

**UNIVERSITY OF THE WESTERN CAPE
FACULTY OF COMMUNITY AND HEALTH SCIENCES**

Title: W.H.O Recommended Infant Feeding Options: Assessment of the Challenges Faced by HIV Positive Mothers in Mongu District, Zambia.

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Type of Thesis: Mini-Thesis

Degree: Master of Public Health

**Department / School: School of Public Health,
University of the Western Cape**

Mini Thesis submitted in partial fulfillment of the requirement for the degree of Master of Public Health.

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Date: 31 October 2008

10 key words: HIV/AIDS, HIV- positive mothers, Mother to child transmission of the HIV virus, breastfeeding, formula milk, replacement feeding, W.H.O, exclusive breastfeeding, stigma, Republic of Zambia

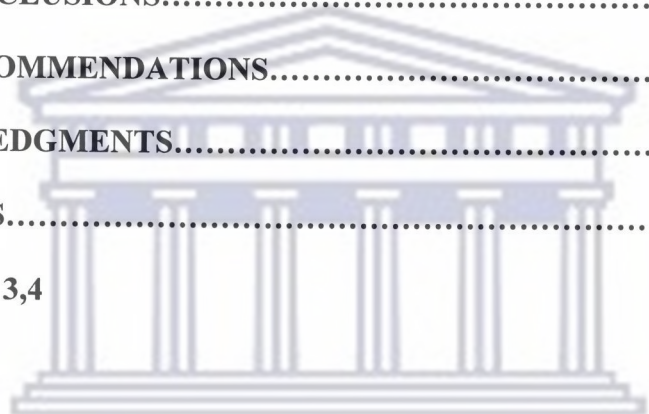
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ABSTRACT

W.H.O infant feeding options are presented as a package in the prevention of HIV transmission from mother to child. These infant feeding options are namely exclusive breastfeeding, replacement feeding and other options such as wet nursing by a tested HIV negative woman and heat treated breast milk. However, in Zambia, like many other poor countries, the cultural attitude towards breastfeeding is that the breastfeeding period generally goes up to two years. This traditional way of feeding is so much rooted in local culture that any cessation of breastfeeding or any introduction of alternative feeding would be a source of concern at community and family levels. In addition, it is a well known fact that stigma and discrimination are still high in the country. It is with this background that we decided to carry out a study in Mongu district which aimed at assessing HIV positive mothers' knowledge of WHO infant feeding options and looking at the challenges they face vis-à-vis these recommended feeding options.

DATA COLLECTION METHODS

A total of 10 experienced nurses, who have been working in the HIV/AIDS programme for more than 15 years, were trained in data collection. During home visit, semi-structured questionnaires were used during face-to-face interviews of each HIV positive mother who voluntarily took part in the study.

SAMPLING AND SAMPLE SIZE

Systematic sampling technique was used to constitute our study sample. With this technique, a complete list of 5317 HIV positive mothers was constituted by listing all HIV positive mothers whose names were in the registers of PMTCT at the selected health institutions, and who had infants whose ages ranged from 6 months to 2 years. 1636 HIV positive mothers had babies whose ages were ranging between 6 months and 2 years. Out of the 1636 we selected randomly the first participant from the complete list, and then we went on selecting every 8th HIV positive mother up to the time we constituted a sample of 200 participants. Thereafter, the selected HIV positive mothers were visited individually in their respective households for interview by trained interviewers. During home visit, 5 selected participants declined to take part in our study while 195 HIV mothers voluntarily accepted to be interviewed.

RESULTS

Analysis of data collected from 195 HIV positive mothers revealed that 144 study participants or 73.8 % (95% CI 67.6-80%) of all participants knew their status through the PMTCT programme where the "opt out" approach was used to routinely screen pregnant women for HIV during ante natal visit or when admitted to labour wards. It was also established that the assessment of knowledge among study participants of exclusive breastfeeding period was good. 96.9 % (95% CI 95.66-98.14%) of participants stated that 6 months was the recommended duration for exclusive breastfeeding when the mother is HIV positive while only 3.07 % (95% CI 0.65-5.49%) said that exclusive breastfeeding should go beyond 6 months. It was discovered that the majority of HIV positive mothers

or 166 participants representing 85.1%(95% CI 80.1-90.1%) who participated in our study considered mixed- feeding as not appropriate for infant born from HIV positive mothers while 29 participants or 14.8%(95% CI 9.8-19.8%) said that mixed feeding was recommendable. It was also found that 95 participants representing 48.7 %(95% CI 41.6-55.7%) opted for exclusive breastfeeding, 61 participants or 31.2% (95% CI 24.7-37.7%) participants opted for formula milk while 39 or 20 %(95% CI 14.4- 25.6%) of participants were mixed-feeding.

It was discovered that 118 participants had breastfed. Among them, 53.4 %(95% CI 46.4-60.4%) participants said that they had breastfed for up to 6 months while 46.6 %(95% CI 43-50.2%) said they had breastfed for more than 6 months. Among those who had breastfed for more than 6 months, 58.1 %(95% CI 54.6-61.6%) said that they had done so because of financial constraints; 21.8 %(95% CI 16-27.6%) for fear of discrimination and stigmatization; and 20 %(95% CI 14.4-25.6%) for fear of discrimination and stigmatization and financial constraints. We also discovered during our research that for the majority of study participants or 81.5%, the decision to opt for one of the infant feeding options was a product of discussion between the HIV positive mothers and other persons such as the husband, friends, relatives and health care provider.

CONCLUSION

In our study we discovered that though the knowledge of PMTCT and WHO infant feeding options among study participants was good, fear of stigmatization, discrimination and abandonment was high among interviewees. This fear explains why the implementation of WHO infant feeding options is still a serious challenge amongst HIV positive mothers in Mongu, as many HIV positive mothers do not want to be seen in the community as people carrying the virus. It is also for the same reason that our study participants had to choose people to whom to talk to about their HIV positive status and with who to discuss their chosen infant feeding options. Further, due to the high level of poverty among Mongu residents, financial constraint was another major challenge in the implementation of WHO recommended infants feeding options.

ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Ante Natal Clinic
ARV	Anti Retroviral Therapy
CSO	Central Statistics Office
DFID	Department for International Development
DNA	Deoxyribonucleic Acid
ID	Identity
IHP	International Health Partnership
GDP	Gross Domestic Income
GNI	Gross National Income
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
PMTCT	Prevention of Mother to Child Transmission
TB	Tuberculosis
MIC	Mother Infant Care
MOH	Ministry of Health
MTCT	Mother to Child Transmission
NGO	Non Governmental Organization
NRTI	Non-nucleoside Reverse Transcriptase inhibitor

OVC	Orphan and Vulnerable Children
PCR	Polymerase Chain Reaction
PNT	Post Natal Transmission
RNA	Ribonucleic Acid
UNAIDS	United Nation Joint Program on AIDS
UNICEF	United Nations Children's Fund
USD	US Dollar
VCT	Voluntary Counseling and Testing
WHO	World Health Organization
ZDHS	Zambia Demographic Health Survey



I.INTRODUCTION

I.0 AN OVERVIEW OF THE GLOBAL HIV /AIDS EPIDEMIC

A 2006 UNAIDS report on the global AIDS epidemic showed that the current situation of the HIV pandemic in the world is encouraging because after the peak in prevalence rate which characterized the late 1990s, the prevalence has stabilized subsequently. This trend in HIV prevalence is explained by the changes in behavior, and prevention programmes being implemented in many countries across the world. It is also believed that the global HIV prevalence has leveled off because of two factors; namely changes in incidence and increasing AIDS - related mortality. It was also observed that the absolute number of people living with HIV in the world have continued to rise due two important factors which are: the world's population growth, on one hand; and, on the other hand, the life prolonging effects of antiretroviral therapy as the world is experiencing a massive scale up of antiretroviral drugs (UNAIDS, 2006).

Statistics from 2007 UNAIDS estimated that 33.2 million [30.6 million – 36.1 million] people worldwide were living with HIV; and an estimated 2.5 million [1.8 million - 4.1 million] people became newly infected with HIV while 2.1 million [1.9 million -2.4 million] people lost their lives to AIDS. Sub- Saharan Africa ,where a little more than one-tenth of the world's population live, is still the worst affected region by HIV epidemic as it is in this region that more than two out of three (68%) adults and approximately 90% of children infected with HIV live. Women represent 61% of people with HIV in the region. It also estimated that more than three in four (76%) AIDS deaths, in sub – Saharan Africa, occurred in 2007. 1.7 million [1.4 million – 2.4 million] people- adults and children- were newly infected in the past year in the region, bringing to 22.5 million [20.9 million- 24.3 million], the total number of people living with HIV in sub – Saharan Africa. It has been established that currently nine in ten HIV infected children younger

than 15 years are living in sub Saharan Africa. This situation is of serious concern as out of the total number of people living with HIV in sub Saharan Africa, 2.5 million [2.2 million – 2.6 million] are children younger than 15 years of age. Data from 2001 UNAIDS report compared to 2007 data show an increase in the number of children living with HIV from 1.5 million [1.3 million – 1.9 million] to 2.5 million [2.2-2.6million]. However, there has been a decline in the number of new infections among children which has gone from 460000 [420000-510000] in 2001 to 420000 [390000-470000] in 2007. Mortality due AIDS among children has also decreased from 330000 [380000-560000] in 2001, 360000[350-540000] in 2005, to 330000 [310000-380000] in 2007 (UNAIDS, 2007). The decrease in the number of new infection and mortality among children in sub Saharan Africa can be explained by programmes which aim at preventing the transmission of HIV from mother to child and treatment of HIV- infected children with antiretroviral therapy. Apart from sub Saharan Africa, the second worst struck continent is Asia where it has been estimated that at the end of December 2007, 4.9 million [3.7 million – 6.7 million] people were living with HIV; while 440000 [210000-470000] were newly infected. The number of people who died from AIDS- related illnesses in 2007 was estimated at 300000[250000-470000]. India alone had in 2006 an estimated 2.5 million [2 million -3.1 million] people living with HIV. The HIV epidemic in North America, Western and Central Europe is characterized by an increase in the number of people living with the virus due to the effect of antiretroviral therapy and an increase in the number of newly diagnosed cases of HIV in Western Europe since 2002. HIV prevalence in these three regions is estimated at 2.1 million [1.1 million -3.0 million] people were living with HIV in 2007, including 78000[19000-86000] who were infected in the past year (UNAIDS, 2007). With these statistics, there is no doubt that Southern Africa remains the global epicenter of the epidemic as (68%) of adults infected with HIV and nearly 90% of children living with the virus live in the sub region (UNAIDS, 2007).

I.1 HIV EPIDEMIC AND WOMEN

Worldwide, 15.4 million [13.9 – 16.6 million] women aged 15 years and older are living with HIV. Of the total number of women living with HIV, three – quarters (76%) of all women (15 years and older) living with HIV are in sub-Saharan Africa. It has been asserted that in most of the region, women are disproportionately affected by AIDS compared to men due to lower socio economic status women have in the African society. Women represent almost 61% of adults living with HIV in sub-Saharan Africa (UNAIDS, 2006). There is evidence that where poverty, inequality and AIDS are combined, they do disproportionately harm to women and girls. The complexity of women's situation is illustrated by the fact that of the 1.2 billion people living on less than one US dollar per day, 70% are women. Despite the fact that women are the majority world's poor population, they are the ones who own a minority of the world's land, yet they produce two third of the food in the developing world. In many societies, women are economically, financially and socially dependent on male partners and family members for their survival (Global coalition on women and AIDS, 2006). This situation characterized by poverty and inequality makes women more vulnerable to exploitation, violence, abuse and HIV infection.

I.2 AN OVERVIEW OF THE HIV /AIDS PANDEMIC IN ZAMBIA

With a total population of 11,668,000 people, Zambia is one of the countries in sub Saharan Africa where HIV epidemic is a major public health problem. An estimated 1,100,000 [1100000-1200000] people- age 15 to 49 years- representing 17.0[15.9-18.1%] of the population, are currently living with HIV. Out of 1,100,000 adults living with HIV/AIDS, 570,000 are women (UNAIDS, 2006). Compared to 2006 UNAIDS report on the global AIDS epidemic which revealed that HIV prevalence in Zambia stood at 17%, the preliminary report of Zambia Demographic and Health Survey 2007 revealed that HIV prevalence among adults (women and men, age 15-49 years) stands at 14 percent. It has also been observed in the same report that

urban areas have HIV prevalence which is twice higher than the prevalence in rural areas (Ministry of Health, 2004).

I.3 INITIATIVES TO FIGHT HIV/AIDS PANDEMIC

With more than 40 million people living with HIV/AIDS, of whom 95% living in resource – limited settings, WHO / UNAIDS estimated that at least 6 million were in advanced stage of HIV according to WHO clinical staging and needed urgently antiretroviral therapy. Out of the 6 million who were in need of ARV treatment, the estimation is that 4.1 million were in sub-Saharan Africa, a region characterized by a weak health system and where access to HIV prevention, care and treatment was minimal. Because of this lack of access to antiretroviral treatment, UNAIDS and WHO launched in 2003 the “3 by 5 initiative” which aimed to get three million people with HIV/AIDS in resource-limited countries on antiretroviral therapy by the end of 2005. The “3 by 5 initiative” focuses its efforts on HIV positive women. This is explained by the fact that in many countries in sub-Saharan part of Africa, more than one in five pregnant women visiting antenatal clinics are HIV positive and may infect their children during pregnancy, delivery and breastfeeding. These cases of MTCT represent a high proportion of the disease burden and these infections are reasonably preventable. However, the implementation of PMTCT is at times faced with challenges such as the lack of counseling and testing services, and inadequate public health services which are needed to spread awareness campaigns on how to avoid risk factors for vertical transmission. Young women, girls and children have been chosen as a focus because they carry disproportionate burden of disease, and because they are most likely to utilize some of the services for treatments such as antenatal clinics and other services to prevent mother to child transmission of the HIV (WHO/UNAIDS, 2005).

The global fund is another international initiative which was created to finance the fight against AIDS, TB and malaria. Vulnerable persons such as pregnant women and children are the target

of this initiative. So far the global fund programme has approved USD 20,204,481.00 for Zambia. This programme addresses gaps in financing the HIV/AIDS strategic framework. It concentrates on mobilizing non- governmental organizations, community- based organizations, groups of people living with HIV/AIDS and private sector companies to scale up responses to HIV/AIDS (Global Fund, 2006).

I.4 BACKGROUND - PMTCT

A healthy mother's breast milk is known as the ideal source of nutrition for an infant. Quinn, Guyon, Schubert, Stone-Jiménez, Hainsworth and Martin (2005) stated that exclusive breastfeeding in the first 6 months of life and continued breastfeeding from 6 to 11 months have been identified as one of the most effective child survival interventions that could prevent 1.3 million children from death each year. WHO (2006) asserted that the risk of HIV transmission among women who breastfed exclusively for three months was associated with a three – to four fold decreased compared to non- exclusive breastfeeding; and secondly it was observed that where free formula was provided, the combined risk of HIV transmission and death was similar whether infants were formula fed or breastfed from birth; and lastly early cessation of breastfeeding was associated with reduced HIV transmission , but also there was an increased risk of morbidity and child mortality in infants born to HIV- infected mothers. From a study conducted in Zambia on early cessation of breastfeeding, Khun et al. (2008) stated that there was no significant benefit in HIV-free survival to 24 months among the infant of HIV infected mothers who were encouraged to stop breastfeeding abruptly at 4 months compared with the infants of mothers who were encouraged to wean their infants according to the standard practice and who continued to for a median duration for 16 months. The authors pointed out that early cessation of breastfeeding has substantial pragmatic costs, including the provision of formula milk, and this carries risks that are difficult to quantify, including the disclosure of HIV status, stigmatization, increased fertility and possible spillover effect in the uninfected population.

However, with the spread of the HIV pandemic in the world, where 33.2 million people are living with the virus, out of which 15.4 million women and 2.5 million children of age below 15 years (WHO/UNAIDS, 2007), and in addition, because the majority of children infected were infected by their mothers through mother to child transmission of the virus during pregnancy, delivery or breastfeeding; researchers and public health practitioners are preoccupied with finding effective ways to reduce the risk of mother to child transmission of HIV.

In Zambia, the impact of the HIV pandemic is illustrated in the UNAIDS report, which estimated that 21.5 percent of Zambians (whose age range 15 - 49) out of the 11.3 million total population were infected with the virus at the end of 2001. Further, it was stated in the same report that 25,000 infants, representing more than one third of infants born to HIV- infected women, are annually infected in utero, during delivery, or through breastfeeding (World Linkages, 2005). WHO(2001)stated that high maternal viral load measured during pregnancy or after delivery, low CD4/CD8 ratio, longer duration of breastfeeding, breast milk infectivity and oral thrush especially before six months of age are risk factors of mother to child transmission of HIV through breastfeeding.

Because of the risk of transmission of the HIV through breastfeeding, WHO made the following recommendations: exclusively breastfeeding during the first 6 months in cases where mother chooses to breastfeed; avoiding breastfeeding entirely when replacement feeding is acceptable, feasible, affordable, sustainable and safe; and if HIV positive mothers chooses not to breastfeed from birth or stop breastfeeding later, they should be provided with specific guidance and support for at least the first two years of the child's life to ensure adequate replacement feeding (WHO, 2007).

However, the cultural attitude towards breastfeeding in Zambia is that the breastfeeding period generally goes up to two years. This traditional way of feeding is so much rooted in local culture that any cessation of infant breastfeeding or any introduction of alternative feeding would be a source of concern at community and family levels. This is a great challenge for an HIV positive mother as she would find herself in a situation of dilemma: on one hand, she would have the responsibility to protect her child; and, on the other hand, she has the right to protect herself from stigma, victimization and discrimination, which may have as origin: her decision to opt for one of the recommended WHO infant feeding options.

