in Zambia, thereby reducing the overall epidemic.

In Zambia, as in other parts of the world, the general approach to the control of the high prevalence rates of HIV/AIDS has been the promotion of awareness of HIV/AIDS expecting that well-informed individuals will choose not to engage in behaviours that lead to the transmission of HIV. These expectations have generally fallen short of the desired effects of changing behaviours. Despite the vast knowledge about HIV transmission and its prevention, surveys document no change in sexual behaviours and protective measures through safer sex practices (MoH/CBoH, 1999). The government's response to this scenario (high prevalence rate of HIV/AIDS) through the MoH has been to spearhead various strategies to contain and limit the spread of HIV infection. The strategies range from protection of blood supply, to information dissemination and campaigns to change social attitudes and behaviours. However, as we enter the third decade of the pandemic, Zambia still has a high HIV/AIDS prevalence despite the strategies put in place. Currently the country's HIV/AIDS prevalence rate is 16% (CSO, 2002).

The prevalence rate of HIV/AIDS is still very high; the determinants of the low prevalence rate of HIV/AIDS in areas with low prevalence rates might be the missing link in HIV/AIDS prevention. If it continues unchecked, HIV/AIDS will alter the trajectory of the country's development by retarding growth, weakening human capital, discouraging investment, exacerbating poverty and inequality, and leaving the next generation increasingly vulnerable to the impact of the epidemic. Investing adequately in HIV/AIDS prevention is now a precondition for virtually all other developments to succeed. Zambia's future depends on addressing the epidemic forcefully.

Most of the studies, which have been done in relation to the prevalence rate of HIV/AIDS, have focused on factors associated with the high prevalence rate of HIV/AIDS. Little is known about the factors associated with the low prevalence rate of HIV/AIDS.

In the year 2000, Northwestern province had a population of 583,350; Northern Province had a population of 1,258,696; Western province had a population of 765,088; Southern province had a population of 1,212,124; among other provinces (CSO, 2000). The prevalence rates shown in table 1 clearly show that Northern and Northwestern provinces had lower rates compared to other provinces. The provincial HIV/AIDS prevalence rates are population size adjusted.

HIV/AIDS remains a major concern in Zambia due to high prevalence rates among both the youth and adults. To reverse the epidemic, the Government of the Republic of Zambia has implemented a number of programmes to reduce the spread of HIV. Programmes have focused on ensuring that individuals, families and communities have the correct and appropriate knowledge and information. A major focus of health interventions is behaviour change to stem the spread of the epidemic. Unfortunately, HIV/AIDS cases are increasing everyday.

Having recognized that HIV/AIDS is a very serious public health problem, it is very important to review factors that may determine a low prevalence rate of HIV/AIDS in the regions or places that have had a moderately low prevalence rates. Such a study can bring about appropriate interventions to help reduce the high prevalence of the epidemic in the regions with high prevalence rates.

