

TOWARDS ELIMINATION OF MOTHER TO CHILD TRANSMISSION OF HIV IN ZIMBABWE. WHAT ARE EFFECTIVE DEMAND SIDE INTERVENTIONS TO REDUCE MTCT? A LITERATURE REVIEW.

**FRANCISCA ZANELE MLOTSHWA
ZIMBABWE**

Master of Science in International Health (MIH)

**KIT (ROYAL TROPICAL INSTITUTE)
HEALTH EDUCATION/
VRIJE UNIVERSITEIT AMSTERDAM (VU)**

WORD COUNT: 13078

Towards elimination of mother to child transmission of HIV in Zimbabwe. What are effective demand side interventions to reduce MTCT? A literature review.

A thesis submitted in partial fulfilment of the requirement for the degree of
Master of Science in International Health

By: Francisca Zanele Mlotshwa
Zimbabwe

Declaration:

Where other people's work has been used (either from a printed source, internet, or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirement.

The thesis '**Towards elimination of mother to child transmission of HIV in Zimbabwe. What are effective demand side interventions to reduce MTCT? A literature review**' is my own work.

Signature: 

Master of Science in International Health (MIH)

09 September, 2019 – 04 September, 2020

KIT (Royal Tropical Institute)/ Vrije Universiteit Amsterdam

Amsterdam, The Netherlands

September 2020

Organised by:

KIT (Royal Tropical Institute) Health Unit

Amsterdam, The Netherlands

In co-operation with:

Vrije Universiteit Amsterdam/ Free university of Amsterdam (VU)
Amsterdam, The Netherlands

Table of contents

List of abbreviations	iii
Glossary.....	v
List of tables.....	vi
List of figures.....	vii
Acknowledgements.....	viii
Abstract.....	ix
Introduction.....	x
Chapter 1: Background information on Zimbabwe.....	1
1.1 Geography.....	1
1.2 Socio cultural situation	1
1.3 Demography, literacy, and education	2
1.4 Socio-economic situation	2
1.5 Health system	2
1.6 Health situation	3
1.7 HIV and AIDS situation.....	4
1.8 Prevention and control of HIV/AIDS	4
Chapter 2: Problem statement, justification, objectives, and methodology	5
2.1 Problem statement and justification	5
2.2 Broad objective	7
2.3 specific objectives.....	7
2.4 Methodology	7
2.4.1 Search strategy	7
2.4.2 Inclusion and exclusion criteria	7
2.4.3 Study limitations.....	8
2.5 Conceptual framework.....	8
Chapter 3: Factors influencing mother to child transmission of HIV and effective interventions for reducing MTCT	10
3.1. Introduction	10
3.2 Ability to perceive one’s health need	10
3.2.1 Health literacy and beliefs.....	10
3.2.2 Trust and expectations	11
3.3 Ability to seek for health care.....	12
3.3.1 Personal, social values and culture	12

3.3.2 Gender, autonomy, and stigma.....	12
3.4 Ability to reach health care services	14
3.4.1 Living environment, transport, mobility, and social support.....	14
3.5 Ability to pay for health care services	14
3.5.1 Income and assets, social capital, and health insurance.....	15
3.6 Ability to engage	17
3.6.1 Empowerment information, caregiver, and adherence	17
3.7 Health policy issues relating to PMTCT.....	18
3.8 Summary of findings	18
Chapter 4: Relevant evidence based effective demand side interventions in Sub-Saharan Africa.....	18
4.1 Introduction.....	19
4.2 Interventions on gender related factors promoting PMTCT	19
4.3 Interventions that address HIV associated stigma in PMTCT.....	20
4.4 Interventions that promote social support for positive pregnant and breastfeeding women enrolled in PMTCT	21
4.5 Interventions addressing financial constraints	23
Chapter 5: Discussion.....	24
Chapter 6: Conclusion and recommendations.....	29
6.1 Conclusion	30
6.2 Recommendation.....	30
References	31
Annex I –Table 1a. Health systems related interventions of PMTCT of HIV in Zimbabwe	38
Annex ii –Table 1b. Demand side interventions of PMTCT of HIV in Zimbabwe	40
Annex iii -Table 2. Search strategy	42
Annex iv –Table 3. Table summarizing the demand side interventions of PMTCT in SAA	43

List of abbreviations

ANC- Ante Natal care

ART – Anti Retroviral Therapy

ARV – Anti Retroviral

CHW-Community Health Workers

CRTC- Cluster Randomized Control Trial

EGPAF- Elizabeth Glaser Paediatric Aids Foundation

EMTCT – Elimination of Mother to Child Transmission

FP – Family Planning

HIV - Human Immunodeficiency Virus

HIV-1 Human Immunodeficiency type 1

IPV- Intimate Partner Violence

MI- Male Involvement

MoHCC – Ministry of Health and Child Care

MTCT- Mother To child Transmission

NSA- Network Support Agent

OIC- Opportunistic Infectious Clinic

PBWLH – Pregnant Breastfeeding Women Living with HIV

PCN- Primary Care Nurse

PLWH- People Living with HIV

PMTCT – Prevention of Mother To Child Transmission

RCT- Randomized Control Trial

SG -Savings Group

SMP – Safety Motherhood Promoters

SRHR- Sexual and Reproductive Health and Rights

SSA- Sub-Saharan Africa

UHC - Universal Health Coverage

UNAIDS – The Joint United Nations Programme on HIV and AIDS

UNICEF- United Nations Children’s Fund

USAID – United States Agency for International Development

WHO -World Health Organization

ZDHS – Zimbabwe Demographic Health Survey

Glossary:

Accessibility "is understood as the availability of good health services within reasonable reach of those who need them and of opening hours, appointment systems and other aspects of service organization and delivery that allow people to obtain the services when they need them" (1) (p.1).

Adherence is "the extent to which a person's behaviour, taking medication, following a diet and or executing lifestyle changes corresponds with the agreed recommendations from a health care provider" (2) (p.1).

EMTCT is defined as "mother to child transmission rate of HIV which is less than 2% for a non-breastfeeding nation and less than 5% for a breastfeeding nation and new paediatric HIV cases less than or equal to 50 per 100 000 live births " (3) (p.1).

MTCT of HIV is the transmission of HIV from an HIV positive mother to her child during pregnancy, labour, delivery, or breastfeeding (4).

Validation of EMTCT of HIV and / or syphilis- "validation is a term that is used to attest that a country has successfully met the criteria for EMTCT of HIV and or syphilis at a specific point in time. It implies that countries will also need to maintain an ongoing, routine, effective program interventions and quality surveillance systems to monitor EMTCT of HIV and or syphilis" (5) (P.12).

Option B+ is an option whereby all pregnant women living with HIV are commenced on lifelong ARVs at first contact (6).

List of tables:

Table 1a. Supply side PMTCT interventions in Zimbabwe

Table 1b. Demand side interventions in Zimbabwe

Table 2. Literature search string

Table 3. Table summarizing the demand side interventions of PMTCT of HIV in SAA

List of figures

Figure 1 Map of Zimbabwe and bordering countries

Figure 2 Levels of public health system in Zimbabwe

Figure 3 Conceptual framework of access to health care services by Levesque et al.

Acknowledgements

First, I thank God for all the blessings and grace that took me through this course. I thank the Missionary Sisters of the Precious Blood for all the support they gave me which allowed me to take up this course. I am grateful to the Franciscan Brothers of Amsterdam who provided me with accommodation in the months that I spent in Amsterdam. I am eternally grateful to my family, friends and well-wishers for the moral support and encouragement. I would also like to thank my colleagues at the university for the way we were there for each other through the course. More importantly, I am thankful to my thesis supervisor and academic supervisor for their support and guidance. I thank the university for a conducive atmosphere that allowed me to undertake my studies with access to all the resources that I needed.

Abstract:**Background:**

Zimbabwe is one of the countries globally with a high mother-to-child transmission (MTCT) of HIV. The study reviews demand side factors influencing MTCT of HIV and effective interventions from SSA focusing on main barriers identified.

Methodology:

A literature review of articles published between 2010 and 2020 was conducted. The findings were analysed using Levesque et al. 2013 access to health care framework, focusing on the demand side..

Results:

Health system based and community based interventions, that focus on main barrier-factors with varying degrees of effectiveness, were identified and analysed. The Levesque et al. 2013 framework aided to analyse a number of factors that influence the pregnant breastfeeding women living with HIV 's (PBWLH) ability to perceive, seek, reach, pay for services and engage in her health care.

Conclusion and recommendation:

Four main demand side factors were identified, including self-perceived and, community related stigma and gender-related issues, both of which negatively impact on health seeking behaviour; lack of social support to reach services; and financial constraints to afford indirect costs like transport expenses. Effective demand side interventions that reduce MTCT of HIV can be used but most often should be modified to suit the Zimbabwean context. A combination of interventions that have a synergistic effect is likely to yield positive PMTCT outcomes in the country. MoHCC of Zimbabwe should adopt community and health facility based strategies that aim at reducing stigma, empowering PBWLH financially and with decision making capacity about their health. Research on the transferability of these strategies is imperative.