It is on the basis of this cultural background, and also taking into consideration the fact that stigma is very high in Zambia, that we decided to carry out our study in Mongu district, in the western province of Zambia, to assess challenges HIV positive mothers are facing when choosing one of the recommended WHO infant feeding options.

I.5 ZAMBIA SETTING

Zambia is situated in the sub-tropical central African plateau. The irregular shaped country shares borders with eight other countries and is divided into nine provinces and 72 districts. Zambia has one of the lowest population to land ratio in Africa. Only 11,668,000 people live in a country the same size as Sweden and Norway together. The country has short history as a democracy. In the late 19th century it was colonized by the British who called that area Northern Rhodesia. It reached independence in 1964. Copper was a large source of income for British colony. Due to the colonization, English is the official language and Christianity the official religion. There are also many indigenous languages and religions because of Zambia's large indigenous population. The four major native groups are; Bemba in the North, Nyanja in the east, the Tonga in the south and the Lozi in the western part of Zambia. The difference in the ethnic diversity is primarily the lineage systems. There is the patrilineal system, which is headed

by a man, but also the matrilineal system in which the family is headed by a woman (Maimbolwa, 2004).

Zambia is ranked as one of the poorest countries in the world (13) by the United Nations. The under –five mortality rate in 2002 was 182 in 1000, which did not differ so much from 1960 when it was 213. Also maternal mortality remained high (about 750/100,000). Life expectancy at birth was at 40 (WHO, 2006). Even looking at the economic indicators the country stays behind on the world rank with a GNI/capita of 330 USD, and the growth rate has declined to – 1.4% of the GDP. Zambia has quite a high percentage of literacy in the whole adult population, about 80%, but still one of the poorest countries in sub Saharan Africa. Malaria is the most common diagnosis in health facilities; cholera and tuberculosis are also two main diseases. Malnutrition has grown over the past decade with an estimated 42% of under –five stunted (short for age). In addition, the HIV pandemic also had a devastating impact as a large number of people are infected with HIV/AIDS (Lake, 2000).

Lusaka is the capital of Zambia. It lies at an altitude of 1300m above the sea level and covers an area of over 70 km square. Lusaka has a population of about 2 million. About 50% of the population live in peripheral compounds with a large informal setting. It is one of the fastest-growing cities in central Africa. Its population almost trebled in the immediate post – independence era and continues to grow daily. There has been no control of rural immigrants and the city is spreading at all directions. Grossly inadequate municipal facilities are hard – pressed to cope with the ever – increasing demand. It is outspread, unplanned metropolis with many multi-storey buildings. Industrial development is growing fast (Zambia Tourism, 2005).

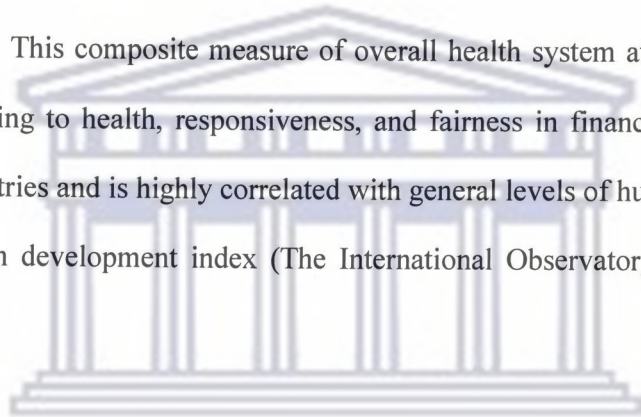
I.5.1 MONGU DISTRICT

Western province covers an area of 126,386 square kilometers, which is about 17 percent of the total area of Zambia. The province's soils consist of vast sands on the upland and alluvial rich loam soils in the plain. The Zambezi River intersects the plain, covering an area 12,950 square kilometers, about 10 percent of the total land area in the province. Every year during the rain season the plains experience floods from December to July. Administratively the province is divided into seven districts, namely: Kalabo, Kaoma, Lukulu, Mongu, Senanga, Sesheke and Shangombo (CSO, 2004).

1.6 THE ZAMBIAN HEALTH CARE SYSTEM

After the election of 1991, Frederick Chiluba's government introduced market –oriented economic reform measures, including privatization and removal of state subsidies. During that period, a radical programme of change in the health sector focused on the district level. The ultimate goal of the Zambian health reform was an improvement in the health of the population. In Zambia, the public sector is considered the major provider of health services; and there was a shift towards a purchaser- provider split with the creation of a new executive agency at national level, such as the central board of health who had the responsibility of commissioning services of newly established district and hospital boards. There are currently 72 district health management teams in Zambia which are responsible for the provision of health services up to the first referral level (district hospitals) for their respective populations. These services are provided through health centers and hospitals, which may be public, private and mission. The vision of the Zambian health care reforms is “to ensure equity of access to cost- effective and quality health care as close to the family as possible” and this should be done by decentralization of resources and responsibility to the district level and below. The government is the main funder of health services. The government accounts for 40% of the total health expenditure, donors 9%, the mining sector 11%, and direct household expenditures for 38%. The ministry of health

introduced fees to health facilities in 1993 in order to implement the “partnership” which asked that citizens also participate in sharing the costs of their care (Lake, 2000). However, in 2006 the government of Zambia removed fees in rural health facilities. As a result, more than 7 million people have access to health care in rural health facilities. After three months of removal of fees in rural health facilities, the use of health services across the country had increase by 30%. In order to deal with this rise in demand, DFID provided the government with an additional £ 2.9 million in budget support over five years(Department for International Development, 2007).In its *World Report 2003*, WHO noted that the total per capita expenditure on health care in Zambia was US \$52 (5.7% of GDP). The WHO overall health system performance score places Zambia 182 out of 191 countries. This composite measure of overall health system attainment is based on a country’s goal relating to health, responsiveness, and fairness in financing. The measure varies widely across countries and is highly correlated with general levels of human development as captured in the human development index (The International Observatory on End of Life Care, 2008).



The health sector is still struggling to cope as it is facing a major shortage of skilled staff, with one-third of all rural facilities having no trained health workers. While the removal of user fees is generally recognized as a positive change, the quality of services will not improve unless more front line workers are trained and recruited (Department for International Development, 2007). In addition, conditions of service should be improved so that health workers are retained in and attracted to the public sector which is the major provider of health care services. The situation currently is that many health workers have left the public sector to join non- governmental organizations (NGOs) which are offering better conditions of service; and others have opted to go outside the country in search of greener pastures.

1.6.1 ZAMBIA AND THE INTERNATIONAL HEALTH PARTNERSHIP

The international health partnership (IHP) launched in September 2007, aims to make aid more effective by getting donors to work together to meet the national priorities of developing countries. In Zambia, the IHP will ensure that the assistance provided by donors is better coordinated, easing the administrative burden on the ministry of health and allowing it to focus on tackling the problems affecting the country's health. Zambia's health system has currently more than 15 major international organization partners. Donors funds come with lot of conditions as many of these donors give money towards specific diseases or one area of health, such as drugs or infrastructure. In addition, donors have their own plans, budget cycles and reporting formats. As a result, money at times sits in funds rather than paying for basic services (Department for International Development, 2007).

The other problem related to donors 'funds is that too much of ministry of health's time is taken up in managing the requirements of donors instead of managing the health system. It was observed that officials working at the ministry of health recently spent over 1,500 hours preparing proposal for just one donor. With this background, the international partnership will mean that donors work together, resulting in fewer meetings, less time spent on individual initiative, and greater coordination in the monitoring and evaluation of the projects. This should allow the ministry of health to dedicate more of its time strengthening Zambia's national plan, delivering services, and recruiting more skilled health workers to meet the needs of the country's people (Department for International Development, 2007).

1.7 CONCLUSION

In Zambia, a country where the majority of people live in poverty, and the disease burden is high, the prevalence of HIV is a major public health problem. Women are the most affected

because of their social and economic status. In the following chapter we look at issue related to PMTCT and WHO infant recommended infant feeding options for HIV positive mothers.



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II. LITERATURE REVIEW

II.1 OVERVIEW OF THE GLOBAL AIDS EPIDEMIC.

HIV/AIDS is still a global challenge with serious social and economic impact on the world's population. 25 years after its emergence, the HIV epidemic remains a major public health problem facing the world. It is further assumed that this medical condition will have long term negative effect on human capital because of the damage it has inflicted to the human population, which will still continue to grow many years after the prevalence of the epidemic starts to decline. After the 1990s peak of HIV incidence rate, the current situation of the epidemic in the world is characterized by stabilization of HIV prevalence rate (UNAIDS, 2006). It is stated in the 2006 UNAIDS report on the global AIDS epidemic that the observed stabilization of the HIV prevalence is due to change of behaviour, and prevention programmes. However, it is asserted that the numbers of people living with HIV have continued to rise as a result of the world's population growth and, more recently, the life prolonging effects of antiretroviral therapy. The other important observation in the report is that the HIV epidemic affects differently men and women at different ages; and it also affects differently people living in rural areas compared to those in urban areas. Further, there have been assertions that HIV prevalence affects people differently according to their social status. In the same vein, it is argued that HIV/AIDS affects differently rich and poor, educated and uneducated, employed and unemployed (UNAIDS, 2006).

Compared to HIV prevalence rate in 2001-2002 which was 16%, the current Zambian HIV prevalence represents a decrease from the previous one. It has also been observed that 16 percent of women are HIV positive, while 12 percent are men. Another important finding in the report is that the HIV prevalence is the lowest among men and women who have never been married and highest amongst divorced, separated and widowed. In addition, urban areas have HIV prevalence

which is twice higher than the prevalence in rural areas, respectively 20 and 10 percent. Moreover, there are provinces which are more affected than other. For example, some provinces in Zambia have prevalence levels above the national average: Lusaka has 21%, central province 18%, copperbelt 10%, while western province has 15%. The lowest levels of HIV prevalence in Zambia are found in northern and northwestern provinces which have 7 percent. The report further states that, for both men and women, there is relationship between HIV prevalence and education level as people with secondary level of education are almost twice likely to be infected than those who do have no education (Ministry of Health, 2008). Children are also affected by the pandemic as more than ninety percent of HIV infections among children occur through mother to child transmission (UNICEF, 2004).

II.2 HIV, POVERTY AND INEQUALITY

There is no doubt that a powerful relationship exists between AIDS and poverty. This can be illustrated by the fact that most households affected by HIV/AIDS can experience financial difficulties due the chronic character of the illness, which is, for example, blamed for absenteeism at work for both employed and self- employed, and for reduction of productivity. However, it can not be asserted that the HIV epidemic is the sole cause of world's poverty as, on one hand, it is common knowledge that in some of the hardest-hit countries people were living in abject poverty before the impact of AIDS was felt; and, on the other hand, there is evidence that some of the worst hit countries are not necessarily the poorest ones. This can be illustrated with the situation of southern Africa which has the world's highest HIV prevalence; yet this part of Africa has countries which are amongst the most economically developed countries on the continent. Generally these countries have higher level of education, gross domestic product and access to water and sanitation than other parts of the continent. However, the relationship between HIV and poverty can not be refuted as these countries also tend to have greater economic inequality and large numbers of people living in poverty, both of which have been

clearly associated with HIV transmission. This is a clear illustration of how AIDS tends to affect the poor more heavily than other population groups. With this establishment of the relationship between AIDS and poverty, many governments across the world are agreeing that reduction of poverty can be a response to AIDS; and also tackling AIDS is a means of reducing poverty(UNAIDS, 2006).

II.3 MOTHER TO CHILD TRANSMISSION OF HIV

Mother –to-child transmission (MTCT) of HIV, which can occur during pregnancy, delivery or breastfeeding, is responsible for more than 90% of HIV infection in children worldwide. As for the remaining 10% of pediatric infections, they are attributed to transfusion with contaminated blood and blood products, use of contaminated medical equipment, other practices that cut or pierce the skin, or sexual contact. Most children acquire the virus through transmission from an HIV – infected mother; therefore, the incidence of pediatric HIV reflects that of HIV infection in women of childbearing age. It should be pointed out that a significant number of children are at risk in areas of high seroprevalence (UNAIDS/WHO, 1998).

Mother – to –child transmission (MTCT) of HIV focuses attention on women, but the use of the term MTCT is not to imply blame, whether or not a woman is aware of her own status. A woman can acquire HIV through unprotected sex with an infected partner, by receiving contaminated blood, or through exposure to unsterile instruments or medical procedures. HIV is often introduced into the family through the woman’s sexual partner, often the father of her child. The prevalence of HIV varies considerably from region to region. Women and children in sub-Saharan Africa are disproportionately affected, with eight in every 10 HIV- infected women worldwide, and nine in every 10 newly infected children living in this region. In west and central Africa, for example, HIV prevalence in pregnant women currently reaches 10-15% in some urban areas and 1-5% in others. Prevalence in East Africa are higher: at 15-25% in urban areas

and 5-10% in rural areas ; while in southern Africa antenatal seroprevalence is at 20-30% ; and in some places of southern Africa even a prevalence as high as 40% have been reported. In the Caribbean, Central America and South America, HIV -1 seroprevalence rates currently range from 0.1% -5%. Asia is experiencing a rapidly growing epidemic with seroprevalence rates in big cities of Cambodia, India and Thailand currently ranging from 1-5 % (UNAIDS/WHO, 1998).

II. 4 HUMAN BREASTMILK AND HIV

II.4.1 HUMAN BREAST MILK PROPERTIES

Human breast milk contains protective immunologic factors that protect breastfeeding infants and make them less susceptible to gastroenteritis, otitis media, early wheezing illnesses, allergic reactions (Walensky, 1999). Breast milk supplies infants with far more than nutrition, as it has been proven that this fluid contains elements that protect infants against infection until their immune system become mature so that they are capable of protecting themselves against infection (Newman, 2003). Moreover, breast milk has the added practical advantage of being stored at the appropriate temperature in an aseptic environment, with rapid food delivery determined by a feedback process, partially controlled by the infant. In addition, the act of breastfeeding offers a unique opportunity for mother – infant bonding (Walensky, 1999).

Breast milk contains several maternal antibodies which are also known as immunoglobulins. Five type of immunoglobulins have been identified in breast milk, among them IgG, IgM, IgA, IgD and IgE. Though all the antibodies are found in milk, the most abundant maternal antibody is the type Ig A, especially the secretory IgA which is found in the gut and respiratory system of adults in great amount. These secretory Ig A are formed by two Ig A molecules called secretory component which protect the antibody molecules from being degraded by the gastric acid and digestive enzymes in stomach and intestines. Contrary to breastfeeding infants who get Ig A in

breast milk, bottle-fed infants have few means for battling ingested pathogens until they begin making secretory Ig A on their own, often several weeks or even months after birth. Apart from antibodies, human milk has several other molecules which prevent microbes from attacking mucosal surface. Some of these molecules are oligosaccharides which can intercept bacteria, forming harmless complexes that the baby excretes. Mucins act by adhering to the bacteria and viruses which then the baby eliminates. Other molecules in human breast milk are lactoferrins which can bind to two atoms of iron. Because many pathogens thrive on iron, lactoferrin will stop the spread of pathogens by making iron unavailable. Lactoferrin also disrupt the process by which bacteria digest carbohydrate hence limiting their growth. Free fatty acid in milk can damage the membranes of enveloped viruses. Interferons are found in colostrum in large quantities and they have a strong antiviral activity. There is also present in milk B12 binding protein which deprives micro organisms of vitamin B12. In addition, immune cells are abundant in human milk. These cells are white cells which fight infection and activate other mechanisms of defense. They are abundant in colostrum; and most of them are neutrophils. The other type of leucocyte is the macrophage which also performs a number of protective functions. They make up 40 percent of all leucocytes in the colostrum; and are far more protective than milk neutrophils. Besides, macrophage being phagocytic, they manufacture lysozyme in breast milk, increasing lysozyme in the infant's gastrointestinal tract. Lysozyme is an enzyme that destroys bacteria by disrupting their cell wall. They are several studies indicating that some factors in human milk induce an infant's immune system to mature quickly than it would if the child was artificially fed. There are also certain hormones in milk, such as cortisol, and small proteins, including epidermal growth factor, nerve growth factor, insulin-like growth factor and somatomedin C which act by closing up the leaky mucosal lining of the newborn, making it relatively impermeable to unwanted pathogens and other potentially harmful agents (Newman, 2003).

II.4.2 HUMAN BREAST MILK AND HIV TRANSMISSION

Despite the importance of breast milk, it should be pointed out that there is little information on the protective effect of breast milk from HIV positive women. It is well known that HIV/AIDS impairs human immune function. For this reason, it is asserted that because of immune dysfunction HIV positive women will produce lower levels of protective antibodies and cell-associated immunity against diarrhoeal and respiratory diseases than HIV-free women. This immune dysfunction explains why it is theorised that milk from HIV positive women confers less protection against infection than that of non- HIV – infected ones (UNAIDS, 2004). Risk factors for HIV transmission through breastmilk are associated with factors such as seroconversion during breastfeeding, human milk viral load, presence of mastitis or breast abscess, nipple pathology, and also variations in infant feeding practices. With regard to infant feeding, mixed feeding is associated with higher transmission than exclusive breastfeeding at age 3 months. In addition, there are also other infant factors which may play a role in increasing the risk of transmission through breastfeeding such as disruption of the epithelial integrity of oral mucosa or the gastrointestinal tract (Shetty & Maldonado, 2001).