1.2.1 FIGURE 1. Analysis of the problem.

SERVICE FACTORS      DISEASE RELATED FACTORS      SOCIOCULTURAL

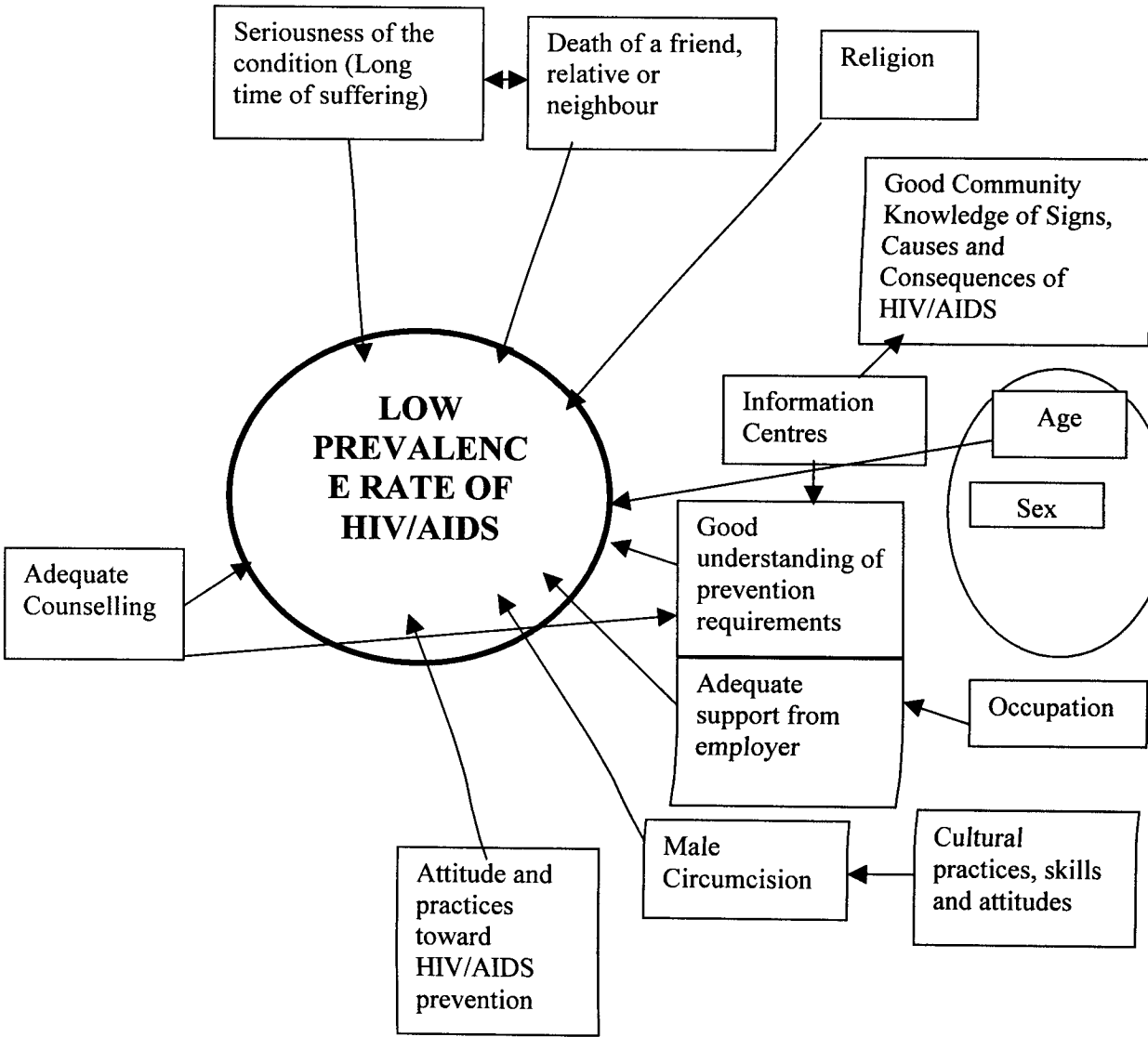


Figure 1 shows the factors that may be associated with the low prevalence rate of HIV/AIDS.

## CHAPTER 2

### 2.0. LITERATURE REVIEW

#### 2.1 Link between HIV/AIDS and circumcision

At the centre of the hypothesis that male circumcision does provide a measure of protection against HIV/AIDS are puzzling discrepancies in HIV prevalence between different countries and regions, despite the presence of what seems to be similar risk factors. It is this startling disparity between West and Southern Africa that has led some researchers into concluding that the missing link is because unlike in Southern Africa, in much of West Africa circumcision is an ingrained cultural and traditional practice that has worked to keep HIV at bay (Wilson, 2003).

There is no disagreement on the fact that HIV/AIDS is predominantly spread through heterosexual contact. The argument centres around the protection men reportedly derive from the removal of the foreskin, to the extent that circumcision arguably reduces infection by up to 50%. Some researchers argue that the skin on the inside of the male foreskin is ‘mucosal’, similar to the skin found on the inside of the mouth or nose. This mucosal skin reportedly has a high number of langerhan cells, which are HIV target cells rich in white blood cells or doorway cells for HIV (Wilson, 2003).

Dr. Jimmy Gazi, who is acting president of the Zimbabwe Red Cross Society and also Chairman of Southern African Development Community (SADC) AIDS Committee, says due to the “moist, mucosal surface” on his penis, “the uncircumcised male has a much higher chance of having a micro ulceration in the glans and inside the foreskin than the circumcised male”. This exposes him to a greater risk of getting sexually transmitted diseases and HIV (Wilson, 2003).