Keywords:

Factors, Prevention of mother to child transmission of HIV, Positive pregnant women living with HIV, Access, Intervention, Zimbabwe, SSA

Introduction

The world experienced an emergence of a new virus about four decades ago. HIV claimed many people's lives until the discovery of the Anti-retroviral (ARV) drugs. The ARVs became a gamechanger and the backbone of the Human Immune-deficiency virus infection (HIV) program in many nations, including Zimbabwe. Although Zimbabwe is currently experiencing a period of severe economic meltdown coupled with varied social challenges, efforts to curtail the spread of HIV have been fruitful. There has been a 50% and 80% reduction of HIV prevalence among adults and children, respectively, in the last 15 years (7). The joint United Nations program on HIV and AIDS (UNAIDS) revealed that in 2018 Zimbabwe's incidence-Prevalence ratio of HIV was between 0- 2.99, showing an remarkable program to control HIV spread in a country facing the hyperepidemic (8). Zimbabwe initially started providing Prevention of mother to child transmission of HIV (PMTCT) services in only 3 pilot sites in 1999 with a nationwide scale up in 2002. The PMTCT program evolved from a single tablet to lifelong triple therapy management of HIV positive pregnant women according to the directive of the 2015 World Health Organization (WHO) guidelines (7).

My experience working with young people who have acquired HIV through vertical transmission made me particularly interested in the subject of elimination of Mother to child transmission of HIV (EMTCT). I have observed the psycho-social effects related to being born with the infection and the burden the disease poses on the healthcare system. Many young people are now able to live with HIV although healthcare providers and caregivers have to deal with issues like poor adherence to anti-retroviral therapy (ART) resulting from lack of acceptance of the HIV status, blame, and poverty. These issues are experienced as young people grow up while trying to cope with the demands of a chronic illness. The purpose of this study is to explore the demand side interventions regarding the prevention of MTCT that have been demonstrated to work in Sub-Saharan Africa (SSA). I hope the findings can contribute to policy formulation for the Ministry of Health and Child Care of Zimbabwe (MoHCC) as the nation moves towards EMTCT.

Chapter 1: Background information

1.1. Geography

Zimbabwe is a landlocked country in the southern part of the African continent sandwiched between South Africa, Botswana, Zambia, and Mozambique. It has a total surface area of 390 757 square kilometres. The country has good soil making farming and mining the major economic activities. In the past ten years, Zimbabwe has experienced droughts and low rainfall, which has part impacted on the economy (9).

Figure 1: Map of Zimbabwe and bordering countries (10).



1.2. Socio-cultural context

Eighty two percent (82%) of the population is comprised of the Shona ethnic group, 14% are Ndebele, 2% other African groups, 1% whites and the remaining 1% are Asians. Shona, Ndebele and English are the main spoken languages. There are 13 other languages from minority ethnic groups. Eight five percent of the population are Christians, 3% practice African traditional religion, 1% practice Islamic and other religions and 12% are non-religious (11). (10). In terms of socio-cultural organization, Zimbabwe is generally a patriarchal country with man in control of decision making in the family (12). Forty seven percent (47%) of women between the age group of 15-49 years experienced physical and sexual violence in their lifetime (ZDHS 2010-2011). Out of one in three (1:3) girls between the age of 14-17 years

experiencing sexual violence only 3% have received assistance due to low legal literacy among women in the country. In 2012 child marriage was reported to be at 50% in the country with the lowest recorded in Bulawayo town (13).

1.3. Demography, literacy, and education

In 2020 the United Nations projected the population of Zimbabwe to be 14 849 946 (14), with an average population growth rate of 1.4% in 2018 (14) (15). The population density was cited to be 37.3 per square kilometre in 2018 up from 32.8 in 2010 (15). Life expectancy in 2018 was reported to be 61.2 years up from 60.8 in 2017 (15). Males had an average life expectancy of 59.5 and females 62.5 by 2018. The country experienced declining birth rates from 36.5 per 1000 in 2010 down to 29.7 per 1000 in 2019. Within the same reporting period the crude death rate declined from 13.7 per 1000 people in 2010 to 7.8 per 1000 people in 2019 (15). This could be explained by the availability of ARVs in the public sector and an improved socio economic status for the general population which has conserved many lives (8). In 2018, the urban population was 32,2 % of the total population. The rate of urbanization was calculated at 2,19 percent per annum (15). By 2015, in terms of literacy, 86.5% of the population could read and write, and males had 88,5% literacy rate, while women were at 84,6%. This is a slight drop from the national literacy rate of 90,7% in 2003 (16). Ninety four percent of males and females completed primary school and 48% males compared to 47% females completed secondary education in 2012. More males (7.8%-10.92% (compared to females (5.71%-9.17%) completed tertiary education. (17).

1.4. Socio-economic situation

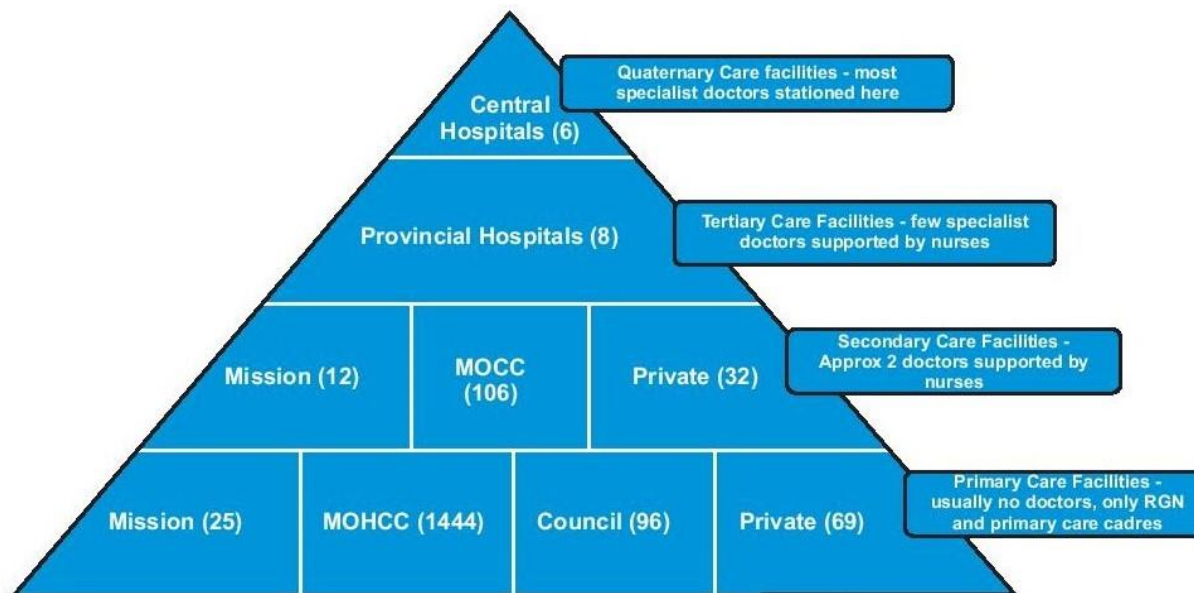
In the past 20 years the country has faced a lot of political and economic challenges which were marked by a controversial land reform program leading to donor aid withdrawal, poor performance of the agriculture driven economy and alienation from the international community (9) (10). The gross domestic product (GDP) was reported to be 22.9m USD in 2018 up from 20.5m USD in 2016 (9). Approximately 70.6 percent of the adult population are self-employed in the informal sector and mainly rely on subsistence farming with about 10% employed in the formal sector (18). In 2015 employment rates were generally higher in the urban than rural setting (18). The poverty rates at 1.90 USD per day were at 33.9% in 2017 up from 21.4% in 2011 (15).

1.5. Health system

The Ministry of Health and Child Care (MoHCC) of Zimbabwe is responsible for keeping all people in good health in the country, providing appropriate quality preventive and promotive health services for those needing care in the community (19). The health care provision is divided into the public, private for profit and private not for profit sector which includes faith-based organizations. Traditional healers are regulated through a branch within the Ministry of health in an effort to control their practice (20).

The public health system has four levels which function in collaboration and are linked by a referral system. These include the primary care level which compromise of clinics run by Primary care nurses (PCN), the secondary level includes district hospitals run by doctors and nurses, the tertiary level run by specialists, doctors and nurses and the quaternary level run by specialists, doctors and nurses. Clients are referred from one level to the next depending on their medical needs (20) (19).

Fig 2: The four levels of public health system in Zimbabwe (19).