II.4.3 MECHANISMS OF BREAST MILK TRANSMISSION OF HIV

The mechanism of HIV transmission through breast milk is not yet fully understood. The respective roles of cell-free and cell-associated virus in breast milk transmission of HIV are not known, nor are the association between plasma and milk virus levels understood. However, there are suggestions that cell-associated virus may be more important in the transmission of HIV through breast milk than previously recognized. To infect the infant, HIV in breast milk uses possible portals of entry among them M cells in the tonsils or those overlaying the Payer's patches of the intestinal mucosa of infants who are exposed to HIV- infected breast milk (WHO, 2005).

In resource -poor countries, transmission of HIV from mother to child is higher due to the risk associated with near universal breastfeeding. For this reason, knowledge about the precise timing of transmission is important as it may help in the design of potential prevention strategies. It should be pointed out that there is after delivery persistence of maternal antibodies in the infant and the presence of a “window period” during which infection is undetectable when technology other than PCR is used. When diagnosing HIV, infants who had a positive DNA polymerase chain reaction (PCR) test result or those who had a positive HIV-1 culture test result in the first 48 hours of life have contracted the HIV infection in utero; while those who, during the first week of life their virologic test results are negative, and subsequently become positive before 90 days of life, were probably infected during the intrapartum period (Shetty & Maldonado, 2001).

Transmission of HIV breast milk can take place at any time during lactation; for this reason, HIV infection among breastfeeding infants will increase with duration of breastfeeding. While there is some information on the estimation of the exact association between duration of breastfeeding and the risk of transmission; there is no doubt; however, that there is strong evidence that duration of breastfeeding can play a role in the transmission of HIV from the mother to the child. With this in mind, that it has been stated that transmission of HIV through breast milk is cumulative, in the sense that the longer the duration of breastfeeding the greater the risk of transmission (UNAIDS, 2004).

Determination of late postnatal transmission of HIV to the infant through breast milk can be carried out by currently available diagnostic tools. For example infants found to be negative by PCR testing at 2-6 months of age but who subsequently showed evidence of infection has provided estimates of the risk of late postnatal transmission (after 3-6 months of age) which range between 4 to 12 % (UNICEF/UNAIDS/WHO, 1998). However, there is another way of

estimating the risk associated with breastfeeding which consists of starting with infants who had been born to HIV- infected mothers and who in early life had tested negative for HIV. These infants are followed until after they ceased being breastfed to determine the rate at which they become HIV positive through breast milk. If all infants who had evidence of not being infected in early life are taken as the denominator, the rate of late transmission is then estimated from the number of breastfed children who have subsequent positive virological tests or persistent antibodies beyond 15-18 months or after cessation of breastfeeding. The time at which the exposure begins is determined by the age at which infants are tested. Usually the time is around four to six weeks, but in earlier study the time was around three to six months. It should be born in mind that different 'start' times may explain why different studies gave different estimates of rate of late postnatal transmission (LPT). This difference is seen, for example, by the estimated rates of LPT which range from about 9% to 13% at 18 months (UNICEF/UNAIDS/WHO, 2001).

II.4.4 FACTORS ASSOCIATED WITH THE RISK OF MOTHER TO CHILD TRANSMISSION OF HIV

There are many factors which are associated with mother to child transmission of HIV. It should be pointed out that the level of maternal serum RNA is a very critical determinant of both intrauterine and intra partum transmission of the HIV. Other important maternal factors are: advanced maternal disease, low CD4-T cell counts, high viral load, and viral characteristics, primary infection, and sexually transmitted infections; and additionally, obstetrical factors such as rupture of membranes for more than 4 hours, vaginal delivery, fetal scalp electrode, chorioamnionitis, episiotomy, vaginal laceration, and invasive obstetrical procedures. Other possible factors involved in the transmission of HIV are: HIV genotype, genetic susceptibility, and vitamin A deficiency (Shetty & Maldonado, 2001).

II.5 WHO RESPONSE TO HIV TRANSMISSION THROUGH BREASTFEEDING

The transmission of the HIV virus from mother to child through breast milk had been scientifically proven, and is a source of concern especially in poor countries where the

prevalence of HIV is high. It was, for example, estimated that the absolute rate of HIV transmission from mother to the child attributed to breastfeeding stands at 16.2% when the baby was breastfed for two years (WHO/UNICEF/UNAIDS, 2004). In response to this situation, WHO came up with the infant feeding options in order to prevent or minimize the risk of transmitting the virus by an HIV positive mother to her baby through breast milk (WHO/UNICEF/UNAIDS, 2004).

The WHO's response to the prevention of mother to child transmission of the virus is presented as a package called WHO infant feeding options. These recommended infant feeding options for HIV positive mothers are constituted of the following: exclusive breastfeeding during the first months in cases where the mother chooses to breastfeed; avoiding breastfeeding entirely when replacement feeding is acceptable, feasible, affordable, sustainable and safe; and if mothers choose not to breastfeed from birth or stop breastfeeding later, they should be provided with specific guidance and support for at least the first two years of the child's life to ensure adequate replacement feeding (WHO, 2007).

Talking about replacement feeding, it should be born in mind that, in many resource- limited settings, commercial formula milk or home modified animal milk as replacement feeding options may be too dangerous due to the fact that they can be the cause of malnutrition and infectious diseases such as diarrhea. It is because of danger related to replacement feeding that the United Nations agencies recommend exclusive breastfeeding in the first few months, and insist that breastfeeding should be discontinued only if it is feasible; and taking into account local circumstances, the individual woman's situation, and the risks of replacement feeding (WHO/UNICEF/UNAIDS, 2004). Though formula milk is presented to HIV positive women as one the WHO recommended infant feeding options, little is known about the possible long term

risks which can be associated with formula milk given to infants born from HIV positive mothers in resource-poor settings. Similarly, this situation characterized by paucity of knowledge is also applied to risk associated with exclusive breastfeeding among HIV positive mothers under conditions where formula milk would be an appropriate choice (Doherty et al., 2007).

II.6 WHO INFANT FEEDING OPTIONS: DILEMMA AND CHALLENGES.

It is a known fact that, for many decades, breast milk has been promoted as the ideal source of nutrition for an infant due to the fact that it contains immunological factors that protects against infectious diseases such as diarrhea and malnutrition (Walensky, 1999). Compared to formula milk, mothers were many a time told during ante natal and under five clinics that breast milk has not only nutritious, immunological and emotional benefits, but it is also cheaper, affordable, and safe. But with the current knowledge on the risk of HIV transmission during breastfeeding, WHO recommended infant feeding options came as a package to minimize the risk of transmission of the virus to the child. However, this recommendation has not been received without criticism, as some critics think that provision of replacement feeding in PMTCT programme may create a loophole for the promotion of formula feeding by respected and trusted people in white uniforms with all the risks these options may present such as diarrhea diseases, diversion of family income to the purchase of formula milk (World Alliance for Breastfeeding Action & La Leche League International 2005).

One critic of WHO infant feeding options is Coutsoudis who conducted a small operational research study in South Africa. She stated, in her paper entitled *The Challenge of Nutrition and HIV/AIDS. Infant feeding dilemmas created by HIV: South African experiences*, that the WHO recommended infant feeding options create a situation of dilemma for health policy makers that results in polarizing them with some feeling that their mandate is the prevention of the HIV pandemic, while others feel that their mandate is child survival. The latter group argued that

WHO infant feeding options threatened child survival in recommending infant formula milk. She also found that the difficulties lie in how health workers and mothers decide when the infant feeding is acceptable, feasible, affordable, sustainable, and safe (Coutsoudis, 2005). In the same study, Coutsooudis discovered that many women, in South Africa, will choose to breastfeed despite the risk of doing so. Her preoccupation was to make breastfeeding safer for those women. While her study is of great interest, it does not look at why those women opt to breastfeed, or what are the challenges they are going through vis-à-vis the recommended WHO infant feeding options. To tackle this pertinent question, the researcher would have explored the cultural, social, financial or psychological aspects that could have explained the researched population attitude. Coutsooudis' study had unfortunately only focused on searching for the safer breastfeeding programme for HIV positive mothers, leaving out important aspects such as culture, stigma, victimization that are important in the implementation of any programme that aims at preventing the transmission of the HIV from the mother to child.

Doherty, Chopra, Nkonki, Jackson and Greiner (2006) conducted qualitative interviews with a sub sample of participants from a prospective cohort study, and found that, in South Africa, both mothers using formula milk and breastfeeding mothers argued that they are protecting their infants with their respective chosen feeding options. Those using formula milk explained that they opt for this feeding option because they do not want to infect their infants with the HIV when breastfeeding; while those breastfeeding defended themselves by arguing that their feeding option is the best because they believe breast milk is the best food for the infant, and they further asserted that the benefit of breastfeeding outweighs the risk of HIV infection through breast milk. In the same study, researchers discovered that mothers who formula-feed and those who cease to breastfeed early faced questions from family members and neighbors. With this barrage of questions, HIV positive mothers develop plausible explanations for their actions. There is no

doubt that decision to opt for a feeding option that can protect the infant from the HIV can be affected seriously by the reactions of the neighbors and members of the family, and this is a great challenge for the HIV positive mothers. There is a question that arises in this social context characterized by pressure from the family and community: Is there no possibility that the mother might decide to ignore altogether the WHO recommended infant feeding options because of pressure from neighbors and family members; or because of fear of stigmatization, victimization and discrimination? Moreover, it has been argued that because HIV positive mothers are concerned about the protection of their infants, many HIV positive mothers felt confused and unsure about the best infant feeding choice; and this explain why at times they chose whatever food they were told could provide the best protection for the child (Doherty et al.,2006).

Because of the risks which can be associated with infant feeding in the context of prevention of mother- to- child transmission of HIV, there is need to chose an appropriate infant feeding option taking into consideration individual and environmental circumstances. This choice can improve infant survival among HIV positive mothers. It is on this basis that Doherty et al conducted a study entitled *Effectiveness of the WHO/UNICEF guidelines on infant feeding for HIV- positive women: results from a prospective cohort study in South Africa*. They suggested in their study that in resource poor- contexts there should be fulfillment of three criteria (piped water, electricity, gas or paraffin for cooking fuel, and early disclosure of HIV status) for HIV positive mothers who chose to formula feed their infants; but in case these criteria are not fulfilled, the study recommends that exclusive breastfeeding should be the most appropriate choice (Doherty et al., 2007). It should be noted that this study was conducted in the context of free formula distribution in South Africa; for this reason, it will be important to encourage HIV positive mothers, from other poor settings, who can not afford formula milk to exclusively breastfeed.

Because of HIV - related stigma and discrimination, it is common knowledge that disclosure of HIV status is still a big challenge. However, there is no doubt that disclosure is very vital for the improvement of survival of infants born from HIV positive mothers. Besides, lack of disclosure makes adherence to antiretroviral therapy or infant feeding guidelines difficult. It should be pointed out that this situation of non- disclosure of HIV status can be tackled through more discussion and openness about HIV status within households; which, it is asserted, would start to change community norms of infants feeding option. Further, discussions and openness would create an easier environment for HIV – positive women to make a choice on the WHO recommended infant feeding options (Doherty, Chopra, Nkonki, Jackson & Greiner, 2005).

II.7 STIGMA, DISCRIMINATION AND HIV/AIDS

Stigma is defined as negative attitudes towards those infected or suspected of being infected with HIV; and those who have been or are affected by HIV pandemic by association, among them orphans, and families of people living with HIV. Discrimination is considered as any form of arbitrary distinction, exclusion or restriction affecting people because of their confirmed or suspected HIV- positive status. Since the emergence of HIV epidemic, stigma and discrimination are the epidemic's worst consequences; this explains why HIV – related stigma and discrimination are considered as big challenges the world is facing in the fight against the HIV epidemic. It is also for this reason that stigma and discrimination are considered as obstacles to HIV prevention, care and treatment for people living with HIV. With this in mind, stigma and discrimination deny hundreds of thousands of people the chance of reaching their full potential (UNAIDS, 2006). It should be also clearly pointed out that discrimination of people living with HIV/AIDS is often a result of stigma; therefore discrimination against people living with HIV/AIDS violates their human rights, and that of their families (UNAIDS 2004). In many societies, women are the most stigmatized because of low status and because of the fact that they are most of the times questioned on their sexual behaviour or faithfulness whenever there are

cases of HIV- related illnesses in the family or in the community (UNAIDS 2006). Because it has been established that stigma and discrimination are obstacles to the fight against HIV pandemic many individuals and organizations fighting the spread of HIV infection - among them; churches and religious groups, human rights commissions and other legislative bodies- have, across Africa, considered the fight against stigma and discrimination as an integral part of their work (UNAIDS, 2006).

II.7.1 STIGMA AND DISCRIMINATION IN ZAMBIA

In a pilot study in Zambia, India, Ukraine and Burkina Faso, UNICEF in conjunction with PANOS Institute found, through focus group discussions and interview with key informants that in all research sites stigma is high amongst pregnant women who are HIV positive. It was, in the same study, observed that because of stigma and discrimination in Zambia, women prefer to breastfeed as not doing so is a revelation of their HIV positive status (UNICEF/PANOS Institute 2001). Bond, Chase, Aggleton (2000) found also, in their qualitative studies on stigma in a rural community located at 170 km south of Lusaka, on the border between Zambia and Zimbabwe, that the fact of not breastfeeding is considered as an indication of HIV positive status and a cause of stigmatization. They further argue in the same study that women, because of stigma, continue to breastfeed as if they were negative in order to hide their HIV positive status. The fear of discrimination, abandonment, violence and stigmatization against HIV positive mothers is high; as a result there is a great concern because while trying to put in place programmes that protect the infant, a blind eye is, however, given to the daily psychological challenges that HIV positive mother is going through, due to pressure from the community and her family. The WHO recommended infant feeding options might fail if policy makers and implementers of such life saving programs do not take seriously into consideration the challenges that HIV positive mothers are facing.

II.7.2 WHO INFANT FEEDING OPTIONS VERSUS STIGMA, VICTIMIZATION AND DISCRIMINATION

Rankin, Brennan, Schell, Laviwa and Rankin (2005) stated that stigma is both the cause and effect of secrecy and denial. According to these authors, stigma is of serious concern because it is a catalyst for HIV transmission. They further asserted that fear and stigma limit the efficacy of HIV- testing programs across sub-Saharan Africa as people do not believe in the confidentiality of health workers. For these same reasons, pregnant mothers may avoid HIV testing – the first step in reducing mother to child transmission of the virus. If stigma and discrimination can influence such human behavior, it is also possible that it may influence women in their decision to breastfeed their children. And, in the same vein, because of stigma, fear, discrimination and victimization that may have as origin: families' members or communities, HIV positive mothers may end up deciding to breastfeed for more than the six months of exclusive breastfeeding-period recommended by WHO. Rankin et al stated that due to fear and stigma, the HIV positive mother may deliberately expose her baby to HIV infection through breastfeeding as she may not want to arouse suspicion of her status, in her home or her community when opting for alternative feeding methods.

II.8 WHO INFANT FEEDING OPTIONS AND CULTURAL WAY OF INFANT FEEDING IN ZAMBIA

Working on PMTCT challenges, Sankey, Kateula and Mwansa (2005) asserted, in their paper, that most Zambians consider formula milk as a supplement to breast milk not as an alternative baby food. In addition, they argued that 95 percent of children, in Zambia, are breastfed during their first year of life, while only 5 percent of infants 4-5 months are exclusively breastfed. This study shows how ineffective WHO recommended infant feeding options can be. Omari, Luo, Kakansa, Bhat and Bunn (2003) stated that in Zambia 98% of the infants were breastfed for a median duration of 20.5 months out of which only 35% were exclusively breastfed. With such trend in the duration of breastfeeding, it is obvious that the introduction of formula milk or any

early cessation of breastfeeding will be a source of concern in the community. Omari et al (2003) further stated that in Zambia, a setting where breastfeeding is the cultural way of feeding the infant, a mother who does not breastfeed is looked at suspiciously, and her decision of not breastfeeding will be a source of speculation in the community and a revelation of her HIV positive status. To avoid such speculation, many HIV positive mothers compromise by giving formula milk at home and breast milk in public. This mixed feeding may increase the risk of transmission of the HIV from the mother to her infant.

II.9 ANTIRETROVIRAL DRUGS AND PREVENTION OF MOTHER –TO-CHILD TRANSMISSION

Prevention of mother to child transmission of HIV is possible because of the availability more potent and safe Highly Active Antiretroviral therapy (HAART) which can be used in pregnant women. However, in resource- limited setting factors related to the health system and to patients such as the strength of health service infrastructure, the availability of financial and human resources; the access to and the use of health service such as antenatal care services, and the proportion of deliveries attended by a skilled health care worker can be an obstacle to have access to prevention of mother to child transmission of HIV, and can also influence the quality of service provided. Moreover, the uptake and quality of service provided can be influenced by socio-cultural factors and individual circumstances. Due to all these factors, the coverage of the PMTCT intervention- which will benefit a large number of women and their infants can be possible only if simple and effective PMTCT interventions can be delivered in settings with limited capacity. Further it should be pointed out that the selection of antiretroviral regimens must be adapted to individual circumstances such as HIV positive test for the first time during antenatal care; early in pregnancy, or late in pregnancy. In addition special consideration should also be given to particular situation such as co-infection with tuberculosis (WHO, 2005).