One of the earlier investigations on the issue (Link between HIV and Circumcision) is a comparative study of four African cities conducted in 1999. Two West African cities, Cotonou in Benin, and Yaounde, the capital of Cameroon, were found to have low HIV infection rates of three percent and four percent, respectively, among men aged 15-49 years. The other two sites, Kisumu in Kenya and Ndola in Zambia, had infection rates of 20% and 23%, respectively, for the same population group. In Cotonou and Yaounde, nearly all the men in the study reported being circumcised. Only 10% of the men in Ndola and less than 30% of the men in Kisumu, meanwhile, had undergone the procedure. Furthermore, the study found, “HIV prevalence was below eight percent in men circumcised before their sexual debut and 25% in uncircumcised men” (Wilson, 2003). Despite studies like this, the medical body is still divided on the preventative benefits male circumcision might have.

## **2.2 Contextual factors influencing HIV/AIDS**

A study was done to analyze population-level HIV and behavioural data from Uganda and neighbouring countries – to assess the validity and determinants of declines in HIV prevalence and to examine the potential influences of prevention intervention. It was found that “important” behavioural changes occurred among the Ugandan population between 1989 and 1995, including an increase in the age of first sexual intercourse, a decrease in indicators of casual or non regular sexual partners and an increase in condom use with both casual and regular sexual partners. In addition, an “important and perhaps overlooked” measure of behaviour change during this time was a 60% reduction in the number of people in both rural and urban areas who reported casual sexual relationships over the previous year. The authors suggested that a reduction in the number of sexual partners in the general population and delay in onset of sexual activity among unmarried youth, especially in urban areas and among males, are the “relevant factors in reducing HIV incidence” (Stoneburner and Low-Beer, 2004).

Although condom use in neighbouring countries was just as common as in Uganda, condom use may not be sufficient to reduce HIV incidence without a reduction in casual sex as well. Stoneburner and Low-Beer also suggested that communication about HIV/AIDS through social networks and personal contact with HIV positive people or people who had died of AIDS-related causes also helped to lower HIV prevalence in Uganda.

Notably, HIV has increased most rapidly in eastern and southern Africa where male circumcision (MC) is uncommon (e.g. Botswana, Zimbabwe, Zambia, Malawi, Rwanda, Swaziland). In contrast, although HIV probably originated in West Africa, HIV prevalence there tends to be much lower and MC tends to be very common though such cross-country comparisons are tricky and involve other factors. Of course MC is very common in Islamic countries, and Islamic faith might also relate to lower behavioural risk of HIV. However, some countries are not predominantly Islamic but have high MC rates and comparatively low HIV (e.g. Philippines, Ghana, Benin, Nigeria, Liberia, Gabon, Madagascar) (Halperin and Bailey, 2002).

A study done to investigate the possible reasons for the low HIV prevalence in the Philippines compared to other Asian nations indicated that the type of establishment in which a sex worker is employed plays a significant role in sexual risk taking behaviour as well as the cognitive and social structural determinants of behaviour. Furthermore, the Philippines requires all female bar workers to be registered and undergo weekly examinations at the local social hygiene clinic. The ability to diagnose and treat Sexually Transmitted Diseases (STDs) at an early stage has a tremendous effect on the spread and distribution of infections. Early recognition of new infections also provides early interventions, counselling and treatment (Morisk, et al, 2002). For example, the prevalence of HIV/AIDS in the Philippines is 0.05 per 100,000 adult populations, compared to 2.15 in Thailand, 0.70 in India, 0.24 in Vietnam and 0.07 in China. There are several factors which may lead to higher prevalence rates including epidemiological

indicators, health behaviours, and social and environmental determinants (Morisk, et al, 2002).

Many articles report research from the developing nations of Africa. They point out to the fact that the regions of Africa most troubled with HIV infection tend to overlap with the regions where male circumcision is rare. However, this does not imply a casual link; circumcision alone cannot explain these differences. Furthermore, the applicability of data from Africa vis-à-vis the conditions in developed countries – where hygiene standards, prevalence of different STDs and strains of HIV differ greatly- is questionable. Rather, these variations can be explained by looking at cultural differences and sexual practices (Tanne, 1998).