In Zimbabwe 65% of healthcare is provided by the public sector. There were 1,6 physicians and 7,2 nurses for every 10000 people in 2010 (21). There is a 50% vacancy rate for doctors, midwives, laboratory, and environmental health staff due to the combined effects of a lack of staff for medical educational training, a high dropout rate on public health care posts. This compromises the quality of health care (19).

The Zimbabwe health care system is financed through domestic funding comprising of tax revenue, voluntary health insurance and out of pocket spending for services that have to be paid for (39%) and external donations contribute 55% of the budget. In 2018 Zimbabwe health budget allocation of 8,3 percent of the GDP was short of the sector requirements and of the 15% Abuja declaration target. This meant underfunding of the health sector resulting in high out of pocket spending (22). Patients over the age of 65 years and under the age of 5 years as well as pregnant women are exempted from paying for health care services but they have had to indirectly pay for these due to constant lack of consumables (19). The rest of the population has to make out of pocket payment since there is no universal insurance scheme, and with economic meltdown this has proven to be a challenge for many. The out of pocket spending was reported to be 39% of the total current health expenditure in 2016. This led to catastrophic health spending and further impoverishment of the poor (19).

1.6. Health situation

HIV and AIDS related deaths rank fourth among the top 5 causes of mortality among all age groups. The other conditions in the top five causes of death in the country include Acute respiratory infections, neonatal conditions, tuberculosis and meningitis (20). The fertility rate in 2018 was 3.615 births per woman down from 4.0 births per woman in 2014. Adolescent fertility rate on the other hand was reported to be 42.04 per 1000 women aged 15 -19 years

in 2018 (23) (15). The high adolescent fertility rate has been blamed on cultural and religious beliefs with over 77% of adolescents believing that contraceptive use is an indication of promiscuity (23). Maternal mortality rate slightly reduced from 480 deaths per 100 000 live births in 2015 to 458 deaths per 100 000 live births in 2017 (22) (10).

In Zimbabwe modern family planning (FP) coverage still lags behind with a reported rate of 67% of all women of child bearing age between 15 and 49 years. An unmet need of 10.4% of all women who want to stop or delay child bearing but are not on any FP method was reported in 2018. Socio-cultural and religious beliefs at community level have been implicated for this low coverage, although provider attitude who normally share the same cultural or religious beliefs especially towards unmarried adolescents is also contributory (23).

1.7. HIV AND AIDS situation

The total population HIV prevalence in the country has seen a reduction from 15.4 in 2010 to 12.7 in 2018. Approximately 1.3 million people in Zimbabwe were living with HIV in 2018 up from 1.2 million in 2010. Over 60% of these were women of childbearing age and 77 000 were children under the age of 15 years (8). Overall, there were 22 000 AIDS (Acquired immunodeficiency syndrome) related deaths recorded in 2018 down from 54000 deaths in 2010. Fifteen percent (15%) of these were among children of the age group between 0-14 Years (8). Data on how much of these paediatric infections was contributed by blood transfusion, vertical transmission and sexual transmission was not found.

Women are the most affected in that they comprise 60,83 percent of the population living with HIV. In 2019 new infections among young women aged 15-24 were more than double those among young men. Nine thousand young women accounted for new infections compared to 4 200 young men (8).

1.8. Prevention and control of HIV and AIDS program

The program is organized through a system of clinics and health facilities offering HIV testing Services (HTS), counselling and HIV preventive and therapeutic services. There are 17 static OIC sites and 22 mobile teams that provide HIV management outreach services across the country and PMTCT services are offered in health care facilities at all levels. The HIV program started in 2004 in the public sector (7).

Although testing services are commendable at population level with the first UNAIDS 90 between 90% in 2018, there is no disaggregated data of key populations and their partners. This information is important as it shows where the program needs to focus its resources. ART initiation was more than 95% for all ages, but no data was given for viral load suppression in 2018 (8). In order to reduce new infections, the country in 2016 introduced Pre exposure prophylaxis tailored towards high incidence populations like key populations and sero-discordant couples. This has remained at pilot level due to lack of funding (7).

The HIV and AIDS program is mainly donor funded by Global fund, PEPFAR and UNICEF. In 2017 the program spent 668 million USD and out of this the Government of Zimbabwe contributed 8.6% through an earmarked 3% AIDS levy contributed by the formally employed. The country spent 470 USD per capita in treating people living with AIDS in 2017 (7) (24).

Chapter 2:

Problem statement, justification, objectives and methodology

2.1. Problem statement and justification

More than 90% of the world's children living with HIV reside in Sub-Saharan Africa, where mother to child transmission (MTCT) of Human Immunodeficiency Virus type1(HIV-1) remains the most significant cause of pediatric HIV Infection (8). Without interventions the rate of HIV transmission from HIV infected mothers to their children is as high as between 25-40% in utero, at delivery and during breastfeeding (25). Furthermore, 50% of children infected through vertical transmission will die within two years if not receiving ART (26). MTCT of HIV has been shown to affect negatively household economy and to reduce health related quality of life among the affected individuals (26). Zimbabwe is one of the 22 countries globally marked as having a high burden of MTCT of HIV by WHO. Despite the availability of free Antenatal care (ANC) and PMTCT programs in some of these countries the prevalence of MTCT in SSA was reported to range between 15-40% (27).

A study conducted in 2014 using geospatial analysis of MTCT identified hotspots in Harare, Eastern Mashonaland West and Manicaland West had an MTCT rate ranging from 32% to 44% (28). Forty four percent is an outlier in this case since MTCT without interventions maximum is 40%. No age disaggregated data on the burden of MTCT of HIV was found. At least 96% of all pregnant women had attended one ANC visit in 2019 a rise from 93% in 2016. Seventy one percent (71.5%) of pregnant women attended 4 ANC visits in 2019 up from 2014(70.1%) (7) (29). In 2018 59 600 pregnant women who had tested positive for HIV were receiving lifelong Antiretroviral therapy (ART) compared to 21 100 in 2010 representing 94% and 29% of all pregnant mothers living with HIV, respectively. Early lifelong ART initiation in pregnancy has been shown to reduce the chances of vertical transmission of HIV significantly (8) (29) (30).

Generally high ART coverage was recorded in the urban provinces with Harare recording (107.52%) and the lowest coverage reported in a rural province, the Midlands (76%).The percentage in Harare above 100% is due to overestimation or underestimation of either the numerator or the denominator due to migration (31). Seventy eight percent of births by all women were attended to by skilled health workers in 2018 posing missed opportunities for offering HIV care services to pregnant women living with HIV for the remaining percentage (29). In my experience delivering in institutions by a skilled cadre offers an opportunity for HIV testing for pregnant women, retesting those who have previously tested negative and to give expertise care and ensure reduction in HIV transmission during labor and delivery. This offers a chance to start counselling on HIV transmission reduction during breastfeeding.

In a bid to increase HIV case finding of children infected in utero the country in conjunction with Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) introduced point of care testing for HIV exposed infants in high HIV burden districts increasing the number of results sent back to caregivers and reducing the turnaround time for results to 1 day in comparison to conventional early infant diagnosis methods with a turnaround time of up to about 3 months (32) This was a pilot study which is currently being evaluated for quality control associated with task shifting as the test is performed by nurses compared to being done in a standard

lab (33) (34). MTCT transmission rate at 6 weeks in 2018 was reported to be 7.56% down from 9.71% in 2015 with a final mother to child transmission rate of 8.5% in 2018 done three months after cessation of breastfeeding. No final MTCT of HIV data was found for 2015 (29) (34). The slightly high final mother to child transmission rate could be due to incident infection of mothers during the breastfeeding period of those who would have tested HIV negative during pregnancy. Preventive interventions like use of condoms need to be employed during the breastfeeding period.

According to WHO in order for a country to be validated for EMTCT its HIV MTCT rate 6 months post cessation of breastfeeding should be <2% for a non-breastfeeding nation and <5% for a breastfeeding nation with less than 50 new paediatric infections per 100 000 live births (29) . Zimbabwe reported less than 50 new paediatric cases per 100 000 live births by 2020 (31). No data for new paediatric infections per 100 000 live births from the previous years was found from literature .

The WHO has put forward four strategic pillars proven to reduce MTCT of HIV in an effort to guide health systems toward the goal of EMTCT of HIV. These are Primary prevention of HIV, prevention of unintended pregnancies among women living with HIV, prevention of MTCT using biomedical methods, provision of comprehensive care treatment and support and follow up for HIV positive women her HIV exposed infant family and partner. Zimbabwe has coopted these strategies into the national strategic plan for EMTCT of HIV (7) (34). The study focuses on the last two WHO strategic pillars of EMTCT of HIV since these are directly linked to PMTCT.

Health systems interventions in PMTCT of HIV have been extensively studied over a number of years and those applied are evidence based and have been proven to be effective. However, there is a need for more understanding of interventions that can be applied to mitigate these, especially to compare what works and that which is not effective in contexts that share similarities. Considering that enough is known pertaining to the health system interventions, I will focus this study on the effectiveness of demand side interventions from SSA. This means focusing on prevention of MTCT using biomedical approaches and provision of comprehensive care treatment and support and follow up of HIV positive women and their exposed infants, family and partner. These will be recommended to the Ministry of health and child care of Zimbabwe and other stakeholders involved in Pediatric HIV.