WHO promotes a comprehensive strategic approach to the prevention of HIV infection in infants which includes the following:(1) primary prevention of HIV infection;(2) prevention of unintended pregnancies among HIV – infected women; (3) prevention of HIV transmission from HIV-infected mothers to their infants; and (4) care treatment and support for HIV – infected mothers and their children. It should be pointed out that the establishment of a link between prevention and treatment in PMTCT programme has the potential of increasing uptake of essential prevention services and ensuring long-term care, treatment and support services. PMTCT programs are also important as they can be an entry point to HIV-related care, treatment including HAART and support for HIV-infected women, their children and families. In the same vein, the implementation of HIV care programmes can not be comprehensive if the PMTCT programme is not included. Moreover, it is very important to emphasize here that all pregnant women in need of HAART should be managed according to national and international guidelines as soon as practical. However, it is also important to state that apart from common national and international regimens which are suitable for the majority of women, there are situations that may arise which will require individualized patient management and where special care may be applied. HIV programs should aim at delivering HAART to pregnant women who respond to eligibility criteria and have indications for initiating therapy for their own health; those who do not require therapy should benefit from the more efficacious, preferred PMTCT regimen based around short-course zidovudine plus single-dose nevirapine regimen. Needless to say that the expansion of PMTCT programmes using single dose nevirapine remains the best alternative in many settings where the necessary improvements in health systems are being put in place in order to initiate the delivery of more complex antiretroviral regimens (WHO, 2005).

II.10 HIV-POSITIVE PREGNANT MOTHERS AND HIGHLY ACTIVE ANTIRETROVIRAL (HAART).

According to the 2006 WHO guideline, which Zambia is using in its PMTCT programme, care of HIV positive pregnant mothers will differ depending on the following situations:

A. MATERNAL HAART AVAILABLE

A.1 Maternal HAART indicated: women should start HAART at any time in pregnancy as appropriate and infants should receive Zidovudine for 7 days from birth.

A.2 Maternal HAART considered: The revised WHO adult antiretroviral guidelines recommend HAART to be considered for patients with clinical stage I and II with CD4 cell count below 350/mm³, particularly if closer to 200-250/mm³. Toxicity related to the initiation of long-term Nevirapine – containing HAART may be a concern in pregnant women with CD4 count between 250 and 350/mm³. Recent data from resource-limited settings suggest a low toxicity associated with the use of Nevirapine in this context. It is suggested that Nevirapine – containing HAART can be considered in this sub group, or alternatively a triple Non-Reverse – transcriptase inhibitor (NRTI) regimen. Infants should receive zidovudine for 7 day from birth.

A.3 Maternal HAART not indicated: women should receive a short-course PMTCT regimen consisting of Zidovudine starting at 28 weeks of pregnancy or as soon as feasible thereafter, continued in labour with single dose Nevirapine at the onset of labour. Infants should receive a single dose of Nevirapine within 72 hours of birth and Zidovudine for 7 days from birth. If the woman receives at least 4 weeks of Zidovudine before delivery, omission of the maternal Nevirapine dose may be considered. A seven- day regimen of Zidovudine/Lamivudine given to the mother after delivery may be considered to reduce the emergence of Nevirapine resistance.

A.4 In all case (HAART indicated, considered or not indicated), if the mother receives less than 4 weeks of zidovudine before delivery, infant Zidovudine dosing should be extended to a total of 4 weeks.

B. MATERNAL HAART NOT AVAILABLE

B.1 HAART not available- capacity to deliver the full range of Antiretroviral for PMTCT

exists: All women and their infants should receive PMTCT antiretroviral regimens similar to those described when HAART is available and not yet indicated. If the woman is symptomatic, a seven –day regimen of Zidovudine /Lamivudine given to the mother after delivery is advised when available to reduce the emergence of Nevirapine resistance.

B.2 HAART not available- capacity to deliver minimal range of Antiretroviral for PMTCT

exists: the minimal recommended regimen consists of single -dose Nevirapine for the mother at the onset of labour and single-dose Nevirapine for the infant within 72 hours of birth.

C. Women first presenting around delivery and having received no Antiretroviral for PMTCT

Women in labour when first accessing PMTCT interventions, and who are known to be infected with HIV and did not receive any antiretroviral during this pregnancy should receive one of the following regimens:

- When capacity to deliver the full range of intervention for PMTCT exists: single-dose Nevirapine and Zidovudine given from birth to the infant, or Zidovudine /Lamivudine for 7 days given to the infant from birth.
- Where capacity to only deliver minimal range of antiretroviral for PMTCT exists: single-dose nevirapine within 72 hours of birth.

In case the mother received either single-dose Nevirapine alone or in combination with zidovudine, a seven day regimen of Zidovudine/Lamivudine given to the mother after delivery can be considered when available to reduce the emergency of nevirapine resistance.

In case a woman did not receive any antiretroviral during pregnancy and delivery, the infant should receive single - dose Nevirapine within 72 hours of birth, plus 7days of Zidovudine if possible.

In all cases, such women need to be assessed postpartum for need of therapy.

D. Pregnant HIV-infected women with tuberculosis

In the Rifampicin- containing phase of tuberculosis treatment, there are concerns about interaction when using Nevirapine –containing HAART at the same time.

- If a pregnant woman has tuberculosis and HAART is initiated, consider:

- Triple NRTTI

- EFV Efavirenz –based regimen. Efavirenz Should be avoided in women of childbearing potential unless adequate contraception is available and used. If Efavirenz has to be used, it should only be taken in the second and third trimesters of pregnancy. Adequate contraception must be made available postpartum, and the woman must be counselled about the importance of avoiding pregnancy if she would continue Efavirenz therapy.

It should be pointed out that the issue of protease-inhibitor-containing regimens is being reviewed to be included in the revised adult treatment guidelines where appropriate guidance will be provided.

- If a pregnant woman is on HAART and develops tuberculosis, change to one of the above mentioned regimens.

As a general principle, if HAART is required, tuberculosis should be treated and the patient stabilized first. The full PMTCT regimen should be started and then HAART initiated as soon as possible

II.11 HIV AND CHILD SURVIVAL

HIV transmission from mother to child is one of the major causes of infant morbidity and mortality in the world. It is for this reason that PMTCT programmes are considered as a very important tool in the prevention of HIV transmission from an HIV - infected mother to her infant. One of the components of this programme is the WHO recommended infant feeding options which is made available to HIV positive mothers as a package to help prevent or minimize the risk of transmitting the virus by an HIV positive mother to her baby. The WHO's response to the prevention of mother to child transmission of the virus is a package which consists of the following infant feeding options: exclusive breastfeeding, replacement feeding or formula milk, and other breast milk options such as wet nursing by a tested HIV negative woman and heat treated breast milk. It is in this vein that the chapter on literature review has expanded on WHO recommended infants feeding options which are made available to HIV positive mothers, and it has also stressed on the fact that the chosen infant feeding option by an individual HIV positive mother should be acceptable, feasible, affordable, and sustainable. However, in Zambia- especially in Mongu district where the study was conducted - stigma and discrimination are still very high. It should also be born in mind that HIV positive mothers may face some challenges when opting for one of the WHO recommended infant feeding options, especially that in the district breastfeeding is the cultural way of feeding the infant, and generally the breastfeeding period goes up to two years. Taking all these factors into consideration, our study intends to assess the challenges faced by HIV positive mothers in Mongu District.

III. AIMS AND OBJECTIVES OF THE STUDY

This study aims at assessing HIV positive mothers' knowledge of WHO infant feeding options and looking at the challenges they face vis -à -vis the WHO recommended infant feeding options in Mongu district.

The objectives of our study are the following:

- 1) To assess the level of understanding of WHO infant feeding options amongst HIV positive mothers.
- 2) To determine problems HIV positive mothers face in choosing the feeding option appropriate, in their situation, for the infants.
- 3) To determine the challenges that HIV positive mothers go through in their community and family when they choose a feeding option appropriate to their individual situation.
- 4) To recommend counseling approach and holistic care that will look at the welfare of both, the mother and the infant.



IV. METHODOLOGY

IV.1 RESEARCH DESIGN

The design is defined as the overall structure and strategy of the research study (Coolican, 2004). Quantitative method was used to reach the aims and objectives of our study. In our study conducted in Mongu district, we aimed at assessing the level of knowledge HIV positive mothers had on the WHO recommended infant feeding options and we further looked at the factors that influence HIV positive mothers' feeding choices and the challenges they faced when implementing their chosen WHO infant feeding option which, in their context, they considered feasible, acceptable, affordable, sustainable and safe. We also tried to understand, for example, the reasons why HIV positive mothers opted for this and not that infant feeding option. With this background, we opted to use cross sectional study design.

IV.2 RESEARCH SETTING

Mongu district is the provincial headquarters of western province. It is situated between 14°37' and 15°49' south line of latitude and 22°49' east line longitude. It covers an area of 10,075 square kilometers. The district shares boundaries with the following districts: Kalabo on the West, Kaoma on the East, Lukulu in the North and Senanga in the South. The district is located in the medium rainfall of Zambia with annual precipitation ranging between 800-1000 mm. Mongu district experiences the heaviest rainfall between December and February with monthly precipitation ranging between 180-195mm. The district's economy is based on natural resources related activities like agriculture, timber exploitation, crafts, livestock and trading. The majority of households in the district are subsistence farmers who, to a large extent, are residents in the rural areas of the district. Poverty levels for both urban and rural areas are high accounting for over 80%. Out of the total poor, 61.7% are categorized as living in extreme poverty; and women are disproportionately represented among the poor (Mongu District Commission, 2005).

The district has a total population of 190,715 inhabitants. 96,726 of the total population are women out of which 48.5% (or 46,912 women) are of reproductive age (CSO, 2007). It should be pointed out that in Mongu district the prevalence of HIV/AIDS amongst pregnant women stands at 18 %, which represent 8444 women of reproductive age (Ministry of Health, 2007).

Mongu district has 1 general hospital called Lewanika General Hospital and 30 health centers. The PMTCT programme is well established at Lewanika General Hospital and in 20 health centers out of the 30. Our research focused on Lewanika General Hospital and the 20 health centers that have a well established PMTCT programme

IV.3 CRITERIA FOR SELECTION

The population sample was formed by selecting HIV positive mothers, resident in Mongu district, and who were registered in the PMTCT registers. Only participants who agreed to take part voluntarily in the study were individually interviewed. The other criterion was that each selected participant had an infant whose age was between 6 months and 2 years. We believed that from 6 months up 2 years of infant's age, a mother was in a better position to talk about challenges she had encountered or difficulties she had faced when implementing her chosen WHO infant feeding option.

University of Zambia research ethical committee authored a letter allowing us to conduct our research in Mongu district. We submitted the letter in question to the provincial health director and a copy to the district health director.

These provincial health authorities issued the letters introducing our team to the sisters in charge of PMTCT programme in the district. Upon presenting the letters to sisters in charge, our

team of data collectors was given access to PMTCT registers in areas where they were dispatched to collect data for research purpose only.

IV.4 SAMPLING TECHNIQUE.

A sample that is obtained by choosing at regular intervals from an ordered list is called a systematic sample. This technique is used when the population is too large for simple random number sampling. While this technique has some advantage such as simplicity for use and suitability for large samples; the disadvantage is that the technique is random only if the ordered list is truly random (Attwood & Dyer, 2000). The method of sampling is adopted when a complete list of the population from which the sample has to be drawn is available. The sampling interval K is obtained by dividing the total number of items in the universe by the size of sample. The first item between 1 and K is selected at random and then every K th item is taken (Gupta, 1998).

In our study we used systematic sampling technique to constitute our sample. In the case of our study, a complete list of HIV positive mothers was constituted by listing all HIV positive mothers whose names were in the registers of PMTCT at the selected health institutions, and who had infants whose ages range from 6 months to 2 years. In the study, a complete list of 5317 HIV mothers was constituted. Among them 1636 had babies whose ages were ranging between 6 months and 2 years. Out of the 1636 we selected randomly the first participant from the complete list, and then we went on selecting every 8th HIV positive mother up to the time we constituted a sample of 200 participants. Thereafter the selected HIV positive mothers were visited individually in the respective household for interview by trained interviewers. During home visits, 5 selected participants decline to take part in our study while 195 HIV mothers voluntarily join our study

IV.5 SAMPLE SIZE.

Mongu district has 96,726 of the total population are women out of which 48.5% are of reproductive age, representing 46,912. However, the provincial data from HMIS (Health management Information system) shows that the prevalence of HIV among pregnant women in Mongu district stands at 18 % (HMIS, 2007). With this, we assume that 8,444 mothers are HIV positive in Mongu district. Using an estimate of exclusive breastfeeding at 35% (Kakansa, Bhat and Bunn, 2003) with a 95% confidence level, our study sample required a sample size of 176 women. Assuming a 12% loss for women who were not found or refused interview, we then aimed at a sample of 200 women for home visit from the current PMTCT registers.

IV.6 DATA COLLECTION METHODS

We used semi-structured questionnaire which trained nurses filled in on behalf of the interviewees, during face-to-face structured interviews. 10 experienced nurses, who have been working in HIV/AIDS programme for many years, were trained during two days in data collection. After training, they were sent to interview study participants in area far from where they usually work. This way of collecting data aimed at reducing bias as study participants were able to freely talk about their challenges to interviewers coming from other areas than they could have done in case they were interviewed by nurses based in their setting with whom they are in touch on daily basis. Such arrangement in dispatching data collectors was cardinal because we believed that there would have been a possible bias if nurses who offer health services to our study participants were used to interview the same participants. Each study participant was interviewed, individually and privately during 45 to 60 minutes, in Lozi which is the local language or English.

IV.7 QUESTIONNAIRE DEVELOPMENT, CONTENT AND ADMINISTRATION

Our questionnaire mainly focused on assessing knowledge related to the PMTCT programme among study participants and the challenges they faced in regard to the implementation of WHO

recommended infants feeding options. The selected participants responded to questions related to their level of education, marital status, events that led them to taking HIV test, infant feeding options they are using for the infants, challenges they faced when implementing their opted WHO infant feeding options.

The questionnaire was available in both English and Lozi. Questionnaire in Lozi was prepared in collaboration with Lozi speaking people who are working at Lewanika Hospital, among them 3 nurses and 3 casual workers. After initial translation, we had we went with the draft questionnaire in Lozi reviewed by 3 Indunas (counselors), who are working for the Barotse Royal Establishment in order for them to check the translation and suggest any final in translation.

Prior to interview of study participants, a pilot test study was conducted using four interviews in order to test the questionnaire. Interviewees who were involved in the pilot study did not participate in the main study. After pilot testing our questionnaire, we made a few adjustments such as rephrasing, adding and excluding a couple of questions that were irrelevant

Administration of questionnaires did not interfere with study participants' activities as interviewers made arrangement with the interviewees on the day and time each study participant felt she was free and could be interviewed. Interviewers visited the selected study participant at her respective home and guided her on how the interview will proceed. The time for interview ranged from 45 minutes to one hour. At the end of each day's data collection activities, the research team held feedback meetings to evaluate their work, identifying and resolving any problems encountered in the field. The data collectors used such meetings as an opportunity for controlling the quality of information through checking the questionnaires for completeness.

IV.8 PILOT STUDY

Prior to the main fieldwork, a pilot test study was conducted using four interviews in order to test the questionnaire. Interviewees involved in the pilot study did not participate in the main study. The pilot study was important for identifying any problems and omissions as well as checking time spent on responding to the questionnaire. Pilot testing of questionnaire was also intended to improve the precision, reliability and validity of data. After pilot testing our questionnaire, we made a few adjustments such as rephrasing, adding and excluding a couple of questions that were irrelevant. After these adjustments, we then proceeded with the collection of data.

IV. 9 DATA PROCESSING AND ANALYSIS

After each interview with the study participants, we checked each form for completeness and accuracy before submitting for data entry. We used Microsoft Office Excel programme for data entry and storage; and all the data were quality checked by comparing a 10% random sample of entered forms with the originals. Open-ended questions were post-coded prior to entry. For data analysis, we calculated the frequencies and percentages for categorical data, and the means and standard deviation for continuous data.

IV.10 VALIDITY AND RELIABILITY

As describe in the previous section, steps were taken to enhance validity and reliability of the data collected. These included that we ensured that participants in the study were selected according to the criteria of selection. There was also the quality of questionnaire and their pilot-testing that strengthened validity and reliability in our study. The training of selected enumerators in data collection and also the way we dispatched them to different areas enhanced the validity and credibility of data collection. At last, the entry of data is also one of the important elements for validity and reliability in any study. In the case of our study we relied on 10% double entry of data during data processing.

IV.11 GENERALISABILITY

Though this study focuses on Mongu District, the findings will give an idea on the HIV positive mothers' challenges in the country as infant breastfeeding is the cultural way of feeding across the country.

IV.12 LIMITATIONS

It should be pointed out that the 5 selected participants who declined to take part in the study did not explain to interviewers why they decided to do so. We refrained ourselves from asking questions on their decision to not participate in the study as participation was voluntary; and participants were free to withdraw any time. These mothers could have differed in some way from the general population, but this potential bias could not be accessed.

The limitation of our study was that HIV positive mothers who did respond or agreed to participate in our study had not given their views on the challenges they were facing in regard to WHO recommended infant feeding options. Secondly, as participants were reporting on their individual challenges, there was possibility of responder bias as they could have exaggerated their challenges to attract sympathy or underplayed their challenges. Thirdly, as all interviews took place during home visits, there was possibility of arising neighbours' curiosity hence undermining privacy and confidentiality. This could also have been due to visits by relatives and friends when interviews were taking place.

IV.13 PROTECTION OF STUDY PARTICIPANTS

This study is based entirely on an analysis that does not harm any of participants in the original studies nor violate the ethical tenants of justice and beneficence that investigators originally agreed to. All initial protections that were originally promised and could be relevant with use of the datasets (e.g., confidentiality) continued to be maintained.

IV. 14 CONSENT FORMS

The protocol, the informed consent documents, the participants' sheet and subsequent modifications were reviewed and approved by the University of the Western Cape and the Ethical committee of the University of Zambia. Written informed consent, in either English or Lozi, was presented to the study participant. The informed consent described the purpose and the objectives of the study, the procedures to be followed, and the study participants 'right of withdrawing from the study whenever they decided to do so. After explanation of the purpose of the study, a copy of the consent form was given to the study participant for signing; and thereafter the interview proceeded.