However, the conditions in Africa are very different from those in the developed world. It would be wrong to apply findings from Africa to the developed nations. Fleming reported on the need for effective control of STDs in a programme of control of HIV infection (Fleming. 1999). Gray and associates reported that control of STDs is important in reducing HIV transmission (Gray, et al, 1999).

The prevalence of male circumcision (MC) may probably explain why HIV is increasing rapidly in some countries (with high HIV prevalence), but not in others (with low HIV prevalence). However, such cross-country comparisons are tricky and involve other factors.

### **2.3 Religion – insights into HIV/AIDS preventive and protective behaviour.**

Since the late 1980s when the first cases of HIV/AIDS were identified in Africa, there has been an upsurge of research on the epidemic. Although religious involvement may be germane to AIDS protection and risk behaviour, few of these studies deal with religion and AIDS. A study done in Ghana by Takyi (2003) on religion and women's health in Ghana, the researchers explored whether a woman's knowledge of HIV/AIDS is associated with her religious affiliation, and whether religious affiliation influences AIDS preventive (protective) attitudes.

The findings indicated that religious affiliation has a significant effect on knowledge of AIDS.

There has been a recent and growing interest in studies dealing with religion in the lives of contemporary Africans, which appears to be motivated in part by the reported resurgence or revival in religious activities in many African countries during the last several decades (Gifford, 1994).

Despite recent research interest on religion and the behaviour of contemporary Africans, few studies have focused on religion and HIV/AIDS. As Agadjanian (2001) reported that in contemporary Africa, church participation is relevant for the analysis of overall reproductive health, not so much as a direct measure of religious piety, but also as an indicator of social exposure and interaction. Besides, some recent findings from the few studies that have looked at religion and AIDS in Africa have found religion to be an important predictor of AIDS protective and risk behaviour.

In a study in Edendale, South Africa, Garner (2000) found that some Christian churches encouraged their members to reduce engaging in extra and pre-marital sexual activity (EPMS), thereby reducing their risks for AIDS.

Religious organizations manifest in “extensive” power, power that has the potential to influence the behaviour of their members (Garner, 2000). Few studies have examined the impact of religion on AIDS-preventive behaviour in West Africa even though religious beliefs and norms may be salient to AIDS prevention (Baffour, 2003). As Agadjanian (2001) pointed out, church participation in Africa creates an environment for social exposure and interaction to new ideas, which could then influence AIDS prevention.

In a study by Takyi, (2003), the findings from the analysis suggest a possible link between religious affiliation and levels of knowledge about AIDS, especially

regarding transmission and prevention. Among the women studied those who self identified as Christians were more likely to report higher levels of AIDS knowledge than their non-Christian counterparts. A combination of factors may account for the reported high levels of AIDS knowledge among the Christian groups. Garner (2000), has suggested that religious groups have different levels of power that could influence the behaviour of their members and with a growing body of research emphasizing that social interactions and network ties influence social action and behaviour (Coleman, 1990)

## **2.4 Knowledge of HIV/AIDS**

HIV/AIDS remains a major concern in Zambia due to its high prevalence rates among both youth and adults. To reverse the epidemic, programmes in Zambia have focused on ensuring that individuals, families and communities have the correct and appropriate knowledge and information. In addition to the Zambia Demographic and Health Survey (CSO et al, 2003), the Zambia Sexual Behaviour Survey (1998 and 2000) provides further measures of sexual behaviour and knowledge of HIV/AIDS prevention in the country (CSO, 2003). Zambians reported a high level of knowledge of both HIV transmission routes and prevention strategies. However, there are rural-urban variations regarding knowledge of ways to avoid HIV/AIDS (ZDHS, 2002).

## **2.5. Gaps in the literature review**

In Zambia, no research has been done to identify the determinants of low prevalence rate of HIV/AIDS in provinces with moderately low rates. This might be a missing link in the prevention of HIV/AIDS. Identifying the factors associated with low prevalence rates in these provinces will help the other provinces in reducing the high prevalence rates.