Tables 1a (Annex i) and 1b (Annex ii) illustrate the interventions found in literature that have been shown to reduce MTCT of HIV in Zimbabwe considering both the demand and supply side. The findings illustrate that there is a lot known concerning the interventions on the supply side. There is limited information concerning interventions addressing the demand side factors that enhance MTCT of HIV in Zimbabwe.

2.2. Broad objective

- To identify and analyze lessons learnt about the effectiveness of demand side interventions that have been tried and tested toward elimination of MTCT of HIV in Sub-Saharan Africa, in order to inform the PMTCT program in Zimbabwe and relevant stakeholders.

2.3. Specific objectives

- To identify and describe the demand side factors that influence MTCT of HIV in Zimbabwe
- To discuss and analyze the relevant demand side interventions focusing on biomedical methods to prevent MTCT of HIV and provision of comprehensive care, treatment and support for PBWLH in Sub-Saharan Africa.
- To make recommendations to the MoHCC of Zimbabwe and other relevant stakeholders about effective and non-effective interventions towards EMCT of HIV.

2.4. Methodology

The study was conducted by undertaking a literature review.

2.4.1. Search strategy

Search engines, PubMed, google, google scholar, and Cochrane data base were used to find relevant peer reviewed literature on EMCT of HIV, and the snowballing technique was applied to source additional relevant articles.

Information was also obtained from grey literature through google and relevant websites such as Zimbabwe MoHCC and partners such as EGPAF, United Nations Children fund (UNICEF); as well as relevant website such as WHO, UNAIDS and United State Agency of International Development (USAID). The search for literature was guided by the search string shown in table 2 (Annex iii).

2.4.2. Inclusion and exclusion criteria

All relevant peer reviewed papers published between 2010 and 2020 in English were included because of ease of understanding to the researcher. Reports and other grey literature from the same period, even if not yet published, were also included.

Studies from Sub-Saharan Africa with evaluations of relevant demand side interventions on prevention of MTCT, even if they portrayed negative effects or findings, were included. Pilot studies with good evaluation of demand side interventions were considered as well. Articles that are not in English and describe studies done outside Sub-Saharan Africa were excluded, except for reviews and Cochrane studies that involve countries in all continents.

2.4.3. Study limitations

The study is a literature review and depends on published and unpublished literature. This poses limitations due to inability to focus on the key issues of the study objective. It limits the chance to collect information in areas where there is data paucity in comparison to primary

data collection or secondary data analysis. Another drawback was that literature included was only in English and there could be more information from journals published in other languages. Furthermore, articles included were only between 2010 and 2020, excluding previous articles with potentially relevant information, not included in the years 2010-2020.

2.5. Conceptual framework

The demand side of the conceptual framework of access (figure 3) by Jean-Fredric Lévesque et al. 2013 was used to guide the literature search and to analyze the findings. There are a number of frameworks that analyze access to health care services such as Penchansky and Thomas (1981), Andy and Anderson (1974), and Peter et al (2002).

The Levesque et al. 2013 framework for health care access was chosen for this particular study as it explores extensively the factors that make a PBWLH to access health services according to various contexts of her living conditions, linking both the demand side and supply side factors. However, the framework does not include the elements of policy and stigma. I have discussed HIV related stigma under the ability to seek for health care services as it links to the independence of a PBWLH to access services. Policy issues relevant to demand side factors have been explored in the results section. For the purposes of this study only the demand side factors that influence MTCT of HIV and interventions linked to these were explored.

In this framework, access to health care services is viewed as the point of connection between the unique features of individuals, families, community, physical environment and those of Health systems. The process of accessing health care services involves identifying one's healthcare needs, seeking health care services, obtaining them and being rewarded with good health outcome (35).

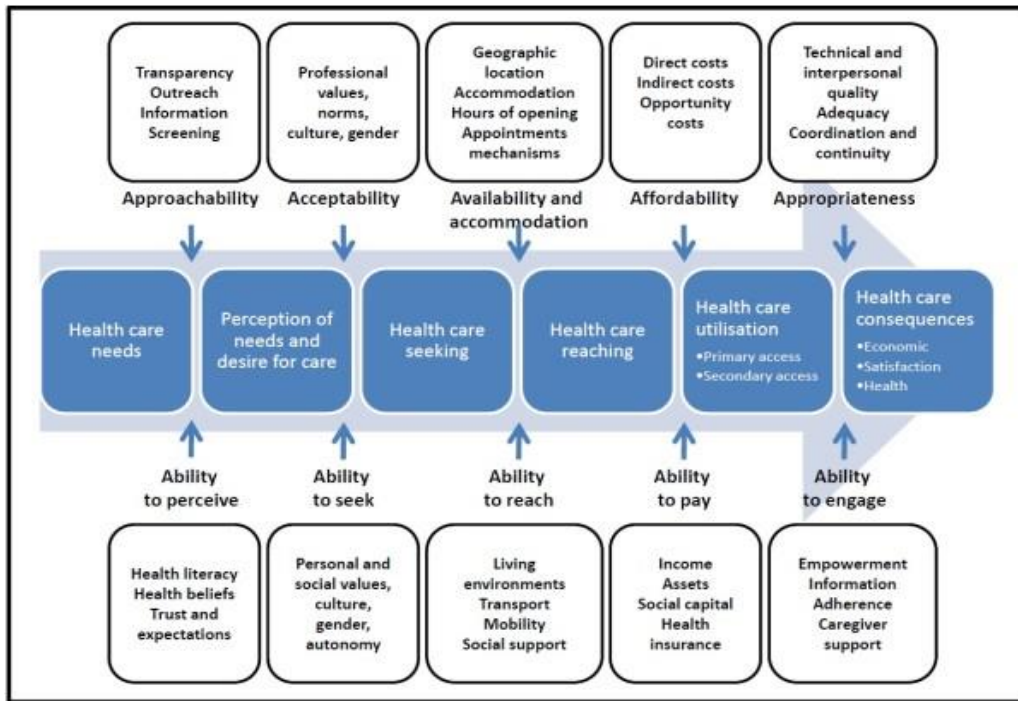
The framework also defines the contributing factors that integrate the demand and supply side issues aiding initiation of the process of access to healthcare for example the ability to perceive one's need for health care (35). The demand side factors include intrapersonal, socio-economic, socio-cultural and community support systems that enable a pregnant woman to initially perceive her need for health care and access these with ultimate good outcome. These are divided into 5 domains, that is the ability to perceive one's need for health care services, the ability to seek for those services, the ability to reach the services, the ability to pay and the ability to engage in health care (35).

Economic empowerment of a PBWLH ensures their ability to pay for health care services when necessary. These can be ascertained by whether a woman has an income or health insurance. All these domains are interlinked and they finally lead to the ability to engage and commit to one's health care. Empowerment and information about the condition and caregiver support and adherence to treatment are the enablers for a PBWLH to commit to her health care management plan (35).

The EMTCT strategic pillar number three on prevention of vertical transmission of HIV employs the WHO guided interventions on ART for pregnant and PBWLH and safe infant feeding methods. Pillar number four links with pillar three and addresses the important linkages to care for the PBWLH and their families and infants to ensure good maternal and child health outcomes (35). Through the Levesque's framework of access to health care services factors that influence PBWLH to seek and engage in care for herself and the unborn or breastfeeding infant were explored basing on EMTCT strategic pillars three and four and in line with the PMTCT continuum of care (35). The continuum of care includes ANC attendance, HIV testing

for herself the infant and partner, starting ART and good adherence, safe infant feeding methods and follow up in the Post-natal Clinic (PNC) (25).

Figure 3: Conceptual framework of health access to health care services by Levesque et al. (45).



Chapter 3: Factors influencing MTCT of HIV and effective interventions for PMTCT of HIV

3.1. Introduction

In this chapter the factors that influence MTCT of HIV are explored using the Levesque et al. framework of access to health care services (35). As explained in the methods section, these will be linked to the relevant demand side interventions in the next chapter. To have a wider picture of PMTCT and to supplement studies from Zimbabwe, literature from SSA will be included.

3.2. Ability to perceive one's need for health care

An individual's ability to perceive their need for health care is vital and determined by a number of factors which include health beliefs, trust in health systems, health knowledge and the assurance of what to expect from health care providers (35).

3.2.1. Health literacy and beliefs

Health literacy is understood to have a link to positive health behavior, health services utilization, compliance to health interventions with ultimate good outcomes (47). A survey was conducted in SSA to assess the relationship between education level and health literacy between 2006 and 2015 among adults aged 15-49 years. The results showed an overall health literacy of 35.7%. Men had a slightly higher health literacy of 39.2% compared to females 34.1%. Tertiary education was associated with a high health literacy rate of 84.4 % followed by secondary school level 69.4% and the least being primary school level 8.9% (48).