IV.15 CONFIDENTIALITY

Data collectors went to the areas they were assigned to collect data with a copy of the letters from the provincial health director and the district health directors allowing them to have access to PMTCT registers at health centers and hospital levels. I was the principal researcher responsible for analyzing and interpreting data in the present study. Nonetheless, I had no access to identifying study participant information beyond the ID numbers and age which do not reveal the participants identity, and which remain the only identifiers in the datasets used in this study. I ensured that data collectors respect the promise of the necessary human protections. Participants' questionnaires and informed consent forms were stored in a manner to maintain confidentiality of interviewees.

IV.16 ETHICAL CONSIDERATIONS

Issues related to the HIV pandemic are still very sensitive; for this reason, the interview took place in privacy, and study participants' answers were treated with confidentiality, and the participants' names were replaced with confidential study ID numbers so that the interviewees remained anonymous. The purpose of the study was explained to the participants; and thereafter, they were requested to sign a consent form as their participation was voluntary. Participants were

informed that they were free to withdraw from the study any time she feels so. HIV positive mothers who refused to participate in our study or decide to withdraw were not compelled to stay on; nor were they denied any form of medical attention or treatment.

After collection and interpretation of data, all questionnaires were sent to the provincial office of the ministry of health where it is kept under lock.

Formal permission to carry out the study was received from:

1. Higher degrees committee of the University of the Western Cape.
2. University of Zambia research ethical committee
3. The provincial director of Health, Western province of Zambia.
4. The District Director of Health, Western province of Zambia.
5. The HIV positive breastfeeding mother.

IV.17 COMMUNICATION OF OUR STUDY RESULTS.

This MPH mini-thesis is completed as an output of this project. Result will be submitted to the ministry of health that is offering health care and HIV related programme to the population in Mongu district, as well as other organizations such as Catholic Relief Service and Center for Infectious Disease Research in Zambia which are implementing HIV related projects for people living with HIV/AIDS in the district. Our findings will be communicated to these local organizations and to the ministry of health at district, provincial and national levels.

As we are researching on challenges related to the WHO recommended infant feeding options, we are of the view that approaches to tackle the HIV positive mothers' challenges will be successful if there is at higher levels such as district, provincial, national and international levels, an understanding of those challenges, and difficulties. For this reason, advocacy at these levels will be necessary.

V. RESULTS

Our study was focused on data collected from 195 participants. We collected information on the age of study participants, the level of education, their marital status, and occasion at which they tested positive. For HIV positive mothers who were divorced or were living in separation (living in the same house with the husband but not having sex), we found out whether their marital status was related to their HIV positive status. In addition, we assessed the knowledge of study participants on PMTCT, exclusive breastfeeding and mixed feeding; and further we found out the infant option used by each study participant and with whom they discussed their infant feeding options. We also asked questions on the challenges faced by study participants with their opted WHO infant feeding option. The following tables summarise our findings:

TABLE I: STUDY SAMPLE DISTRIBUTION

Age Group	Frequency	Percentage
15-20	23	11%
20-25	38	19%
25-30	52	26%
30-35	47	24%
35- 40	23	11%
40-45	10	5%
45-50	2	1%
TOTAL	195	100%

The average age of our study participants is 28.7 years, with 95% confidence interval of 28.7 ± 4 years. Table I displays a description of the study sample according to age groups. A total of 195, out of the 200 approached HIV positive mothers, participated in the study. During our study, 23 participants were in the age group 15-20, representing 11% of study participants; 38 in the age group 20-25, representing 19%; 52 participants in the age group 30-35 representing 26%; 47 participants in the age group 30-35, representing 24%; 23 participants in the age group 35-40, representing 11%; 10 participants in the age group 40-45, representing 5%; and 2 participants

were in the age group 45-50 or 1% of the total number of HIV positive mothers interviewed during our study.

TABLE II: EDUCATION LEVEL OF STUDY PARTICIPANTS

Level of Education	Frequency	Percentage
None	4	2%
Lower primary School (Grade 1-4)	11	6%
Upper primary school (Grade 5-7)	60	30.7%
Basic secondary school (Grade 8-9)	69	35.3%
Senior secondary school (Grade 10-12)	34	17.4%
College/University	17	8.7%
TOTAL	195	100%

Table II displays the level of education of study participants who participated in the study. 35.3% of HIV positive mothers reached basic secondary school level of education, 30.7 % went with their studies up to upper primary school, and 17.4 % reached senior secondary school while only 8.7% went to college/university, 2% had never attended school, and 6% attended only lower primary school education.

TABLE III: MARITAL STATUS

Marital Status	Frequency	Percentage	95% C I
Single	71	36.4%	29.7-43.1%
Married	81	41.5%	34.6-48.4%
Divorced	20	10.2%	6-14.4%
Widow	13	6.6%	3.1-10%
Separated	10	5.1%	2.1-8.1%
TOTAL	195	100%	

On marital status, Table III shows that 36.4% of study participants were single with 95% CI of 29.7-43.1%; 41.5% of participants were married with 95% CI between 34.6-48.4%; 10.2% of participants were divorced with 95% CI between 6-14.4%; 6.6% of participants were widows with 95% CI between 3.1 -10%; and 5.1% of participants were living in separation with 95% CI between 2.1- 8.1%.

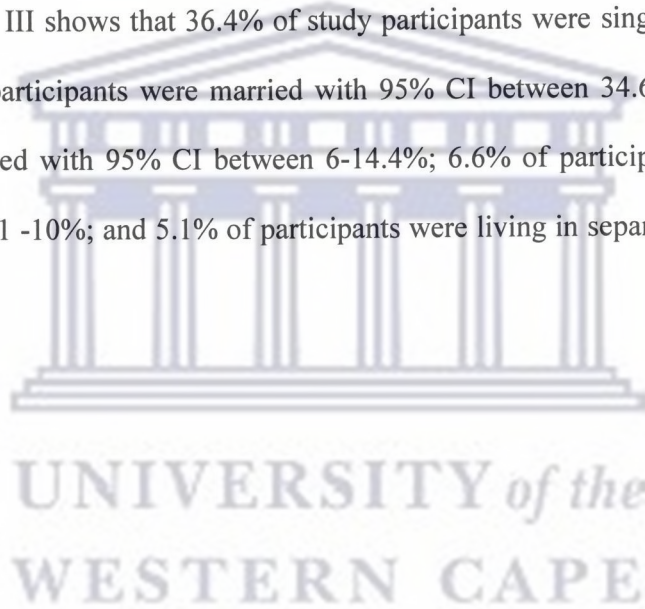


TABLE IV: REASON FOR DIVORCE/SEPARATION

Total Divorce/ Separation	Reason	Divorce	Separation	Total
	Related To HIV + Status	10 (50%)	4 (40%)	14
	Not Related To HIV+ Status	10 (50%)	6 (60%)	16
TOTAL		20 (100%)	10 (100%)	30

On the reason for divorce, we discovered that out of the 20 divorcees, 10 participants representing 50% were divorced for reasons related to their HIV positive status, and while for the other 10 participants (50%) the reasons of divorce was not related to their HIV positive status. As for the study participants living in separation, out of the total of 10 HIV positive mothers, 4 participants said that the reasons of separation was their HIV positive status, while 6 participants HIV positive said that there was no relationship between their marital status and their HIV positive status.

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TABLE V: OCCASION OR EVENT THE PARTICIPANTS TESTED POSITIVE

Occasion / Event Tested Positive	Frequency	Percentage	95% C I
PMTCT when pregnant	144	73.8%	67.6-80%
VCT without illness	36	18.4%	13-23.8%
VCT when sick	14	7.1%	3.5-10.7%
When donating blood	1	0.05%	0.02-0.08%
Total	195	100%	

Table V shows that 73.3% with 95% CI between 67, 6-80% of participants knew their HIV status through PMTCT when they were pregnant through 'opt out' approach or routine screening of pregnant women at antenatal clinic; 18.4% with 95% CI between 13-23.8% went for VCT without any illness and 7.1% with 95% CI between 3.5-10.7% discovered that they were HIV positive when they fell sick. 1 participant representing 0.05% with 95% CI between 0.02-0.08percent came to know her HIV positive status when wanting to donate blood.

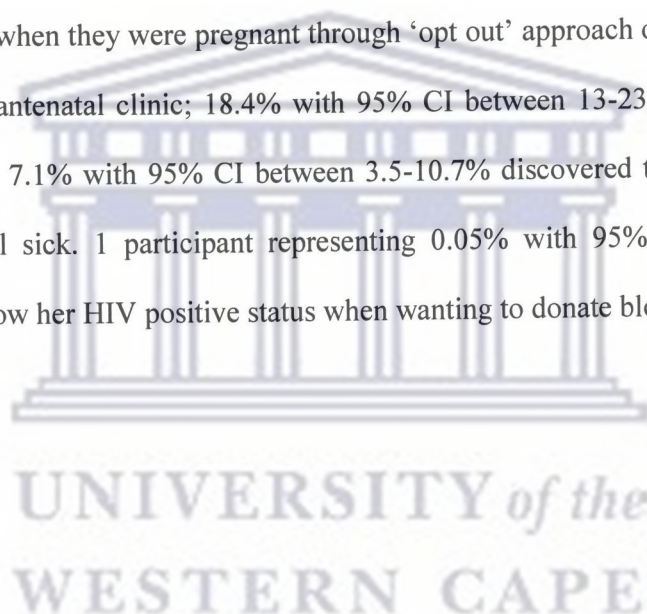


TABLE VI: PEOPLE AWARE OF STUDY PARTICIPANTS HIV POSITIVE STATUS

Those aware of The Participant Status	Frequency	Percentage	95% C I
None for fear of stigmatization and discrimination.	18	9%	6.9-11%
Husband	36	18%	12.6-23.3%
Participant's Relatives	73	37.4%	30.6-44.2%
Participant's Relatives and Friends	4	2%	0.03-3.96%
Husband & Participant's Relatives	43	24.1%	21-27.16%
Husband, Participant's Relatives and Friends	5	2.5%	0.3-4.7%
Father to the child, Participant's relatives and Friends	2	1%	0-2.4%
Majority of people in the community	14	7%	3.4-10.6%
Total	195	100%	

During data collection, interviewers tried to find out from study participants whether they talked of their HIV positive status to other people. As displayed in Table VI, 9% of participants with 95% CI between 6.9-11% said that they have kept their HIV positive status to themselves for fear of stigmatization and discrimination, 18% of participants with 95% CI between 12.6- 23.35, said only their husbands know their status, 37.4 % of participants, with 95% CI between 30.6 – 44.2%, said that only their relatives know about their status while their husbands are unaware; 2% of participants with 95% CI between 0.03-3.96%, have discussed with their relatives and friends; 24.1% of participants with 95% CI between 21- 27.16% have opened up to their husbands and their relatives; 2.5% of participants with 95% CI between 0.3 – 4.7% have talked to their husbands, relatives and friends about their HIV positive status , 1% of participants with

95% CI between 0- 2.4% have discussed with father to the child , participant’s relative and friends ; while 7% with 95% CI between 3.4 -10.6% said that the majority of people know about their HIV positive status.

TABLE VII: INFANT FEEDING OPTION

INFANT FEEDING OPTION	Frequency	Percentage	95% C I
Exclusive Breastfeeding	95	48.7%	41.6-55.7%
Formula Milk	61	31.2%	24.7-37.7%
Mixed feeding	39	20%	14.4-25.6%
Total	195	100%	

Table VII shows that out of the total 195 participants who were interviewed, 95 participants representing 48.7%, with 95% CI between 95.66 – 98.14, opted for exclusive breastfeeding as their infant feeding option, 61 participants representing 31.2%, with 95% CI between 0.65- 5.49%, HIV positive mothers opted for formula milk, while 39 participants or 20% with 95% CI between 14.4-25.6% of participants opted for mixed feeding.

TABLE VIII: KNOWLEDGE ABOUT EXCLUSIVE BREASTFEEDING FOR HIV POSITIVE WOMEN

Knowledge about exclusive breastfeeding	Frequency	Percentage	95% C I
Up to 6 Months	189	96.9%	95.66-98.14%
More than 6 Months	6	3.07%	0.65-5.49%
Total	195	100%	

Table VIII shows that 189 study participants or 96.9%, with 95% CI between 95.66- 98.14%, of HIV positive mothers who participated in the study knew that the WHO recommended period for

exclusive breastfeeding women for HIV- positive women was between 4 to 6 months while 3.07%, with 95% C I between 0.65- 5.49%, thought that the recommended period is more than 6 months.

TABLE IX: NUMBERS OF MONTHS THE MOTHER INTENDS TO BREASTFEED EXCLUSIVELY

Duration of Breastfeeding	Frequency	Percentage	95% C I
Up to 6 Months	63	53.4%	46.4 – 60.4%
Beyond 6 Months	55	46.6%	43 – 50.2%
Total	118	100%	

Table IX shows that out of 118 interviewees, 63 participants or 53.4%, with 95% CI between 46.4- 60.4%, intended to breastfeed for 6 months while 55 participants representing 46.6% , with CI between 43-50.2%, expressed their intention of breastfeeding for more than 6 months.

TABLE X: REASONS TO BREASTFEED FOR MORE THAN 6 MONTHS

Reasons To Breastfeed For More Than 6 Months	Frequency	Percentage	95% C I
Financial constraints	32	58.1%	54.6 – 61.6%
Fear of discrimination and stigmatization	12	21.8%	16-27.6%
Fear of discrimination, stigmatization and financial constraints	11	20%	14.4-25.6%
Total	55	100%	

We interviewed 55 HIV positive mothers who intended to breastfeed for more than 6 months to find out the reasons why they decided to breastfeed for that duration. As displayed in Table X,

we discovered the following: 32 participants or 58.1%, with 95% C I between 54.6-61.6%, of HIV positive mothers intended to do so for financial reasons, 12 participants or 21.8% , with 95% C I between 16-27.6%, HIV positive mothers planned to breastfeed for more than 6 months for fear of discrimination and stigmatization, and 11 participants or 20%, with 95% C I between 14.4-25.6%, HIV positive mothers said that they preferred to do so because they have both financial constraints and fear of discrimination and stigmatization as reasons

TABLE XI: IS MIXED FEEDING OF INFANT RECOMMENDED IN PMTCT?

Mixed Feeding	Frequency	Percentage	95% C I
Yes	29	14.8%	9.8- 19.8%
No	166	85.1%	80.1-90.1%
TOTAL	195	100%	

Assessing knowledge of WHO infant feeding option among HIV positive mothers who participated in the study, we discovered as shown in Table XI 166 HIV mothers who participated in our study or 85.1% participants, with 95% C I between 80.1- 90.1%, said that mixed feeding was not recommended in PMTCT, while 14.8% participants, with 95% C I between 9.8 - 19.8 %, said that mixed feeding of infant born from HIV positive mothers was recommendable.

TABLEXII: DID YOU DISCUSS WITH SOMEONE YOUR INFANT FEEDING OPTION?

Feeding Discussed?	Option	Frequency	Percentage	95% C I
YES		159	81.5%	76.05-86.95%
NO		36	18.5%	13.05-23.95%
TOTAL		195	100%	

On whether HIV positive mothers discussed their infant feeding options with someone, Table XII shows the following: 159 HIV positive mothers interviewed or 81.5%, with 95% CI between 76.05- 86.95%, had discussed the feeding option of their infants with someone; while 36 study participants or 18.5%, with 95% C I between 13.05- 23.95 %, did not discuss the opted infant feeding option with someone.

TABLE XIII: PERSON DISCUSSED WITH THE INFANT FEEDING OPTION.

Person discussed with the infant feeding option.	Frequency	Percentage	95% C I
Husband	36	22.6%	16.73-28.47%
Husband and relatives	29	18.2%	12.8- 23.6%
Husband, relatives and health care providers	4	2.5%	0.3-4.69%
Husband and health care providers	8	5%	1.94-8.06%
Father to child	3	1.8%	0-3.67%
Father to child and relatives	8	5%	1.94-8.06%
Relatives	51	32%	25.45-38.55%
Relatives and Health care providers	8	5%	1.94-8.06%
Health care providers	12	7.5%	3.8-11.2%
Total	159	100%	

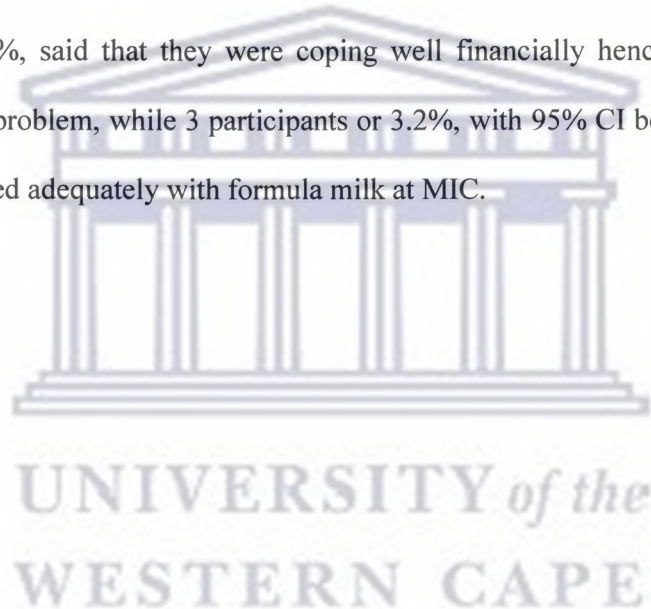
Table XII shows that 36 participants or 22.6%, with 95% CI between 16.73-28.47%, had discussed their infant feeding option with their husbands, 29 participants or 18.2%, with 95% CI between 12.8-23.6%, had discussed with both husband and their own relatives, 4 HIV positive mothers or 2.5 % , with 95% CI between 0.3-4.69%, had discussed with their care providers, 8

participants or 5% ,with 95% CI between 1.94-8.06%, had discussed with their husbands and health care providers, 3 participants or 1.8% , with 95% CI between 0- 3.67%, had discussed with the father to the child, 8 study participants or 5%, with 95% CI between 1.94-8.06%, had discussed with the father to the child and relatives, 51 HIV positive mothers or 32% interviewee, with 95% CI between 25.45-38.55%, had discussed with their relatives only, 8 study participants or 5% of interviewee, with 95% CI between 1.94-8.06%, had discussed with their relatives and health care providers, and 12 study participants or 7.5%, with 95% CI between 3.8-11.2%, had discussion with their health care providers only.