## **2.6 Justification of the study**

The HIV is a Public Health problem. It has continued its devastating spread, blighting the lives of another 16,000 people every day and the virus is increasingly targeting women, babies and young people.

The high incidence and prevalence rates of HIV/AIDS in Zambia have life threatening and serious morbidity consequences. The HIV/AIDS epidemic is a major challenge to the public health and the socio-economic development of the country. It is threatening to arrest, even reverse, some of the important, hard won gains in various sectors such as health, education, agriculture and human resource development. There are low prevalence rates of HIV/AIDS in Northern and Northwestern provinces and yet nothing has been done to probe on why it is so. Exactly what has brought about a moderately lower prevalence of HIV/AIDS in some parts of the country is unclear, making it difficult to draw lessons for the other parts of the country with high prevalence rates. It is for this reason that the researcher has recognized the importance of conducting this study to identify the factors associated with the low prevalence rate of HIV in Mwinilunga and Solwezi Northwestern province. This might lead to the discovery of a missing link in the efforts of reducing the overall high prevalence rates in Zambia.

The study has a potential to generate data that will provide a better understanding of the factors associated with the low prevalence rate of HIV/AIDS in Mwinilunga district in Northwestern province. Such data will be important in making recommendations to the authorities responsible of managing HIV/AIDS prevention and mitigation programmes in Zambia.

## **2.7. Research question**

Why is the HIV/AIDS prevalence rate moderately low in the Mwinilunga district in the Northwestern province? Is the low prevalence rate due to more effective use of HIV/AIDS preventive measures, different sexual or reproductive behaviours or other unspecified social cultural practices?

## **2.8. Research hypothesis**

People who receive HIV/AIDS education and sex education are more likely to have a good positive attitude towards the prevention of HIV/AIDS and this might be the cause of the low prevalence of HIV/AIDS.

## **2.9. Definition of terms**

### **HIV**

This is the human immunodeficiency virus, which is spread through blood, semen, vaginal secretions and breast milk; it weakens the body's immune system until it can no longer fight infection.

### **AIDS**

This is the acquired immuno-deficiency syndrome which is a fatal illness caused by the retrovirus, HIV.

### **Knowledge**

This is an awareness of what HIV/AIDS is, how it is transmitted and how it can be prevented.

### **Culture**

These are the arts and other manifestations of human intellectual achievements regarded collectively and it is a refined understanding or appreciation of this.

### **Attitude**

This is the way an individual or community thinks and feels about the prevention of HIV/AIDS.

### **Prevention**

To stop something from occurring.

**Practice**

What people do or use to prevent HIV/AIDS.

**Prevalence Rate**

This refers to the total number of all individuals who have HIV/AIDS at a particular time (or during a particular period) divided by the population at risk of having HIV/AIDS at this point in time or mid way through the period.

**Factor**

An influence that tends to produce a result.

**Determinant**

Any factor, whether an event, characteristic or other definable entity, that brings about change in a health condition.

**Religion**

This is a particular system of faith and worship of a super human controlling power.

**Income**

This is money received, especially on a regular basis, for work or through investments.

**Incidence Rate**

This is defined as the number of new cases of HIV/AIDS occurring in a defined population during a specified period of time.

**Systematic sampling method**

It is the selection of the units at fixed intervals from a list.

## **CHAPTER 3**

### **3.0. RESEARCH OBJECTIVES**

#### **3.1. The General Objective**

To identify the determinants of the low prevalence rate of HIV/AIDS in Mwinilunga district in Northwestern province.