A survey to assess national female literacy on women's maternal care use in 70 low, middle- and high-income countries, conducted between 2002 and 2003, revealed that high female literacy was associated with a high income and increased use of maternal services. In countries with over 80% female literacy rate women were more likely to use maternal services compared to those with 30% or less literacy rate (49).

A cross sectional study (n= 779) to assess the role of health literacy regarding universal health coverage (UHC) elements like health service accessibility and health insurance was conducted in 8 rural and 36 urban communities in Ghana from June 2015 to October 2015 (47). The results showed a positive relationship between health literacy and access to health care (P=0.05) and health insurance (P=0.0). Health literacy is imperative for enhancement of good health outcomes even in situations where UHC policies are favorable (47). Positive acceptance of HIV testing including test results is enhanced by the knowledge and experience of good outcomes of HIV management, availability of ART and its effect in improving the health status of individuals within the community (47).

A qualitative study to explore Option B+ acceptability, barriers and facilitators to ART adherence and uptake of services was done in both rural and urban health centers of Zimbabwe from July 2014 to March 2015. The results showed that pregnant and breastfeeding women accepted ARV drugs as a lifelong treatment stating that these improved their health and protected the unborn or breastfeeding child (50). In a similar study women advocated for awareness campaigns that target male involvement in PMTCT programs stating that this will improve HIV knowledge of their partners (50).

A qualitative descriptive study with semi structured interviews (year of study not given) to explore the influence of beliefs on diabetes self-care was conducted in a Zimbabwean referral hospital based in an urban area. The results showed that although both males and females displayed limited knowledge about diabetes mellitus, women more often than men related the causation of the disease to supernatural powers like gods or witches (51).

This belief could have negative effects on accessing and use of biomedical treatment. Education level has an association with health literacy and influences use of health care services. Empowering PBWLH with education could improve their health literacy and ultimately use of PMTCT services.

3.2.2. Trust and Expectations

A qualitative descriptive study done in a rural setup of Zimbabwe to understand women's experiences in the PMTCT program showed that PBWLH were not satisfied with the health care pointing out that nurses disclosed their status by asking them questions relating to their HIV status in the presence of other patients. In the same study women expressed disbelief in the advice given by nurses on exclusive breastfeeding as they feared they would transmit the virus to their unborn child (52).

A systemic review of the role of care and trust in health care systems of qualitative studies done in SSA between 1998 and 2013 was summarized into four main findings. These are important in developing a good relationship between health care providers and patients. They focused on sensitive use of power by health care providers, Patients' perceived empathy from health care providers, quality of medical care and workplace mutual relationship. Although the study finding does not conclude on the role of trust in promoting demand for health care services it reveals that health care provider's negative attitude can hinder use of services. This also applies to PBWLH (53).

A systemic review done of studies between 1990 and 2015 in SSA to assess women's experiences of intrapartum care and the drivers of disrespect during delivery revealed that women opted for traditional care where they received psycho social support and respect. In the facilities midwives exercised a lot of power of knowledge and control over women's bodies. For instance the expression of pain by delivering women was repressed by being told to remain silent (54).

A survey was conducted in both rural and urban communities (840 households) of Nigeria using a mixed methods approach to explore the people's perception of health facilities and their use. The study period is not given (55). The results echoed similar sentiments about health care provider's attitude similar to those expressed by participants in the previous studies. Negative attitude of the health care workers, unavailability of resources, long waiting hours were cited by participants from poor performing health facilities. More than 50.4% of the respondents expressed health services as bad with 55.4% contributed by participants from the rural area (55). The findings of the above studies all point out health care provider's attitudes as unsatisfying and in one study patients express mistrust in the advice given. This finding has implications on MTCT as it influences PBWLH 's health seeking behavior due to health care provider's attitude.

3.3. Ability to seek health care services

This relates to the ability to seek health care services without feelings of being victimized or discriminated (35). The ability of PBWLH to seek for healthcare services is influenced by a

range of factors including personal and social values, cultural norms, gender issues and one's independence (35).

3.3.1. Personal values, social values and culture

A qualitative study to explore women's decision-making on infant feeding in the light of 2010 WHO recommendation on option B+, entailing exclusive breastfeeding for 6 months followed by prolonged breastfeeding thereafter. The study was conducted in the rural Uganda from February to August 2014. The results revealed that although women understood the value of exclusive breastfeeding, their contrary decisions were influenced by societal values where the expectations of family and partners win (55). Another qualitative study done in Kinshasa, Democratic Republic of Congo among 40 PBWLH echoed similar findings. Findings showed that although women understood the value of exclusive breastfeeding, barriers associated with non-compliance included misinformation about HIV transmission, Societal norms and prior breastfeeding experience (56).

There are cultural beliefs that certain ailment can only be treated traditionally. A study done in Chiota district in Zimbabwe explored risky traditional practices performed on neonates for certain perceived ailments. Imaginary eye or ear problem was treated using the mother's milk which was squeezed into the eyes and ears of the neonate, exposing them to HIV infection (57). An open fontanelle of a neonate was considered an ailment and coarse salt was reported to have been used by a senior woman in the family to scratch the baby's hard palate leading to ulceration and potential MTCT during breastfeeding (57).

Cultural beliefs thus have an influence on the breastfeeding woman to seek alternative treatment for their infants other than biomedical management exposing the baby to HIV infection.

3.3.2. Gender, autonomy and stigma

Gender describes the role, characteristics or behavior of a man or woman as expected by the local community's norms. Gaps arising from these expectations amount to gender inequalities. Gender inequalities infringe on a woman's ability to make an informed decision independently (57) (58).

Structured interviews were conducted in four countries in SSA (Ghana, Kenya, Tanzania and Uganda) from 2003 to 2006 to estimate the effect of gender inequalities on women's decision making capacity and use of maternal health services (58). Decision making was measured against a woman's ability to decide concerning her health, household purchases and mobility. Ghana and Uganda reported the highest level of decision making for women (46%, 52%) and Kenya and Tanzania (36%, 37%). Tanzania, Uganda, Ghana which are more tolerant to gender inequalities including violence against women, were less likely to seek maternal health care services consistently (58).

Pregnant women living with HIV in a qualitative study done in Zimbabwe cited that their partners, religious leaders and health workers often violated their rights to decision making (59). A participant in a similar study had this to say from her spouse, "he tells you: the hospital cannot tell me what to do! If you insist on condoms then go back to your parents. Sometimes you may end up in a fist fight" (59). (Participant #3 FGD#3) (p.4). In such cases the woman's right to decide on her sexuality to have protected sex is violated leaving her and the unborn or breastfeeding child exposed to HIV infection (60).

A study done in the Midlands province of Zimbabwe in districts with both urban and rural setup, showed that accepting and adhering to ARVs for women enrolled in the PMTCT program was strongly influenced by male involvement in the program. In turn, male involvement was influenced by a number of factors like having tested for HIV initially as a couple and perceiving couple testing as important (61). On the other hand, a qualitative study conducted in rural Kenya revealed that men have challenges in accompanying their wives to the health center as local culture perceives it a feminine role to attend ANC services(62).

An analytic cross-sectional study conducted in four health institutions in Bindura town in Zimbabwe in March to July 2008 to understand the determinants of non-disclosure of HIV status showed that non-disclosure was high among HIV positive pregnant women at 45% compared to HIV negative women at 32%. Disclosure was cited as unimportant or a source of disharmony in the family. In non-disclosure group adherence to ART was compromised for the woman and her infant (63).

Another qualitative study done in Zimbabwe reiterated the same sentiments. Perceived stigmatization and fear of being labelled as unfaithful to their partners by in-laws, family, friends and community led to non- disclosure (64). As one 18-year-old woman shared, "I will not disclose to others, because people talk too much and this may affect my health, so I will keep it to myself" (Participant 12) (P.4). Participants reported negative and positive real experiences of disclosure. These were cited as stigma and discrimination, abuse and divorce in negative experiences while support and confidentiality was reported as positive experiences (64).

A cross sectional study conducted in Kenya (n=1525) to measure the association between stigma level and acceptance to test for HIV echoed the same sentiments. Pregnant women feared HIV testing with the concern of being stigmatized by family (28%), by partner (32%) and concern of losing a friend (45%) in case they were found HIV infected (65).

Key informant interviews was conducted among PMTCT stakeholders in Nigeria in May 2013 to explore the barriers of uptake of PMTCT services. Separation of the PMTCT clinic from other departments in the hospital was found to be stigmatizing in itself (66).

Stigma can be driven by a negative self perception as well as influenced by the community's values and insight on HIV infection as well as gender related power dynamics. The later remove the woman's ability to decide on their health and that of the infant as guided by the PMTCT program (66). Interventions focusing on Male partner involvement in empowering PBWLH to make informed decisions on the choice of ART and HIV preventive methods independently are therefore important (66).