TABLE XIV: ANY PROBLEM FACED BY NON- BREASTFEEDING MOTHERS?

PROBLEM FACED BY NON BREASTFEEDING MOTHERS?	Frequency	Percentage	95% C I
Yes, financial constraint	25	26.6%	20.4-32.8%
Yes, stigma and discrimination	5	5.3%	1.86-8.14%
Yes, financial constraint, sigma and discrimination	3	3.2%	0.7-5.7%
Yes, inadequate supply of F. milk at OVC and MIC	4	4.3%	1.45-7.15%
No, family copes financially	53	56.9%	51.3- 62.5%
No, because of family is assisted with F. Milk at MIC	3	3.2%	0.7-5.67%
TOTAL	93	100%	

During our interview, 93 participants said that they were not breastfeeding. Table XIV displays different problems faced by non – breastfeeding HIV positive mothers who participated in our study. 25 HIV positive mothers out of the 93 non- breastfeeding HIV positive mothers, representing 26.6%, with 95% C I between 20.4- 32.8% of interviewees, said that they had financial problems as they had to buy formula milk; 5 participants or 5.3%, with 95% C I between 1.86- 8.14%, faced problems related to stigma and discrimination; 4 participants or 4.3% , with 95% C I between 1.45-7.15%, had problems related to inadequacy of supply of formula milk from OVC programme and MIC (Mother Infant Care programme). Other participants stated that they had no problem; for example, 53 HIV positive mothers or 56.9%, with 95% CI 51.3-62.5%, said that they were coping well financially hence the purchase of formula milk was not a problem, while 3 participants or 3.2%, with 95% CI between 0.7-5.67%, felt that they were assisted adequately with formula milk at MIC.



VI. DISCUSSION

VI.1 INTRODUCTION AND RELEVANCE

This study aimed at assessing HIV positive mothers' knowledge of WHO infant feeding options and at looking at the challenges these mothers were facing in relation to the WHO recommended infant feeding options in Mongu district. Firstly, our study on WHO recommended infant feeding options was very important in the sense that so far no study on PMTCT had been conducted in western province as the majority of research on PMTCT and other public health issues are being conducted in big cities such as Lusaka, Copperbelt and Livingstone provinces. With this in mind, our study was the first one in the province to research on issues related to PMTCT from a province which is located far from the capital city and far from the line of rail. Secondly, it is common knowledge that in Zambia the majority of people live in poverty and unemployment. And western province where the study was conducted is among the provinces that lag behind economically; with as a result, high level of poverty and unemployment among the majority of people. Poverty and underdevelopment fuel the HIV epidemic. Moreover, poverty is one of the drivers of HIV epidemic as it reduces an individual ability to avoid becoming infected. This can be illustrated by the fact that lack of income may lead people to engage in high risk activities such as sex work. Poverty makes a woman vulnerable to HIV/AIDS; and consequently, she may not be in a position to negotiate for protected sex. Moreover, poverty is associated with lower education which may in turn be associated with lower awareness of measures to prevent HIV infection. It should also be born in mind that the poorer the individual, the less likely that individual will have access to treatment, care, preventive interventions and health education (UNAIDS, 2003). With this background, findings from our study on WHO recommended infant feeding options, in Mongu district, are of great importance in the sense that they will reflect the challenges many HIV positive mothers are facing across similar areas of the country in regard to the implementation of the WHO recommended infants feeding options. As breastfeeding is the

traditional way of feeding the infant in many families, across the country, our study can be also considered as of great importance at a national level as its findings can be generalized to the rest of the country because many families consider breastfeeding of the infant as the normal, culturally acceptable, safe and cheaper way of feeding infants.

VI.2 GENERAL CHARACTERISTICS OF THE SAMPLE

VI.2.1 AGE AND EDUCATION OF STUDY PARTICIPANTS

Our study intended to interview 200 HIV positive mothers during the two months scheduled for data collection in the selected health institutions in Mongu district. As participation in the study was voluntary, 195 HIV positive mothers consented to take part in the study, representing a non-respondent rate of 2.5%. All the selected 195 HIV positive mothers who accepted to participate in the study had infants, aged between 6 months and 2 years.

The ages of participants in our study ranged between 15 and 48 years, with an average age of 28.7 years (95% CI 24.7- 32.4). It should be pointed out here that the average age of women attending antenatal clinics in Mongu District is 25 years. With this in mind, our study sample had a slightly higher average age than the general district antenatal clinic (ANC) population. However, the difference in average age of our sample population compared to the average of ANC population is not statistically significant within 95% confidence interval.

Because the majority of study participants had a level of education above Grade 4 and as our study focused on assessing the level of understanding of WHO infants feeding options among HIV positive mothers, it was assumed that HIV positive mothers who participated in the study were able to understand issues related to WHO infant feeding options as presented to them by health care providers during antenatal clinics, or before their discharge from maternity wards after delivery, or at under 5 clinic in their respective health centers. However, it should be noted

that generally the level of education was low among our study participants as only 26.1 % had reached senior secondary school or College/University while the remaining less than 75 % had only basic secondary education or below. These findings show how education is still a serious challenge among women, especially those living in poor setting such as Mongu district. The lack of education among women explains why they are generally economically disadvantaged compared to men. Further, the lack of education is a barrier to women's ambitions as they can not eye viable or well paying jobs, hence making them vulnerable to gender- based violence, abuse, exploitation and HIV. Commenting on education , UNAIDS(2003) in its publication entitled *Accelerating Action against AIDS in Africa* stated that while good – quality education is a powerful weapon against AIDS, the situation across sub – Saharan Africa is that only 57% of children are enrolled in primary schools. The situation is compounded by the fact that these children who have no access to education are the same children who years down the line become fathers and mothers. The relationship between HIV and education is also illustrated in The World Bank publication, entitled *Accelerating the Education Sector Response to HIV/AIDS in Africa: A review of World Bank Assistance*. It is stated in this publication that the more educated young individuals were, the more they were likely to have adopted safer behaviour including knowing their HIV status through VCT, delaying their sexual debut and using condoms. In the same publication, it is further asserted that the pattern of safer behaviour was even stronger among women as there was evidence that the more educated women were the more there was likelihood of them having fewer sexual partners (Bakilana, Bundy, Brown, Fredriksen, 2005). There is relationship between education, standard of living and vulnerability to HIV infection among women. Moreover, it is asserted that women with secondary or higher education are at least five times more likely to have comprehensive knowledge of AIDS than their counterparts who lack formal education (The Global Coalition on Women and AIDS, 2006). For example, in our study, out of 195 participants, only 52% had reached secondary school and 8.7% had

University and College level of education. This is a great challenge in the sense that HIV programme that aims to reduce women's vulnerability to HIV should consider women's empowerment, through education, as a top priority. This approach can be explained by the assertion that the higher the education the higher the prospect of getting employment and having an acceptable standard of living.

VI.2.2 MARITAL STATUS AND DISCLOSURE

On marital status, we observed that 71 participants were single representing 36 % (95% CI 29.7-43.1. %); 81 participants were married representing 41.5 % (95% CI 34.6-48.4%); 20 participants or 10.2 % (95% CI 6.6-14.4%) were divorced; 13 participants or 6.6 % (95% CI 3.1-10%) were widows and 10 interviewees or 5.1 % (95% CI 2.1-8.1%) participants were living in separation. We also look at the divorcees and those in separation to find out whether their respective marital status was related to their HIV positive status. We discovered that out the 20 divorcees, 10 or 50% said that they were divorced because of their HIV positive status while the remaining 50% stated that there was no relation between their HIV positive status and their marital status. For those who were living in separation, out of 10 HIV positive mothers living in separation, 4 participants or 40% said that they were not living with their husbands because of their HIV positive status, while 6 participants or 60% said that their marital status had nothing to do with their HIV positive status. The rate of divorce and separation related to HIV positive status among our study participants is a matter of concern as it impedes the fight against the HIV pandemic. It was stated that the most common barriers to disclosure of HIV status in developing countries are: fear of abandonment, rejection and discrimination, violence, upsetting family members, and accusation of infidelity. Women's fear of abandonment was closely tied to fear of economic support from their partners. This situation is explained by the fact that in developing countries resources are extremely scarce and women's access to resource independently of their partner is uncommon. It is for fear of losing economic support that many women would opt not

to disclose their HIV positive status (Medly, A., Garcia – Moreno, C., McGill, S., & Maman, S., 2004). Apart from fear of abandonment, rejection and discrimination, violence, upsetting family members and accusation of infidelity, there is stigma which in Zambia is a source of concern as well. Zulu (2005), in his paper entitled *Fear of HIV serodisclosure and ART success: the agony of HIV positive married women in Zambia*, found that two third of married women who were started antiretroviral therapy had not disclosed their HIV status for fear of blame and abandonment. Ogden and Nyblade (2005) stated that the extremely important consequence of stigma is its effect on people's ability and willingness to disclose their HIV positive status to others. These two authors asserted that women were living in HIV fear to disclose their HIV status to their most intimate partners for fear of violence and abandonment.

Skunodom et al (2006) believe that women who disclose early their HIV positive status would benefit not only from earlier psychological support provided by counselors, family and friends, but also from earlier uptake of interventions designed to reduce vertical transmission of HIV. With this in mind, it is clear that disclosure of HIV status is very important in PMTCT programme. Doherty et al (2006) asserted that more discussion and openness about the HIV positive status of mothers within the households is important in the sense that it might shape community norms on infant feeding, and can further create an easier environment for HIV positive women to carry out their infant feeding choices.

VI.2.3 COUPLE COUNSELLING AND HIV TESTING DURING ANTENATAL VISITS

It was observed during our study that the majority of study participants or 73.8% were those knew their HIV positive status through ante natal screening (opt out approach) compared to those who had known their status during VCT without illness (18.5%), VCT when sick (7.1%) and VCT when donating blood (0.05%). With these results, it is obvious that the uptake of HIV testing is high during ante natal visits. It is then important to explore ways and put in place, at

national level, policy and guidelines so that ante natal visits are used as an opportunity for couple counseling and testing.

It should be born in mind that in the fight against HIV pandemic and HIV/AIDS related stigma, what is important is to find ways of bringing the husband in the picture of HIV testing so that he is also tested when the pregnant mother comes for antenatal visits as this will reduce potentially stigmatization, discrimination, victimization and abandonment at couple – level. It will also further promote joint responsibility and decision – making regarding the infant feeding option in case the mother is HIV positive. In the same vein, De Cock et al (2002) asserted that increased efforts are required to arrange for couples to be tested together for HIV infection, so that HIV /AIDS can be approached as disease of the family and of society. In another paper, De Cock et al. (2003) stated that counseling and testing of couples can help the two partners to be aware if one of them is HIV- infected, so that they take measure to protect the seronegative partners in such relationships, and thus reduce the risk of their children being orphaned. Evan (2000) also supported his paper the idea of couple testing by asserting that it may be a disadvantage for only the woman to be tested in the absence of her partner being tested as this may result in undue blame and other negative consequences. For these reasons, he suggested that ideally the woman and the partner should be tested at the same time as this approach promotes joint responsibility and decision – making regarding sexual practice, reproduction, maternal care and infant care. In relationship to infant feeding, the advantage of the couple counseling is that there will not be reason for the HIV positive mother to hide her status from her husband or to find herself in a situation of mixed feeding whereby she will breastfeeding in the presence of the husband to show that all is fine while in the absence of the husband she will try to give formula milk because her conscious is not at peace as she feels that it is wrong to deliberately infect the innocent child with HIV. HIV testing of the couple can also help the husband and the HIV

positive mother to cope with the perceived stigma and discrimination from relatives or members of the community. However, the component of post counseling should be given particular attention as in case the male partner is negative, the HIV positive mother can be stigmatized, discriminated and even abandoned by her husband and the husband's relatives. And in a setting like Mongu where the level of poverty is high, especially among women, an abandoned HIV positive mother can find life very difficult as she may be the only one to look after her infant, and to feed the infant according to WHO recommended infant feeding guidelines.

VI.2.4 APPROACHES TO HIV TESTING IN PMTCT

Because HIV testing is done for different purposes in different context, it is argued that it will be inappropriate to advocate for the application of one model- voluntary counseling and testing – to all settings. It is asserted that though self-initiated HIV counseling and testing and prevention counseling allows people to voluntarily learn their status and reduce risk acquisition or transmission of HIV infection, some literature advocate that every African adolescent and adult should know his or her HIV status, and he/she should be retested in case of potential exposure. Further, it is a well known fact that African programmes to reduce mother- to- child transmission of HIV have been affected by low uptake of HIV testing and associated interventions (DeCock, Marum and Mbori-Ngacha, 2003). This explains why it is necessary to use other HIV testing approaches such as the opt out approach. The purpose of the opt-out approach to testing is to do antenatal testing of all pregnant women unless they actively refuse. According to this approach, all women receive standard information but emphasis is on post test counseling for those infected with HIV. It should also be pointed out that this approach is part of an integral preventive health service which consists of routine screening for infections such as malaria, syphilis and hepatitis. During this routine testing, there is no requirement for formalized counseling or written informed consent (DeCock, Marum and Mbori-Ngacha, 2002). Because of the lack of formalized counseling and written consent, many women consider the testing as a

mandatory one, especially that it is present to them when they come to seek health service such as ante natal clinics and skilled obstetrical assistance when they come to the labour ward for delivery. Commenting on HIV testing, Evan (2000) argued that mandatory testing of women in pregnancy is a violation of human rights and it is not acceptable. He believes that counseling should be done on a voluntary basis, with informed consent and carried out in privacy and the results must be dealt with in a confidential manner. He further pointed out that if testing is carried out then women need to be informed of the benefits of HIV testing and how the test may influence various therapeutic options. Further, he argued that there are many issues surrounding HIV testing and how individuals cope with HIV positive results. According to Evan (2000), issues of stigma and discrimination are also major problems experienced by people living with HIV/AIDS. De Cock and al (2002) in their paper argued that routine HIV testing differs from mandatory testing in that this approach implies a default policy of testing unless an individual specifically decide not to have the test done. They further asserted that routine HIV testing is done as part of medical and prevention best practice such as blood pressure monitoring and syphilis screening, because specific actions are undertaken on the basis of a positive results. For all these reasons, De Cock and al (2002) argued that routine testing should not require specific consent or pretest counseling provided that all the pregnant women are informed that the testing is part of the package of services for which they are voluntarily attending. While these arguments and counter arguments sound academically convincing, the reality on the ground is that when the opt out approach is presented as a package to pregnant women, health care providers generally do not inform clients that the routine testing is a service which they can voluntarily take or refuse. It is with this in mind that in areas such as Mongu and other areas in Zambia the opt out approach is looked at by pregnant mothers as a mandatory testing especially that they are subjected to such testing without their consent; and the test is offered to them when they come to seek health services such as antenatal visit and delivery when in labour. In the same vein, it is

important to emphasize on the fact that many women in Mongu district are not aware that they have the option of opting out. The perception of mandatory character of the opt out approach can be illustrated with commonly used sentences among members of the public and the health care providers such as *Musali Kaufula yaitwezi ulukela kutatubiwa ka kokwani ka HIV* (A Lozi sentence which literally can be translated as; every pregnant woman should be test for HIV) , there are also in other provinces, and even in Lusaka, sentence such as *Muzimai aliyense ali di pakati aenera ku pimidwa* (A Nyanja sentence which has the same meaning like the Lozi sentence). Basing on these arguments, it should be noted that routine testing can not be looked at as not mandatory at all as there is no consent form signed by pregnant women and generally information is not availed to them on whether they have the right to refuse the test; nor should it be considered as fully mandatory as there is no component of coercion attached to it. As stated by De Cock and al (2002), for a successful programme that aims at preventing the transmission of HIV from mother to child, HIV testing of pregnant women should be considered as a component of obstetrics in Africa, including rapid testing during labour for women whose HIV status is unknown, so that all HIV – exposed infants can benefit from preventive antiretroviral drugs. To show how important routine testing of pregnant women can be in the fight against HIV epidemic and in the prevention of mother to child transmission of the virus, our study found that the analysis of data collected from the 195 HIV positive mothers who participated in the study revealed that the majority of study participants representing 144 participants or 73.8% (95% CI 67.6-80%) of participants knew their status through PMTCT program where they were tested at ante natal clinic or in labor room. 32 HIV positive mothers, representing 18.4% (95% CI 13-23.8%) knew their HIV positive status through VCT without illness, 14 participants or 7.1% (95% CI 3.5-10.7%) knew their HIV status through VCT when they were sick while 1 participant representing 0.05% (95% CI 0.02-0.08 %) of study participants had known her status when she wanted to donate blood. The fact that the majority of people had known their HIV

status through PMTCT program shows how important the opt –out approach is in the fight against the HIV pandemic. It should also be pointed out that our study findings on the increase uptake of HIV testing through opt out approach concurred with Moses et al (2008) findings. In their study conducted in Lilongwe, they found that the uptake of HIV testing among women who attended ante natal care was at 100%. While Evan’s arguments on mandatory testing sound ethically correct, it is a well fact known that VCT uptake in Zambia is still poor as less than 15% of the total population know their HIV status (MOH, 2006). This situation characterized by poor uptake of VCT was also observed in our study where only 18.4 %(95% CI 13-23.8 %) of HIV positive mothers have known their status through VCT. Our findings on poor VCT uptake concurred with Rankin et al’s observation that fear can cause pregnant women to avoid HIV testing and may force mothers to expose babies to HIV infection through breastfeeding as they do not want to arouse suspicion (Rankin et al., 2005). Ogden and Nyblade (2005) also found in their study that HIV and AIDS – related stigma prevents people from taking HIV test and in case they do, many do not return for their HIV test results. Further, the two authors also asserted that many people will avoid going to the clinic for HIV testing because they fear to be seen there and to be suspected by members of the community as having HIV. In addition, it is asserted that people fear to go for HIV test because they feel that health workers will not keep confidential their results. In the same vein, De Cock et al (2002) argued that the reasons for women to refuse HIV testing are related to stigma, discrimination and potential consequences such as abandonment. Basing on these arguments and taking into consideration that in the Zambian context, the uptake of VCT is low while the HIV prevalence is high, it would be prudent to support any measure that can reduce the risk of transmission of the HIV virus from mother to child, such as opt –out approach and possibly health provider initiated counseling and testing. This is so because looking at the result that the opt out approach gave in our study, it is evident that this approach is a very important tool in the prevention of mother to child transmission of

HIV. Further, it should be noted that it is not in the best interest of the fight against the HIV epidemic to criticize any approach to HIV testing if that approach is not coercive, because all non-coercive approaches can play a role in the prevention of mother-to-child transmission of the HIV; and, therefore reduce the spread of HIV epidemic in the general population. With all these reasons in mind, we can argue that De Cock et al (2002) were right to argue that the perceived benefit and rights of women to refuse testing need to be weighed against the risks to infants of being exposed to the virus which in a breastfeeding population results in 40% or more of exposed infants being infected and dying prematurely.