#### **3.2 Specific Objectives**

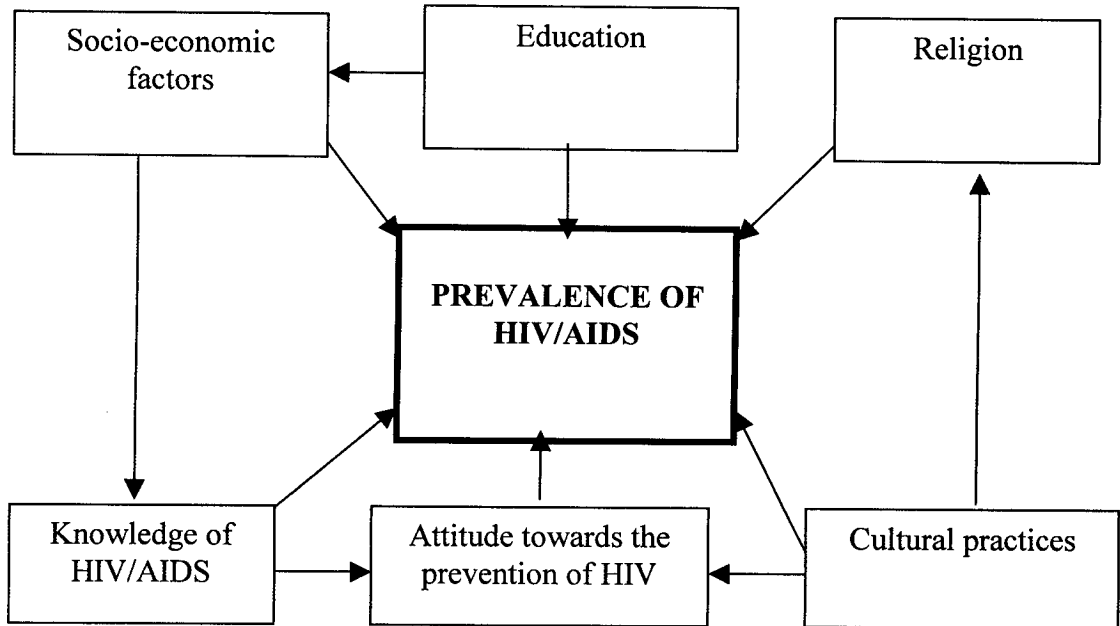
1. To determine socio-economic factors that may influence the prevalence of HIV/AIDS in Mwinilunga and Solwezi districts in the province.
2. To determine cultural factors that may influence the prevalence of HIV/AIDS in Mwinilunga and Solwezi districts in Northwestern province.
3. To determine people's knowledge on the causes, prevention and consequences of HIV/AIDS in Mwinilunga and Solwezi districts in Northwestern province
4. To make recommendations to all parties (i.e. managers, community based organizations, NGOs, MoH/CBoH, and the community) concerning what changes should be made, and how to improve on the strategies for preventing HIV/AIDS in the province and in other provinces as well.

## CHAPTER 4

### 4.0. RESEARCH METHODOLOGY

#### 4.1. Conceptual framework

**Figure 2: Interrelationship links of dependent and independent variables**



The conceptual framework (Figure 2) is showing the variables that were used for analysis. These variables have been defined as indicators in table 2.

**TABLE 2: Conceptual framework indicators and cut off points.**

VARIABLE	DEFINITION	INDICATORS
Prevalence of HIV	Estimated number of people who are HIV positive in an area	Rate of HIV/AIDS as compared to other areas
Education	Number of years of education, or last grade attained, or type of educational institution last attended	Primary education Secondary education Tertiary education
Income	Personal Income, Family income or average family income per member	Low  Medium  High
Social Class	Based on occupation, education, crowding index, income, neighbourhood or residence, home amenities or subject's self perception-based on one of these, or a combination	Low density area   Medium density area  High density area
Cultural practices	The arts and other manifestations of human intellectual achievement regarded collectively	Male circumcision
Religion	The belief in and worship of a superhuman controlling power, especially personal God	Christianity  Moslem  Hindu
Knowledge of HIV/AIDS	This is awareness of what HIV/AIDS is, how it is transmitted and how it can be prevented	Low  Medium  High
Attitude towards the prevention of HIV/AIDS	This is a stand taken by an individual or community over a given site	Negative attitude  Positive attitude

#### **4.2. Study design**

The purpose of the study was to identify the determinants of the low prevalence rate of HIV/AIDS in Mwinilunga district in Northwestern province. A cross-sectional comparative study was done between Mwinilunga and Solwezi districts. This analytical study design was chosen because of the type of the problem/situation, and also the researcher was suspecting that certain factors could indeed be associated with the situation/problem.

In this comparative study design, the researcher did not only describe the variables, but, by comparing a district with a high HIV prevalence and a district with a low HIV prevalence, the researcher also tried to determine which socio-economic, behavioural, cultural and other independent variables are associated with the low prevalence of HIV/AIDS in Mwinilunga district in Northwestern province. The researcher also watched for confounding or intervening variables.