3.4. Ability to reach Health care services

The ability of an individual to reach the health care facility is influenced by several factors including their living condition and transport availability as well as their social support system (35). In the context of this study these factors also contribute to PBWLH's capacity to access PMTCT services .

3.4.1. Living environment, transport, mobility and social support

A cross sectional study (n=147) done in an urban setup of Zimbabwe assessed factors

associated with access to care in a PMTCT program in Zimbabwe between June and August 2008. Data on women enrolled in the PMTCT programme between June 2006 and December 2007 was analysed. Long waiting times, high transport costs to the health facility and other competing priorities like searching for food or accommodation were ranked as some main causes barring PBWLH from attending PMTCT clinics (67). This could be in keeping with the economic challenges which was faced by the country since 2008.

The same study echoed the need for male involvement in PMTCT as those living with male partners were 60% less likely to attend health care services citing the need for male education on PMTCT as they are often the breadwinners and providers of transport money (67). The number of women living with male partners is not stated in the article making this statement an assumption.

In a systemic review conducted in South Africa from January 2002 to October 2014 to identify the determinants of adherence among HIV positive adults the participants (161 922). Lack of social support among other factors like alcohol misuse, use of traditional medicine, unfriendly health care providers were identified (68).

Another systemic review conducted in SSA using published articles between 2000 and 2015 to assess barriers to obstetric care access revealed that among other demand side barriers cited such as inadequate household income, stigma, transport availability and costs were reported to be an impediment to health access (53).

Lack of social support particularly from close family members and spouses, leading to non disclosure for fear of being blamed was found to play a role in driving stigma and discrimination.

3.5. Ability to pay for health services

In this section factors hindering attaining health care services due to inability to pay without incurring financial risks to an individual or household will be explored (35). A steady income, assets or health insurance capacitates one to pay for their health care without having to suffer catastrophic spending (35).

3.5.1. Income, Assets, social capital and Health insurance

In Zimbabwe, HIV services are subsidised in the public sector, patients do not have to pay for them. There is a private health insurance which covers only those who can afford to pay for the premiums if they want to be attended to in the private sector (19). No studies assessing the association of one's ability to pay for PMTCT services done in Zimbabwe were found. However patients have to pay for transport to access the ARVs as already discussed under the section on ability to reach health care services.

Household food insecurity is sometimes used as a proxy to measure one's income. Food insecurity is a barrier to PMTCT service utilisation. An analysis from a 2012 cross sectional survey, done to evaluate the impact of Zimbabwe's accelerated National PMTCT program in 5 provinces (8790) revealed an association between food security and utilisation of the PMTCT services. Forty nine percent (49%) of women from both moderate and severe food insecure households were likely to attend PMTCT services compared to 45% and 38% with moderate food insecurity and severe food insecurity respectively (69). Food insecurity seemed to have a positive effect on exclusive breastfeeding as 98% of women from food insecure households were likely to exclusively breastfeed their babies, compared to 96% of those with enough food even though this was not a significant difference.

Despite the above finding 13.3% of infants from households with inadequate food were infected by HIV compared to 8.2% from households with sufficient food (69). From these finding it can be concluded that level of income has an influence on MTCT outcomes.

Studies done in South Africa and Uganda showed that among interrelated barriers to attending the PMTCT clinic, lack of transport money was one of the reasons (70). In Uganda other indirect expenses included costs of engaging a caretaker for an adult or children while the woman is at the clinic, or informal payments done at the clinic (71). Absence of certain domestic assets associated with low income levels like electricity, television, refrigerator or a radio is associated with fewer ANC visits than average. A study done in the Democratic Republic of Congo revealed that lack of the above mentioned domestic belongings was associated with fewer ANC visits (72).

Structured interviews were conducted in both the rural and urban Zimbabwe between 1998 and 2003 to evaluate the association between community membership and risk of acquiring HIV. Baseline surveys on membership in a community group, sexual behaviour and having tested for HIV (73). Follow up interviews were then conducted after 3 years and the results showed that women's knowledge had increased by 5% among those who were always members of community groups compared to 31% among those who previously did not belong to a community group. Twenty six percent of women in community groups displayed self efficacy in HIV prevention compared to 15% of women who did not belong to a community group (73). Although the study did not associate social capital with ability to pay for health care services, belonging to a cohesive community can ensure support even financially for PBWLH needing assistance.

3.6. Ability to engage

Decision making about a client's treatment plan should ensure the individual's participation in their management. Caregiver support, empowerment and having information about one's condition are essential for full participation in one's health management (35).

3.6.1. Empowerment, information, adherence, caregiver support

A cluster randomised control trial conducted in two rural districts in Zimbabwe showed that older married women (93.2%) who had disclosed their HIV status (87.5%) and were closer to the health facility of 0-3 kilometer radius (38.1%) were more likely to attend mother HIV support groups (MSG). In comparison unmarried women (6.8%), those who did not disclose their HIV status to partner (12.5%) and were far from the clinic, at a radius of 8-25 kilometers (29.0%) were less likely to attend MSG (74).

Married women are more likely to be supported by their partners compared to unmarried women who might not have such support. Being close to a health care facility means easy accessibility to health information and a better opportunity to use free services without incurring extra expenses like transport costs. Non-disclosure of HIV status hampers a PBWLH to seek for PMTCT services due to stigma and fear of their partners and family members becoming aware of her HIV status (74).

A cluster randomised trial was conducted to evaluate point of care CD4 testing (n=1150) as a measure to support adherence done in Zimbabwe among women attending an ANC clinic in January 2014 to June 2015. The results showed that married women (81.4%) were more likely to attend and adhere to treatment compared to single women (17.3%) and divorced women (1.2%). The age of the woman had an influence on retention and adherence. Among teenagers between 15 and 19 years 9.7% adherence was observed, compared to those above 30 years who had 37.2 % adherence (75). This could be due to that older women might be more understanding and responsible and are supported by their partners.

A qualitative study done in Mashonaland East province of Zimbabwe revealed that lack of communal and partner support led to poor ART adherence among women enrolled in the PMTCT program. Stigma and discrimination in the community was found to be the most common barrier for women to engage in and stay in care. ARV side effects and lack of food was also cited as reasons for poor adherence (59).

In support of the above findings a study done in Bulawayo, Zimbabwe showed that both self and community related stigma had declined among women enrolled in a mother to mother peer support group where women received information and freely shared about their condition in the group (45). Being empowered with health knowledge and support from family, spouse, friends or community enhances full participation in one's health care. Zimbabwe acknowledges the importance of equality and the parental role and health care of women in the health system. Issues related to stigma are addressed with the aim of reducing maternal mortality, ensure universal access to HIV and AIDS treatment and support for caregivers

3.7. Health Policy issues relating to PMTCT

Although the framework does not include an element policy issues that influence an individual's health including PMTCT. Policy issues linked to the demand side will be discussed. The financial health policy of Zimbabwe's aim is to ensure that there is sufficient health financing, financial protection of households from catastrophic spending through risk pooling (19). Pregnant women and children under five are exempted from paying user fees at the point of access, and HIV related services are free for all. However there is no policy to compensate PBWLH for indirect cost incurred while seeking for health care services.

Zimbabwe acknowledges the importance of equality and the parental role and health care of women in the health system. Issues related to gender are addressed with the aim of reducing marital mortality, ensure universal access to HIV and AIDS treatment and support for caregivers (76). No policy was found on stigma and discrimination.

3.8. Summary of findings

The findings on factors influencing MTCT of HIV using the Levesque et al. 2013 framework of access to health care reveal that these are interconnected and dependent on each other. The PBWLH's ability to seek for health care services requires that she has some knowledge about MTCT of HIV and is enabled to reach and engage fully in health care services through the support of her family, spouse or community. This is central to good health outcomes. Policy issues that impact MTCT in Zimbabwe include indirect financial costs and the gender policy that acknowledges the role of equality in health care systems.

Findings show that key factors influencing MTCT of HIV in Zimbabwe include perceived and community stigma, Gender related factors, lack of social support, and financial constraints. These findings will be used to guide a review that focuses on the relevant demand side interventions.

CHAPTER 4: RELEVANT EVIDENCE BASED EFFECTIVE DEMAND SIDE INTERVENTIONS IN SUB-SAHARAN AFRICA INCLUDING INTERVENTIONS ON OTHER DISEASES THAT ARE APPLICABLE TO PMTCT

4.1. Introduction

PBWLH 's health seeking behaviour should be connected to their living conditions which are often influenced by culture , gender dynamics and community norms hence interventions tailored towards these improve access to health care services for PBWLH (78). This section explores interventions that address key demand side factors that influence MTCT of HIV in Zimbabwe. This chapter discusses interventions on PMTCT associated stigma, gender dynamics , social support and those addressing financial constraints experienced by PBWLH.