VI.2.5 HIV POSITIVE STATUS DISCLOSURE AND ITS CHALLENGES

In our study, 18 participants representing 9%(95% CI 6.9-11%)of HIV positive mothers said they kept their HIV positive status as a secret for fear of discrimination and stigmatization, 36 participants or 18% (95% CI 12.6-23.3 %) had talked about their status to their husbands, 73 participants or 37.4% (95% CI 30.6-44.2%) had discussed with their relatives, 4 participants or 2%(95% CI 0.03- 3.96%) had opened up to their friends and relatives; 43 participants or 24.1% (95% CI 21-27.16%) had discussed with both husbands and relatives; 5 participants or 2.5%(95% CI 0.3- 4.7%) have managed to talk to their husbands, relatives and friends. Further, 2 participants or 1 %(95% CI 0.2- 2.4%) said that the father to their children, their friends and relatives were aware of their HIV positive status; while 14 participants or 7 %(95% CI 3.4- 10.6%) stated that their HIV positive status is known by the majority of the people. While people may seem to be opening up, it is obvious that many still fear stigmatization, discrimination, and abandonment. Because of these fears, even when an individual talked about her HIV positive status to others, she would prefer to talk to the person(s) she feels will no betray her by disclosing her HIV positive status to others. This explains why some of the participants in the study kept their HIV status secret and went to the extent of not discussing their status to their husbands as they fear that their partners can abandon or divorce them. Leshabari, Blystad and

Moland (2007) found in their study that disclosure to partner was greatly feared by study participants, and this had a bearing on and was an obstacle to the practice of replacement feeding. As Doherty et al (2005) stated, in their paper, HIV- positive mothers struggle with a recent HIV diagnosis, the uncertainty about how to care for the child, and fear about disclosure of their status. This lack of disclosure makes adherence to drugs regimens or infant – feeding guidelines difficult. Moreover, it is well known that access to voluntary testing and counseling is crucial as it allows individuals to discover their status and take advantage of important prevention and care interventions. It was clearly proven from literature that women, in particular, face a number of significant barriers to disclosure, and that some women face negative outcomes as a result of disclosure. For this reason, there should be in place strategies that would support women who want to disclose their HIV test results safely to their sexual partners, and to enable these women to avail themselves of prevention and treatment programme where they exist (Medley, Garcia- Moreno, McGill, and Maman, 2004).

VI.3 INFANT FEEDING

VI.3.1 KNOWLEDGE

The assessment of study participants' knowledge on exclusive breastfeeding revealed that 189 participants or 96.9% of the total number of participants (95%CI 95.66-98.14%) said that exclusive breastfeeding when the mother is HIV-positive should last 6 months, while only 6 participants or 3.07 % (95% CI 0.65-5.49%) believed that exclusive breastfeeding should last for more than 6 months. This shows that the majority of women have good knowledge of PMTCT and of the recommended duration of breastfeeding infants born from HIV positive mothers as per WHO guideline. This adequate knowledge is also seen in the question we asked interviewees on whether mixed feeding was recommended in a situation where the mother was HIV positive. The findings were that 29 participants or 14.8 % (95% CI 9.8-19.8%) said yes while 166 participants or 85.1 % (95% CI 80.1-90.1%) had a contrary view as they stated that

mixed feeding was not appropriate for infants born from HIV positive mothers. Contrary to Hallander (2005) who, in her paper entitled *Knowledge about Mother to child transmission in HIV through breastfeeding among primiparas in Lusaka, Zambia*, found that mothers lacked knowledge about MTCT, especially the risk of breastfeeding and they did not know that HIV is present in breast milk, in our study we discovered that HIV positive mothers have good knowledge of MTCT and they were aware of the presence of HIV in breast milk. This is explained by the fact that the majority of HIV positive mothers in our study said that breast milk when given to infants should not last for more than six months. Omari et al (2003) found that 85% of their study sample, which was constituted of 140 HIV positive mothers, had good knowledge of the risk of transmission of HIV through breastfeeding. The authors asserted that HIV positive mothers in their study reported that they were advised by midwives and nurses on infant feeding options. It was found that breastfeeding was the most opted infant feeding option, and that could be explained by the fact that firstly breastfeeding was the traditional way of feeding the infant, secondly health education message presented to pregnant mothers during ante natal clinics was that breast milk was the best infant's food, and thirdly fear of indirect disclosure of HIV status could be another reason compounded by the cost of replacement feeding and stigmatization related to not breastfeeding the infant in the African context.

VI.3.2 PRACTICE

On the infant feeding option, 95 participants or 48.7% (95% CI 41.6-55.7%) of study participants opted for exclusive breastfeeding, 61 participants or 31.2%(95% CI 24.7-37.7%) opted for formula milk while mixed feeding was an option used by 39 participants representing 20%(95% CI 14.4- 25.6 %). It should be pointed out that, taking into consideration the benefits of breast milk for the infant, it is very encouraging that 48.7 % (95% CI 41.6-55.7%) of HIV positive mothers opted for exclusive breastfeeding. Because of the benefits of breastfeeding, and their effects on child survival in poor setting, it would be important to promote and encourage

HIV positive mothers to exclusively breastfeed their infants for 4 to 6 months. Commenting on the benefits of early protective role of exclusive breastfeeding compared to the risk of HIV transmission through breast milk, Fowler (2008) argued that there was 3.5- 4 - fold increased hazard of infant infection by age four months among infants who were not exclusively breastfed compared to those who were. She suggested in her paper that high level of exclusive breastfeeding in the first four to six months of life can be achieved with effective counseling of mothers. The author further asserted that exclusive breastfeeding should be encouraged as the vast majority of early transmission occurred only in people with low CD4 count. Iliff and al (2005) in their paper emphasized also the importance of supporting exclusive breastfeeding among breastfeeding mothers, particularly in areas of high HIV prevalence, where many women do not know their status, and among HIV- positive mothers who opt to breastfeed. They also pointed out that early introduction of non human milk and solid foods should be strongly discouraged among HIV positive mothers as it increases the risk of HIV infection for babies born from HIV positive mothers and also the risk of diarrhea and respiratory infection for all babies. They further suggested that breastfeeding women who are known to be HIV positive should consider early cessation of breastfeeding, which should go along with support for nutritionally adequate and safe replacement feeding.

It was also found among our study participants who were breastfeeding that 63 participants or 53.4 %(95% CI 46.4- 60.4 %) intended to breastfeed for 1 to 6 months; while 55 participants or 46.6 %(95% CI 43-50.2%) opted to breastfeed for more than 6 months. The reasons for breastfeeding for more than 6 months were as follow: financial reason among 32 participants or 58.1%(95% CI 54.6-61.6%); fear of stigmatization and discrimination among 12 participants or 21.8%(95% CI 16-27.6%); and fear of discrimination, stigmatization and financial constrains among 11 participants or 20%, (95% CI 14.4-25.6%) of the total number of HIV positive

mothers who were breastfeeding. While the prevalence of HIV among women is high in Mongu district, the level of poverty is very high as well. This high level poverty explains why those who opted to breastfeed did so not only because breastfeeding is the traditional way of feeding infants in Mongu or for fear of discrimination and stigmatization, as not breastfeeding can arouse suspicion from relatives and members of the community, but also for financial constraints as formula milk is very expensive for the majority of families. Even HIV positive mothers who were receiving formula milk from programs such as MIC (Mother infant care) or OVC (orphans and vulnerable children) complained of inadequacy in the supply of formula milk. The danger of inadequacy of formula milk supply is that when the supply is inadequate and the HIV positive mother has no financial means to buy formula milk, she may find herself mixed- feeding her infant; and she may end up transmitting the HIV to her child. Not only that, when supply of formula milk is inadequate or insufficient, the mother may try to economize formula milk she has in her possession while awaiting the next supply, hence the risk of diarrhea, malnutrition and infectious diseases.

VI.3.3 RISKS RELATED TO FORMULA MILK AND MIXED FEEDING IN POOR SETTING

31.2 % (95% CI 24.7-37.7%) of participants opted to formula feed their infants while 20 % (95% CI 14.4-25.6%) said they were for mixed- feeding. This finding raised also serious concerns because of the risks related to formula milk. In regard to risks associated with replacement feeding, it has been asserted that improper use of breast milk substitute (if mixed with tainted water or if over diluted) can be the cause of severe malnutrition and fatal infectious diseases. Bearing this in mind, it is evident that the risks associated with replacement feeding may outweigh the benefits, depending on the local environment. In the case of sub Saharan Africa, for example, where diarrhea is the leading cause of death in children under five, a sound assessment of the safety of replacement feeding should be made before opting for replacement feeding. And

this assessment would depend on access to clean water, a reliable supply of formula milk and the availability of instruction on how to safely use formula milk (Interagency Coalition on AIDS and Development, 2001). 2000 WHO guideline on formula feeding recommended that HIV positive mother who find it culturally acceptable to prepare formula milk hygienically should have the basic necessities of clean environments and water and proper sanitation; and where formula milk is not acceptable, feasible, affordable, sustainable and safe, HIV positive women are recommended to breastfeed exclusively for the first few months (WHO, 2000). Talking about water and sanitation, the situation in sub Sahara – and Mongu is a rural district in sub Sahara- is very bad. Coutoudis, Coovadia and Wilfert (2008) asserted that a global “ water crisis” or the lack of clean water kills five times more children than HIV/AIDS and curtails economic growth, especially in Africa. For example, sub Sahara Africa loses 5% of its GDP every year , more than what it obtains through aid, due to lack of access to water and sanitation.. And above all, more than 1.1 billion people do not have proper access to clean water and 2.6 billion lack access to sanitation. With this mind, it would not be prudent to recommend formula milk in poor setting, such as Mongu district.

An other concern about the risk of formula milk in poor setting is that alluded to by Doherty et al (2007) who found, in their study, that amongst women who intended to formula feed, 29% gave breast milk at some point between birth and 36 weeks. The authors further asserted that reliability of formula supplies was found to be poor in their study, with 73% of women who intended to formula feed reporting that they have been to the clinic at least once between birth and 36 weeks and found that the clinic did not have formula milk in stock. As a result, the most given fluids during these times were breast milk, purchased formula milk and sugar water.

VI.1.3.4 EXCLUSIVE BREASTFEEDING VERSUS REPLACEMENT FEEDING

Despite the fact some study participants opted for replacement feeding, breast milk is generally the most used food by mothers for their infants. This was evidenced during our study where 48.7% (95% CI 41.6-55.7%) of participants opted for exclusive breastfeeding, while 31.2% (95% CI 24.7-37.7%) opted formula milk and 20% (95% 14.4-25.6%) were mixed feeding. In a setting such as Mongu where breastfeeding is the cultural way of feeding infants, not breastfeeding or formula feeding the infant will definitely arouse suspicion; and it should also be pointed out that with the knowledge that people have on PMTCT in the community, a woman who does not breastfeed is looked at as de facto HIV positive. To emphasize the importance of breast milk as a traditional way of infant feeding in Zambia, Sankey, Kateula and Mwansa (2005) stated, in their paper, that most Zambian women consider formula milk as a supplement to breast milk and not as an alternative baby food. Leshabari et al (2007) stated that, in countries where breastfeeding is the norm, formula feeding has been noted to alert a woman's family or community that she is HIV positive, and may result in stigma and other negative repercussions. The authors further argued that replacement feeding may be interpreted as a sign of HIV, especially if there is no good alternate explanation for replacement feeding, such as cesarean section. As knowledge of HIV transmission through breastfeeding is disseminated into local communities, a woman who opts for replacement feeding will be carefully watched. The cost involved, combined with the scorn and suspicion that is perceived to foster, thus making replacement feeding only for women who have disclosed their HIV status to their partner, or who are not living in close proximity to another family member. It is also important to bear in mind that the main issue is not that breastfeeding is the traditional way of feeding the infants, but that the average Zambian can not afford to exclusively formula feed their babies because of economic constraints.

Commenting on the same issue of breastfeeding, an article by PATH (2008) stated that avoiding completely breastfeeding is not a safe or feasible option for many HIV- positive mothers in resource poor areas. Although commercial infant formula is the recommended infant feeding option for HIV positive mothers in developed country, mothers in poor setting face issues such as the expense of infant formula, lack of access to safe water, unsanitary living conditions, and increase risks to their children from common childhood illnesses, inadequate health care, and social cultural factors. In the same vein, Doherty et al (2007) argued that where conditions for appropriate formula feeding can not be met, women should be supported to breastfeed, as inappropriate formula feeding appears to carry the greatest risk of HIV transmission or death. Further, the same authors asserted that assisting HIV positive women to make an appropriate infant –feeding choice should be regarded as a difficult task that requires complex information to be given regarding competing risks. They therefore suggested that the currently available guidelines need to be simplified and combined with practical tools and simple assessment algorithms that counselors can use to assess individual and environmental characteristics known to alter risk of feeding options. It is with this in mind that they proposed that infant HIV – free survival could be improved if HIV – positive women who choose to formula feed fulfilled at least three criteria (piped water, fuel and have disclosed their HIV status); and that without these criteria fulfilled a choice to breastfeed exclusively would be more appropriate. We did not incorporate in our study such criteria in order to assess the challenges HIV positive mothers were facing in Mongu district vis-à-vis the WHO recommended infants feeding options. However, it should be pointed out that Doherty et al (2007) used these criteria in a context where formula milk was supplied freely to HIV positive mothers.

VI.3.5 FACTORS DETERMINING DISCUSSION OF WHO INFANT FEEDING OPTIONS AMONG STUDY PARTICIPANTS

Out of 195 participants, 159 or 81.5% (95% C I 76.05- 86.5%) said that they discussed with someone their feeding options while 18.5 % (95%CI 13.05-23.95%) revealed that they did not

discuss with anyone. Out of the total number of participants who discussed their infant feeding options with someone, 22.6 % (95%CI 16.73-28.47%) have discussed with their husbands, 18.2% (95% CI 16.73-28.47%) with husband and relatives, 2.5%(95% CI 0.3-4.69%) with husbands, relative and health care providers, 5% (95%CI1.94- 8.06%) with husbands and care providers, 1.8%(95% CI 0-3.67%) with father to child, 5%(95%CI1.94- 8.06%) with father to child and relatives, 32%(95% CI 25.45-38.55%) with relatives, 5%(95%CI1.94- 8.06%) with relatives and health care providers, and 7.5%(95% CI 3.8-11.2%) with their health care providers. This shows that the decision to opt for one of the WHO infant feeding options was not made by the mother alone but a product of discussion between the HIV positive mothers and any other person. In Zambia, because of routine prenatal screening, an HIV positive mother discuss generally WHO recommended infant feeding guideline with her health care provider during ante natal clinic or before discharge from maternity ward. As stigma and discrimination are still high in Mongu in particular and Zambia in general, the discussion of infant feeding outside heath care provider – patient circle is selective as the HIV positive mother chooses who to discuss with her infant feeding option. It is for this reason that the HIV positive mother can either discuss with the husband in case she has informed him about her HIV positive status or with any other person she trusts, and who she believes will not divulge her status to others who may stigmatized and discriminate her. In addition, HIV positive mothers will open up to the person who has empathy and who she feels will support her morally. It should be pointed out that in many countries and communities, the stigma – associated with HIV and the resulting discrimination can be as devastating as the illness itself. People living with HIV/AIDS can be abandoned by their spouses and /or families; they can be socially ostracized, and can end up losing job and properties; they can be subjected to violence; and they can be denied medical services, care and support. These consequences, or fear of them, mean that people are less likely to come for HIV testing, disclose their HIV status to others, and adopt HIV preventive behaviour, or access treatment, care and

support. Disclosure is key for outcomes ranging from condom use to care-seeking attitudes. Many studies have found that stigma and discrimination affect adversely disclosure to partners, health care providers and family members (UNAIDS, 2007). It is for this reason that Doherty et al (2005) stated, in their paper, that HIV- positive mothers struggle with a recent HIV diagnosis, the uncertainty about how to care for the child, and fear about disclosure of their status. This lack of disclosure makes adherence to drugs regimens or infant – feeding guidelines difficult.