#### **4.3. Study setting**

The study was conducted in Solwezi and Mwinilunga districts of the Northwestern province. Solwezi district had 396 HIV/AIDS cases per 1000 population while Mwinilunga had 202 cases of HIV/AIDS per 1000 population (Northwestern AIDS Cases, 2003 Unpublished Report). The districts were chosen for the study so as to enable the researcher to make a comparison and come up with the possible factors that could be associated with the low prevalence rate of HIV/AIDS in the province. There is no current literature on the level of MC in the districts apart from the national level, which is at 15% (CSO, 2003).

#### **4.4. Study population**

The study population consisted of young adults aged 16 to 24 years old in Solwezi and Mwinilunga districts. This age group is the one with a high incidence of HIV. These young adults were both males and females.

**Inclusion Criterion**

These were males and females aged 16 - 24 years in high schools (Secondary Schools). These people were living in Solwezi and Mwinilunga districts.

**Exclusion Criterion**

Those aged below 16 years and above 24 years and those who were not in school and also those who were not living in Solwezi and Mwinilunga districts.

**4.5. Sample size determination**

The sample size was calculated using the following formula: -

$$n = \frac{P_1 Q_1 + P_2 Q_2}{(P_1 - P_2)^2} \times f(\alpha, \beta)$$

This formula was used because the study involved two groups and the interest was to compare two groups.

Where  $P_1 = 10\%$  - this was the proportion of male circumcision and  $P_2 = 30\%$  this was the proportion the researcher was expecting. Significance level ( $\alpha$ ) was 5%. The power of the study ( $1 - \beta$ ) was 80% confidence interval. This was a two-tailed test.

TABLE 3. Values for f (α,β)

Significance Level α				
	One - tailed Test		Two - tailed test	
Power, 1 - β	0.05	0.01	0.05	0.01
0.5	2.71	5.41	3.84	6.63
0.8	6.18	10.04	7.85	11.68
0.9	8.56	13.02	10.51	14.88

Source: Dobson, 1984

P<sub>1</sub> was taken from a comparative study of four African Cities Conducted in 1999 to find out the proportions of male circumcision. Only 10% of the men in Ndola - Zambia were found circumcised, (Johwa, 2003). P<sub>2</sub> was the proportion of male circumcision that the researcher was expecting to be at 30% in the districts were the study was done.

The sample size was therefore calculated as follows: -

$$n = \frac{(P_1 Q_1 + P_2 Q_2) \times f(\alpha, \beta)}{(P_1 - P_2)^2}$$

then,

$$n = \frac{10 \times 90 + 30 \times 70 \times 7.85}{(10 - 30)^2}$$
$$= \frac{900 + 2100 \times 7.85}{400}$$
$$= 43.46$$

Adjusting for a response rate:

Considering an average response rate of 80% then the required number in each group was

$$\frac{43.46}{0.80} = 55$$

The researcher considered studying 65 subjects in each group. The calculated sample size applied for each of the two groups. Therefore, each district had 65 respondents bringing the total number of respondents to 130.

#### 4.6. Sampling

Sampling means selecting part of a population for the study so as to reduce on the resources, obtain the results quickly and to reduce on the non-response rate. The sampling technique that was used in this study is the *Systematic random sampling method*. Systematic random sampling is a probability sampling. The hallmark of probability sampling is the random selection of elements from the population. A *random selection process* is one in which each element in the population has an equal, independent chance of being selected (Hungler and Polit, 1995).

*Systematic random Sampling* involves the selection of every  $K^{\text{th}}$  individual from some list or group, such as every  $10^{\text{th}}$  person on a list of students listed in School registers. In this study, Systematic sampling was used to sample every  $K^{\text{th}}$  student on a class register in all the high schools in Mwinilunga and Solwezi districts. All the 5 high schools were sampled because they were few. The sampling frames were the class registers at each school. Therefore, the following procedure was adopted. The desired sample size was established at some number e.g. 65. The size of the population at the schools aged 16 - 24 years were estimated (N). By dividing N by n, the sampling interval width (K) was established. The *sampling interval* was the standard distance between the students chosen for the sample.