4.2. Interventions on gender related factors promoting PMTCT

Empowering PBWLH with health knowledge supports their decision making capacity. Group health education improves health literacy more than individual health education. A prospective cohort study was conducted in Kumasi Urban District hospital of Ghana to assess whether group ANC education improved women's health literacy. Two hundred and forty (240) women were enrolled into the intervention group which received group ANC health education. A facilitator's guide was developed which included ANC elements as well as tips on respectful maternity care and strategies of enhancing adult learning (77).

The intervention group received individual and group health education in the form of group discussions where story telling , peer support and sharing of experiences was utilised. Picture demonstrations were used to accommodate those who had no formal education since 35% of the participants had no formal education. Seven sessions were given during the ANC visits. The control group received individual ANC health education (77). There was an enhanced knowledge on pregnancy related complications in the intervention group (94%) compared to the control group (72%) at the end of the intervention. Breastfeeding knowledge also increased in the intervention group (90%) compared to (75.9%). The dropout rate was 27% due to miscarriage , transfer to other health care facilities and loss to follow up (77).

Group health education using guidelines that cater for those with informal education, with experience sharing by group members, enhances knowledge and ultimately demand for health care services. However study was done in an urban setup and might not be representative of a rural setup. Such a strategy could be used for PBWLH to empower them with health knowledge.

Male involvement strategy in health care services normally attended to by women is essential in the PMTCT program. Men's involvement includes attending the ANC, undertaking an HIV test , monetary contribution and emotional support to the partner (78). A randomised controlled open label trial was conducted in Malawi in two health centres situated in urban Malawi (n=462) from June to December 2013 to evaluate the impact of an invitation card to male partners as a means of increasing male involvement in ANC (79). An invitation card was used to invite partners of women in the intervention group to the PMTCT clinic and the control group used the word of mouth. Fifty percent (50%) (P value= 0.02) of women in the

intervention group were more likely to be accompanied by their husbands compared to the standard of care group and these were offered an HIV test and encouraged to always accompany their partners to ANC (79). This study shows that use of invitation cards for partners of women enrolled in PMTCT program improves male involvement and their willingness to attend healthcare services with their partners. This assists PBWLH to access the PMTCT program without impediment.

A randomised control trial to assess the effectiveness of a written invitation to the male partner of women attending an ANC in Malawi (n=1060) conducted between October 2009 and February 2010 showed that an invitation letter increased couple ANC attendance by 10% compared to those who did not receive invitation letters (80). The study reiterates the findings in the previous study.

A qualitative study was conducted in Malawi to assess the facilitation of spousal communication and male involvement in FP use (year not given). A Malawi Male Motivator project (MMMP) was designed to reach out to partners of young women (<25 years) in a rural district (81). Four hundred males were recruited into the study and they received five visits from a trained male motivator for 6 months. The control group was visited at the end of the study period for an indepth interview (81).

The results showed an increased contraceptive use in the intervention arm (78%) compared to the control group (58%). Communication about use and choice of FP method improved in this group (81). One (1)year later an interview was conducted among 30 spouses of the intervention group participants. Women expressed improved communication and joint decision making about choice of the FP method. One third of the females reported making decision about the type of FP method to use independently and half of the man also reported allowing their wives to make that choice independently (81).

Male involvement enhances shared decision making and hence improves access to health care services for their partner.The strategy can also be inferred on the PMTCT program.

4.3. Interventions that address HIV associated stigma in PMTCT

The cause of stigma among pregnant and breastfeeding women living with HIV is multifactorial and there is evidence that addressing stigma leads to improved PMTCT outcomes (82).

A cluster randomised control trial (CRCT) in South Africa evaluated the effect of a multi-component stigma reduction intervention among pregnant women living with HIV (PWLH) enrolled in twelve rural community health centers from April 2014 to March 2017.The aim was to improve PMTCT uptake in Ger Sibande and Nkangala districts in Mpumalanga province (83). The intervention group (EI) (n=342) received enhanced intervention condition standardised PMTCT care plus 'Protect your family' intervention and a stigma reduction package from lay health counselors. This group received four ANC visits and 2 postnatal visits during which a health education package was given. This included knowledge on HIV transmission and prevention, adherence to ART, safe infant feeding methods and dual FP protection.Two sessions on stigma reduction were administered in addition focus was given to partner communication skills and disclosure, intimate partner violence (IPV) , skills on addressing thoughts related to stigma (83).

The control group (SC) (n=357) received standardised care from the PMTCT clinic only. This included nurse led counselling sessions during the perinatal period and video health education sessions on childhood illnesses and sexual abuse and alcohol use (83). The assessment done in both the intervention and control groups showed a positive stigma reduction after a 12 months follow up in the EI group (95% CI -2.12,-0.65) in all facets including individualised stigma, disclosure related issues, and community related stigma (P=0.001) (83).

The study suggests that inclusion of health education in group sessions tailor made to address the consequences of stigma has a positive impact in addressing personalised stigma and its negative result in accessing health care services. However a high loss to follow up (40.5%) in the study could have influenced the results.

A retrospective review of community networks approach was conducted in Uganda to assess the relevance of community mobilisation in PMTCT of HIV between 2006 and 2009. Seven hundred and fifty (750) groups of people living with HIV linked to trained Network support agents (NSA) provided health education, referral and linkage to health facilities for PLWH including PBWLH (84). Services provided for pregnant women included HIV counselling and testing, ANC appointment reminders, ART adherence support and involvement of their partners (84). By the end of the study period PMTCT enrolment increased from 1264 in 2008 to 15892 in 2009. There was reduction of stigma among PLWH within the support group and PBWLH. Male involvement was increased and improved retention in care (84).

Incomplete data due to poor coordination among the networks makes it difficult to evaluate the results. The project was donor funded and feasibility of its cost effectiveness when scaled up is unsure. The intervention indirectly alleviated stigma and improved male involvement in the PMTCT program. Support groups of PLWH can be agents for stigma reduction and increased male involvement in the PMTCT programme.

4.4. Interventions that promote social support for positive pregnant and breastfeeding women enrolled in PMTCT

Social support is imperative for PBWLH as it mitigates stigma related challenges and fosters adherence to PMTCT care. Community based volunteers form a link between the community and the health facility but often face a dilemma between their own cultural beliefs which are normally like their clients' beliefs and following the stipulated PMTCT interventions (85).

A qualitative study was conducted among patients on ART (n=369) and their social networks on Mfangano island in Kenya in 2012. The aim was to encourage engagement of the family, neighbours and friends in the care and management of people living with HIV. A Microclinic intervention was employed. Microclinic is defined as a therapy management collective formed by small groups of neighbours (86). HIV infected adults on ART who were being managed at Sena health centre in Mfangano were enrolled into the study between November 2011 to February 2012. One sub location of Mfangano island was allocated to be the intervention arm and the control arm were all patients residing in a community with a similar environment (86).

The intervention participants formed groups of between 5-15 comprising of people living with HIV and their social support networks and they received support from community health workers through 10 workshops within the study period (86). At the end of the ten workshops all members were invited for HIV counselling and testing and voluntary disclosure to the group. Within a catchment area of 5000 residents 56% of those on ART were able to disclose their HIV status (86). During the focus group discussions, the intervention participants reported a change in their perception of people living with HIV and associated stigma. However there were reports of self-harm and loss of confidence within the community post HIV status group disclosure (86).

The extent of self-harm is not stated in the study. The study does not give the outcome of the control group for comparison. Inferring social networks involvement from this study as an intervention in improving social support for PBWLH is inconclusive.

A pre and post comparison study was conducted in Rural Mtwara district in Tanzania in 4 villages (n=8300) to explore the community-based intervention in increasing use of obstetric care services (87). The area is served by one health centre and a dispensary. The study was performed between October 2004 and October 2006 whereby 512 deliveries were assessed. A baseline analysis on the use of obstetric care was performed followed by an intervention period for 2 years then a final analysis in November 2006 (87). Fifty (50) Safe motherhood promoters (SMP) who were volunteers from the village were trained. Out of these 50% were male and some of the volunteers were religious leaders and traditional birth attendants. They were trained on safe motherhood and the curriculum included early ANC visits, complications of a pregnancy including MTCT of HIV, danger signs during pregnancy and advantages of delivery by skilled birth attendants. The SMP conducted home visits and taught on safe motherhood and raised awareness within the community using video shows (87).

The post intervention results showed an increase in ANC bookings at 4-16 weeks from between 2004 and 2006 ($P<0.001$). Deliveries with skilled birth attendants significantly increased between 2004 and 2006 ($P<0.05$) (87). However the study did not show a significant increase in knowledge level on safe motherhood within the community ($P>0.05$) (87). The strengths of the study as expressed by the community were that community and religious leaders were involved and some volunteered as SMPs. The intervention modified some of the practices of Traditional birth attendants as they understood and expressed being empowered to refer more women with danger signs to the health care centre (87).