VI.4 CONCLUSION

In all societies and cultures the birth of an infant is a very important and joyful event. However, the era of HIV epidemic has been a challenge to humankind as the infant can be infected with HIV through mother to child transmission of the virus. With this in mind, it is the responsibility of the couple, the family, the community and all organizations that are involved in HIV/AIDS programmes to ensure that HIV- free infants are born. To achieve this, programmes such as the opt out approach, initiation of HIV positive pregnant women to highly active antiretroviral therapy, short course therapy with either Zidovudine or Nevirapine , and the WHO infant feeding guidelines are of great importance.

While the contribution of WHO infant feeding options in PMTCT had been demonstrated, there is evidence that in poor setting the implementation of such a programme has its own challenges. As breastfeeding is the traditional way of feeding the infant in many societies and cultures, any attempt to discontinue breastfeeding at 6 months or to formula feed the infant raise lot of concerns in the community. Besides, knowledge of issues related to HIV/AIDS and PMTCT is adequate in many communities; therefore, a mother who decides to formula feed her infant or to breastfeed for only six months would be looked at as carrying HIV, and may be stigmatized, discriminated and victimized. Because of fear of stigmatization, discrimination, victimization and abandonment, HIV positive mothers are generally scared to disclose their HIV positive

status. This has serious implications on the implementation of WHO infant feeding options as the HIV mothers can ignore all together the WHO infant feeding options in order to protect herself from stigma, victimization and discrimination; or she can find herself breastfeeding in public to avoid suspicion of her HIV positive status by members of the community; and formula feed in private as her conscience does not allow her to deliberately transmit HIV to her infant. In case the HIV positive mother decides to disclose her status, she would open up to a few selected persons who she feels would support her psychologically, morally and materially, and would not divulge her HIV positive status to others.

It should also be pointed out that in poor setting the majority of people live in poverty. For this reason, HIV positive mothers who opt to formula feed are also faced with financial constraints as formula milk is expensive. In addition there are challenges related to the preparation of formula milk such as lack of access to clean water, risk of over dilution of formula milk with the intention to economize formula milk while awaiting the next supply. This exposes the infant to malnutrition and infectious diseases. Though exclusive breastfeeding is safe, feasible and affordable option in many poor settings; financial constraints affect also HIV positive mothers who decided to breastfeed exclusively, as after six months of exclusive breastfeeding the infant must have nutritionally balanced foods which many families have no access to.

On the basis on these challenges, a successful implementation of WHO infant feeding options can only be possible if other ingredients such as couple testing and counseling, educational and economic empowerment of women , reduction of stigma and discrimination , disclosure of HIV positive status and reduction of poverty are seriously tackled. In the next chapter, we would make recommendations which are key for the effective implementation of WHO infant feeding guidelines.

VII. CONCLUSION AND RECOMMENDATIONS

VII.1 CONCLUSION

The present study entitled WHO recommended infant feeding options: Assessment of the challenges faced by HIV positive mothers in Mongu district was conducted in Mongu district, a district, located in the western province of the Republic of Zambia. We interviewed 195 participants. Nurses experienced in PMTCT and HIV/AIDS programmes were trained in data collection and carried out interviews in the selected health centers.

During interview it was discovered that the majority of study participants knew their HIV status through routine screening of pregnant women at ante natal clinic or in the labour ward; while the remaining of study participants had known their status either through VCT when they were sick and advised by the health care provider to take an HIV test or VCT without illness and when donating blood.

It was observed in the study that the knowledge of PMTCT and WHO infant feeding options among the study participants was good as the majority of mother knew how infants born from HIV positive mothers should be fed. Exclusive breastfeeding was the most chosen infant feeding option, followed by formula milk and mixed feeding. The majority HIV positive mothers exhibit adequate knowledge on the duration of exclusive breastfeeding as per WHO recommended duration for exclusive breastfeeding. Despite a high level of knowledge among those who intended to breastfeed, a big number were for the idea of breastfeeding for 6 months and a significant number of participants intended to breastfeed for more than 6 months.

It was discovered that the decision to opt for WHO infant feeding options by HIV positive mothers was influenced by fear of stigmatization, discrimination, victimization and abandonment

(divorce and separation). These were serious barriers which blocked many HIV positive mothers from feeding their infants according to WHO guideline as they do not want to be seen in the community as people carrying HIV. These reasons explain why some study participants, though knowing well the duration of exclusive breastfeeding, planned to breastfeed for more than 6 months because breastfeeding for 6 months only would have exposed their HIV positive status. It was also discovered that some study participants opted not to discuss their infant feeding options because of fear of stigmatization, discrimination, victimization and abandonment. For the same reasons, study participants had to discuss their infant feeding options in a selective way. Many discussed their infant feeding options with health care providers who knew their HIV positive status, through either 'opt – out' prenatal screening or VCT. Generally our study participants discussed their WHO infant feeding options with the persons they trusted and who they feel will keep secret their HIV positive status and who will give them moral support.

Lastly, it was discovered in our study that participants were also faced with financial constraints when deciding, for example, to formula feed their infants; and because of their financial constraints, those breastfeeding exclusively faced also problem after weaning their infants after 6 months of exclusive breastfeeding. This situation also explained why some study participants opted to breastfeed for more than six months as they weighed the possible risk of HIV transmission to their infants against the risk of starving their infants. The danger associated with such situation is that the HIV positive mothers may either mixed feed their infants; or economize the amount of formula milk supplied to them, hence exposing the infants to other risks such as malnutrition and infectious diseases.

VII.2 RECOMMENDATIONS

In the case of our study we feel that if the following barriers are tackled the implementation of WHO recommended infant feeding options will be successfully achieved in Mongu district:

- Fight stigma and discrimination through community sensitization, as they are obstacles to the disclosure of HIV positive status; and obstacles to easy adoption of one of the WHO recommended infant feeding option by an HIV positive mother.
- Assist HIV positive mothers in disclosing their HIV positive status as this will have positive effects on the implementation of WHO recommended infant feeding options.
- Empower women by increasing their access to education, because it has been proven that there is a relationship between HIV and education: The more educated women were, the more there was likelihood of having fewer sexual partners. And the more educated women are, the more they have comprehensive knowledge of HIV/AIDS.
- Empower women economically through access to jobs and other income generation activities as this will uplift their standard of living; and reduce their vulnerability to HIV/AIDS. And it has been established that empowerment of women will also increase their ability to disclose their HIV positive status to their partners as they will not fear divorce or abandonment; and furthermore economic empowerment will increase their ability to take care of their infants in case they are abandoned or divorced because of their seropositive status.
- Use of PMTCT as an entry point to couple HIV testing; and possibly a starting point for couple management of HIV/AIDS and its opportunistic infections.
- So far the opt out approach to HIV testing of pregnant women has its focus on post test counseling of women after delivery, leaving out men. A new approach in counseling which would put emphasis on post counseling of the couple should be considered. This new approach would be of great value in the sense that the choice of WHO recommended infant feeding option may emerge from the discussion between the health care and the couple after weighing the advantages and disadvantages of each option, and also taking into consideration the financial status of the couple.

VIII. ACKNOWLEDGEMENTS

This Master of Public Health degree project could not have been successfully conducted without the high quality of training I received from the University of the Western Cape. I am what I am today because members of staff and lecturers at the University of The Western Cape put their efforts to build me academically. I am grateful to you ladies and gentlemen. I am particularly indebted to Professor Debra Jackson who patiently supervised this research paper.

I take this opportunity to thank all the nurses who went out in the field to interview the selected HIV positive mothers and got their views on the challenges they encountered when deciding and implementing the WHO recommended infant feeding options for their infants. Thanks very much to you colleagues. Thanks also to the Provincial Health Director, Dr Albert Sitali, and District Health Director, Dr Liwalii, who gave us all the administrative supports and allowed us to go in the field for interviews.

Special thanks to Mr. Robby Nyambe, a friend and a brother, who had been there when I started this project; and who fixed again and again my small old generator whenever it broke down; and who day and night work with me on data to give them meaning. Robby, you are indeed a computer expert.

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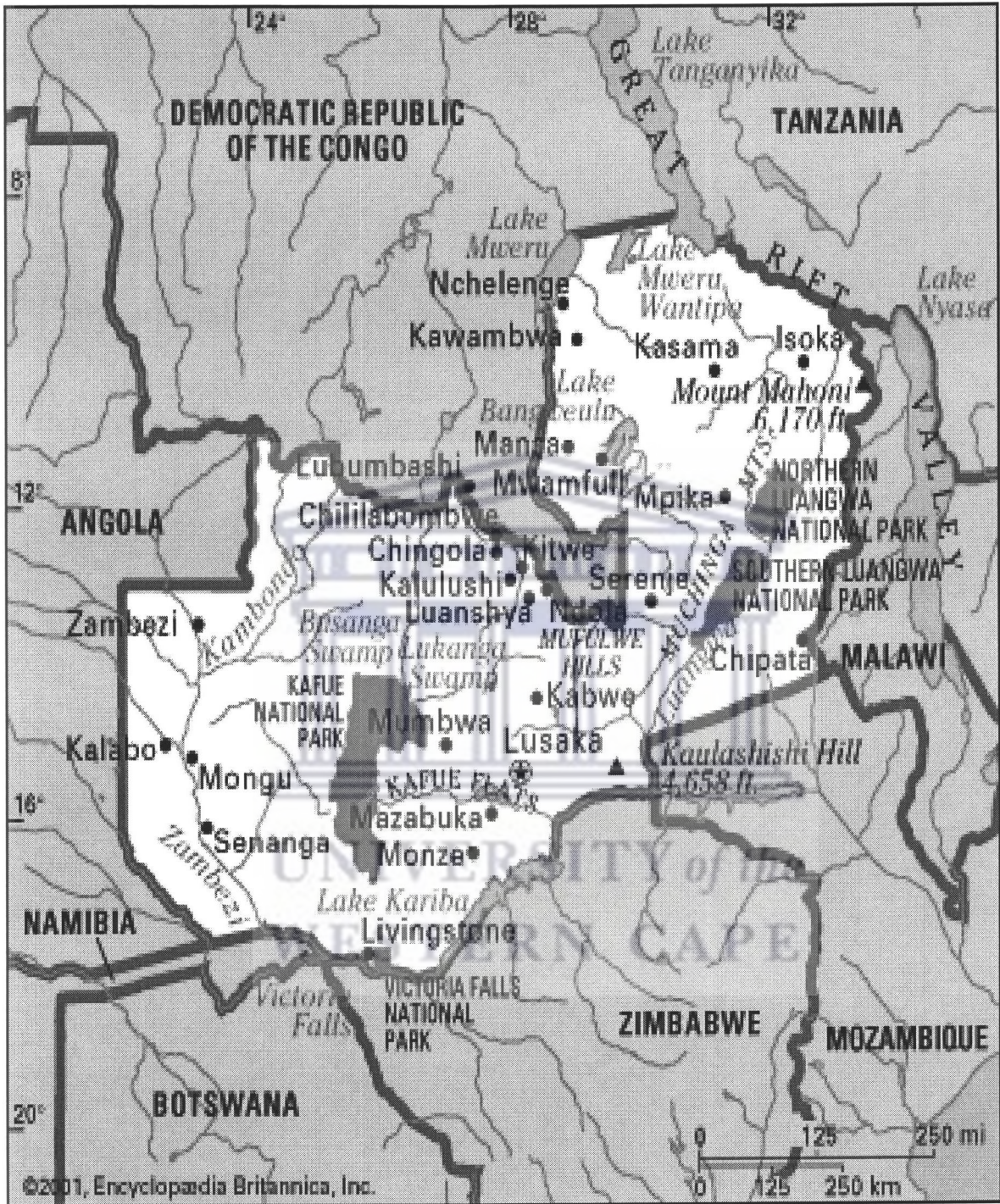
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APPENDIX 1: MAP OF ZAMBIA





APPENDIX 2: INFORMED CONSENTIN ENGLISH

Date:
Place at which the interview was conducted: Mongu District
Area:
Interviewer:
Tel: 0977445869
E-mail: kelakazola@yahoo.com
Institution: University of the Western Cape
Interviewee's Study's ID:

1. I am Dr. Henry Ilunga, a student at the SOPH, University of the Western Cape. My Student number is 2520708. As part of my Masters in Public Health I am required to submit a Mini thesis. I will be focusing on the Challenges HIV positive mothers are facing in the application of the WHO recommended infant feeding options in Mongu. I am accountable to Professor Debra Jackson, my supervisor.

2. The purpose of the interview is to explore the level of understanding of WHO infant feeding options amongst HIV positive mothers, to identify problems they are facing in choosing the feeding option appropriate for their infants and to have an insight in the challenges, and difficulties these mothers are facing at family and community level in Mongu district in regard to the WHO infant feeding options.

For this reason, my team and I would like you to respond to this questionnaire. The interview will take approximately one hour. We are taking this opportunity to assure you that during this interview all the answers you give us will be kept confidential. Your name will not appear on the questionnaire but only a pseudonym. Your participation in this interview is voluntary and you are free to refuse to participate or withdraw at any time.

3. Interviewer's agreement: I accept to participate in the study:

Date.....
Signature.....
Thumb print.....

Witness

Date.....
Signature.....



APPENDIX 3 INFORM CONSENT IN LOZI

PEPA YA KUTUWANO

Lizazi

Sibaka kone ku bezi litatubo

Sibaka sa mutatuli.: Mongu

UWC nombolo ya muniti ki 2520708

Email: kelakazola@yahoo.com

Sikolo: University ya kwa wiko wa Cape.

Pseudonym libizo:

1.Kina Doctor Henry Ilunga Kasongo, ni muniti fa sikolo sa buiketo bwa sicaba(SOPH) University ya kwa wiko wa cape . Sina kalulo ya Masters mwa buiketo bwa sicaba ni kupilwe kuya ka buku swani bwa thesis. Nikatalima kaza matata eba fumana bashemi ba basali baba nani kakokwani ka HIV mwa Mongu kuitusisa mukwa o lumelizwe ki ba katengo ka WHO kamo ba lukela ku utela limbutu ni ikalabela ku Debra Jackson yena muzamaisi waka.

2. Libaka la litatubo kiku fumana kuli kiba bakai baba nani kutwisiso ya mwa ku utela limbututu mwa hala bashemi baba nani ka kokwani ka HIV. Kuya ka katengo ka buiketo lifasi loteyona(WHO) ili kuziba matata eba fumana kaku keta mukwa oswanela ku uta ka ona limbututu za bona ni kufumana manyando , linzila ni matata eba fumana mwa malapa ni mwa libaka zeba pila kuzona mwa sikiliti sa Mongu ku amana ni katengo ka bwiketo bwa lifasi lote ka (WHO) ka mwa ku utela limbututu. Ka moo wo lukupa kuli mu alabe lipuzo ze. Litatubo nako ye kuma fa hola ilinwi. Lunga nako ye, kumi sepisa kuli ona likalabo kaufela ze mulufile haluna kulizibahaza kwa batu basili lika bulukwa sina kunutu. Mabizo amina ana ku bonahala fa pepa ya lipuzo kono sibaka feela ku unga kalulo mwa litatubo mo kiku mina kui itombola mi mu lukuhile kuhana kunga kalulo kapa kutuhela kanako kaufela.

3. Buitamo bwa mu tatubi
nalumela kunga kalulo mwa tuto
Lizazi
Saina.....
Kunyatela

4.Paki
Lizazi.....
Saina

APPENDIX 4: QUESTIONNAIRE
QUESTIONNAIRE

1. Identity

Study ID	
Age	
Village	
District	
Province	
Country	

2. Level of Education

Level of Education	None	Lower Primary school (Grade 1-4)	Upper Primary school (Grade5-7)	Basic secondary school (Grade8-9)	Senior secondary Grade 10-12	University/ College level
Tick in appropriate cell						

3. Marital Status

Marital Status	Single	Married	Divorced	Widow	Separated
Tick appropriate cell					

4. If divorced or separated, give reason of divorce or separation:

Reason of divorce	Related to her HIV positive status	Not related to her HIV positive status
Tick appropriate cell		

5. At which occasion or event were you tested positive?

Occasion or Event	VCT without illness	VCT when sick	PMTCT when pregnant	When donating blood
Tick appropriate cell				

6. Is any one aware of your positive status:

People aware of the participant HIV status	No one	Husband	Participant's Members of family	Participant's friends	Church members or other community group	The majority of people in the community
Tick appropriate cell						

7. If not, why have you not talked to anyone about your HIV status?

8. Which feeding option are you using for your baby?

Infant Feeding Options	Exclusive breastfeeding	Formula Milk	Breast Milk and Formula Milk	Breast Milk And Solid Food	Goat Or Cow Milk	Other please describe
Tick Appropriate Cell						

9. If Breastfeeding, for how many months or years do you intend to breastfeed your child?

Month for Breastfeeding	At least 6 months	Up to two years
Tick Appropriate Cell		

10. If more than six months, what (is) are the reason(s)?

11. If an HIV- positive mother is breastfeeding, do you know how long it is recommended that she breastfeeds exclusively?

Month for breastfeeding in HIV-positive mothers	4 to 6 months	More than 6 months
Tick appropriate Cell		