For instance, since the researcher was seeking a sample of 65 from a population of about 325, the sampling interval was as follows:

$$K = \frac{325}{65} = 5$$

In other words, every 5<sup>th</sup> student on the class register in the schools was sampled. The first student from a group of five students was randomly selected using a table of random numbers. Probability sampling was really the only viable method of obtaining a representative sample. A further advantage is that probability sampling allows the researcher to estimate the magnitude of sampling error.

#### **4.7. Enrolment procedure**

Young adults aged 16 to 24 years in secondary schools were eligible for enrolment in the study. The participants were residents of Solwezi and Mwinilunga districts for not less than six months from the beginning of the study. All the persons referred to in the study agreed to be participants.

#### **4.8. Ethical consideration**

The Research Ethics Committee of the University of Zambia granted approval for the research to be conducted. Permission was also obtained from the Provincial Education Officer (PEO) for Northwestern province. This permission was then copied to the District Education Board Secretaries (DEBS) and the District Standard Officers for Mwinilunga and Solwezi. This written permission was also copied to all the head teachers of the high schools. This was meant to recognize all the concerned authorities and to gain cooperation. Written consent was also obtained from each participant after an explanation of the purpose of the study. Privacy and confidentiality were maintained through out the study. More so with the questionnaires which were numbered rather than bearing individual names. Participation in this study was absolutely voluntary.

#### **4.9 Data collection**

The data collection technique that was used to collect information from the participants was an interview and the data collection tool that was used was a structured interview schedule. The interviews were face to face and the answers to the questions posed during the interview were recorded by writing them down during the interview. This data collecting technique was chosen because it was suitable for literate participants. To prevent miscoding of responses, most of the questions were closed ended. To control for the limitations of the interview method, the interviewers introduced themselves and stated the significance of the study in order for the participants to appreciate the study. At the conclusion of the interview, all participants' questions and concerns were addressed and the participants were thanked for their participation.

The interview covered demographic history, cultural practices and beliefs, attitudes towards the prevention of HIV and knowledge of HIV/AIDS and perceived behavioural skills.

The other data-collection technique that was used to collect information from participants was a Focus Group Discussion. The researcher used this qualitative method to investigate socio-economic, cultural, demographic and other factors that might have links with determining the low prevalence rate of HIV/AIDS in places like Northwestern province. A Focus Group Discussion (FGD) is a group discussion of 6-12 persons guided by a facilitator, during which group members talk freely and spontaneously about the topic. The purpose of a FGD is to obtain in-depth information on concepts, perceptions, and ideas of the group in relation to the topic under study. A FGD aims to be more than a question-answer interaction. The group members discussed the topic among themselves and brought out issues clearly. Ten focus group discussions were conducted because the study was more qualitative. Five FGDs were conducted in each district. FGDs were arranged separately for the young men and women because it was

anticipated that participants would express themselves differently according to who was present. By cultural convention in Zambia, young women are expected to keep silent in discussions when men are present, and Zambian men tend to take a paternalistic role claiming to represent the views of women, and talking on their behalf. Young women would express different views when only women are present. For comparative purposes, some FGDs were also conducted with mixed groups. FGDs help collect "data on norms and collective values, customs and practices" (Weir et al, 2003).

The FGDs were for the people who did not take part in the interviews. To ensure uniformity and comparability, the participants in the two districts answered the same interview schedule and FGD guides. To increase the accuracy of data collection, the interviewers/research assistants were properly trained prior to collecting the data and data collection tools underwent pre-testing.

#### **4.10. Pilot study**

A pilot study is the process of carrying out a preliminary study, going through the entire research procedure with a small sample. The pilot study was conducted at one of the high schools in Solwezi. The pilot study served as a trial run that allowed the research team to assess the reliability, appropriateness, validity and also the sequence of the questions in the interview schedule and the FGD guide. The results of the pilot study helped the researcher to refine the research instruments before embarking on the main study. The pilot study also helped to evaluate the success of the training of the research team.

#### **4.11. Quality control checks**

The structured interview schedule (questionnaire) and FGD schedule were pre-edited within the field and at the end of the day, to ensure completeness and consistency in the information collected.