Engaging volunteers from leaders within the community can enhance the health message and increase access to maternal health care services including PMTCT.

4.5 Interventions addressing financial constraints

Although PMTCT services are free in most Low and middle-income, PBWLH incur extra expenses to access services, mainly transport costs, incentive for a caregiver to take care of the other children while the PBWLH is at the clinic.

A secondary data analysis from a randomised control trial was conducted in Democratic Republic of Congo, Kinshasa between April 2013, and August 2014 (n= 433) in 89 clinics among HIV newly diagnosed women registering for the first time at an ANC clinic at 32 weeks gestational age. The aim of the study was to assess the impact of cash incentive in improving retention in PMTCT clinics. Factors associated with loss to follow up at 6 weeks visit were identified and Binomial models were used to measure the relation between cash incentives and these factors (88). At enrolment a structured interview was administered to all women to assess their perception on the severity of their HIV infection, MTCT risk, PMTCT benefits, barriers to accessing PMTCT and their ability to attend to and adhere to the PMTCT program (88).

The intervention group received standard care for PMTCT plus cash payment per visit to cater for extra costs like transport. They received \$5 per month which was topped up by \$1 monthly if the woman attended PMTCT clinic visits and accepted to have a CD4 count done, referral for ART, delivered in a health care centre and accepted to have the baby tested for HIV at 6 weeks of age. The control group received only standard care PMTCT care without cash payments (88).

The results showed that women perceived their illness (78.5%) and that of the child (84.3%) to be a grave health problem and PMTCT benefits were held with high esteem (84.8%). A small group anticipated difficulties in coming to the clinic due to transportation (15.9%) problems and not having money (11.6%) (88). Those who reported that not having money would be a hindrance to come to the clinic were about twice as likely to be loss to follow up (LTFU) (95% CI 0.75 , 4.84) compared to those who did not respond to any hindrance (63.3%). Providing this group with cash payments improved LTFU (95% CI -0.35,0.10) (88). The results of the study were misinterpreted for the group that responded that not having money would hinder them from attending the clinic since the 95% CI shows no difference to the control group. The study is inconclusive.

A survey was conducted in a semi urban area of Mozambique to compare the relationship between being a member of a community savings group (SG) (n= 105) and impact on maternal health care utilisation compared to being a non-member of the SG (n=100), and whether women's agency mediated the association. Data was collected within 2 weeks from March 2017 (89). The study assessed the hypothesis that SG membership is associated with use of all three (3) Maternal health services namely ANC visits, use of a skilled birth attendant and post-natal care use (89).

The results showed that there was higher ANC use among SG members (>4 ANC visits, 72.4%) compared to non-SG member (30%). Attendance by skilled birth attendants was also high among SG Members (94.2%) compared to non-SG members (76.3%) and Post-natal care attendance was at 60% among SG members compared to 46% among non-SG Members. SG members reported a higher decision-making role in the household (p>0.001). There was no significant difference within the two groups in education level, average age and average family size (89).

Women who are financially empowered are more likely to access health care services independently without the assistance from their partners who are often the bread winners in the family. This strategy could be used to support PBWLH who may face opposition from their partners to access PMTCT services.

The above results were echoed by a clustered randomised evaluation of impact of community based microfinance groups conducted in Ghana, Malawi and Uganda which showed an empowerment on decision making for women, besides improvement in household resources (89).

Although there could have been a bias of members reporting what they thought the interviewer was interested in during the interviews the study shows that financial empowerment for women besides improving their general welfare and household food security enables them to make decisions about their health and fully engage in care.

See summary table of the demand side interventions of MTCT in SSA in Annex iv.

CHAPTER 5: Discussion

This chapter discusses the key findings of the study relating them to the Zimbabwean context in PMTCT of HIV.

Factors influencing MTCT transmission of HIV among PBWLH in Zimbabwe

The National strategy towards elimination of MTCT of HIV in Zimbabwe is applaudable considering that MTCT transmission rate has reduced to 7.56% in 2018 from 9.71% in 2015 mainly driven by health system related interventions. The demand side interventions still need to be addressed as revealed by the study findings. The findings in the review revealed four main demand side factors influencing MTCTC of HIV in Zimbabwe among PBWLH. These include self-discrimination and community related stigma, gender issues, financial constraints and lack of social support. These fall under three domains of the Levesque et al.'s framework of access to health care services. Stigma and gender related issues impede the ability of a PBWLH to seek for health care services for herself and her infant, while financial constraints and lack of support hinder the PBWLH's ability to pay and reach health care services respectively.

Ability to perceive

The findings show that health literacy versus limited health knowledge has a strong correlation with a positive health behavior and compliance to health-related advice. High education levels are associated with a high health literacy rate. Limited health knowledge emanating from low education level in turn influences negative health beliefs. The education level of women in Zimbabwe shows that the majority of them have only attained primary school level and a few tertiary education. In Zimbabwe the health beliefs both in a rural and urban setup are contrary to modern medicine principles. This could be explained by the low level of education among females both in the rural and urban setup as well as societal beliefs as has been discussed in the previous section. Although unsatisfying health care provider's attitude has been raised in the review but none of them links that loss of trust by the clients to the influence it has on the level of demand of health care services.

Ability to seek

The findings show that the ability of a PBWLH to access health care services is linked to her perception about their need for care. There are a number of players in determining this including the society in which they live, the family members and her partner. In Zimbabwe man have the decision-making authority in the family concerning household management, finances and health issues. The review reveals that such gender inequality in decision making has a negative connotation for a PBWLH to access health care services even if they have the health literacy.

In the Zimbabwean context a child within the community is viewed as everybody's child and therefore advice concerning their health and feeding practices are viewed as the responsibility of the society in which they live. The study findings reveal that societal norms can have an influence towards making decisions among PBLWH for example, adopting breastfeeding practices that are contrary to the PMTCT guidelines. Even though the PMTCT program in Zimbabwe started in 2002 self-discrimination and stigma from the society still plays a major

role in hindering access to PMTCT services for PBWLH and their infants. Both types of stigma have been shown to culminate in non-disclosure for PBWLH to their spouses or family members.

Gender related power dynamics, a negative self-perception and the community's values are cross cutting issues driving stigma among PBWLH infringing on a woman's ability to decide independently on her health and that of the infant. Interventions focusing on empowering PBWLH to make informed independent decisions in line with the PMTCT guidelines are important.

Ability to reach

The PBWLH's living environment which is both physical in terms of distance from the health facility or the people they live with has an influence on their ability to reach health care services. Lack of social support from the spouse or family can be a driver of stigma leading to defaulting PMTCT health care. Availability of transport and being close to health care services have been shown to enhance the PBWLH's ability to reach health services.

In Zimbabwe a large population lives in the rural areas where even though distances may be long, people use donkey driven carts or walk to the centre compared to the town setup where people prefer using paid for public transport.

Ability to pay

Although PMTCT services are free, indirect cost like transport expenses can lead to high defaulter rates in Zimbabwe among PBWLH where most families are living from hand to mouth. The findings reveal that income levels are strong predictors of whether a PBWLH will be able to pay for indirect costs to access PMTCT services. In Zimbabwe which has a high poverty rate PBWLH face challenges in accessing PMTCT services due to lack of financial stability.

Ability to engage

The findings show that health literacy, spousal support and community support are essential tools for engaging PBWLH in care without feelings of stigmatization. Empowerment with PMTCT information in Zimbabwe is mainly through the health system and community HIV support groups. The latter have been shown to assist in alleviating self and communal stigmatisation and ensure HIV status disclosure and good adherence to treatment.

Engagement to care with ultimate good health outcomes for the PBWLH and her infant calls for a process which starts by the woman's perception of her health care needs, her ability to seek, reach and pay for them and be engaged in care. Different stakeholders as has been discussed before are involved throughout the process, therefore interventions aimed at reducing MTCT of HIV should be tailor-made to engage them.

Key findings on effective demand side interventions on MTCT of HIV in SSA

Interventions that target the four identified key factors influencing MTCT of HIV among PBWLH will be discussed in this chapter pertaining to the feasibility of applying them in the context of Zimbabwe. These include stigma reduction strategies, interventions focusing on gender related factors, interventions that are tailor-made to enhance social support for the PBWLH and interventions to empower PBWLH financially.

Currently the PMTCT program's interventions are mainly supply side oriented. The demand side interventions though not fully rolled throughout the country include mother to mother mentor support groups, community-based support groups, the national behavior change programs which include PBWLH, Index linked case testing within the community.

Stigma reduction strategies should aim at both self-discrimination and community related strategy.

Stigma reducing interventions

The multicomponent stigma reduction strategy can be incorporated into the Zimbabwean PMTCT program, and lay counselors can give the psychosocial counselling sessions to PBWLH. In Zimbabwe lay HIV counselors work at all levels in the health care system within the HIV program. They can be trained in the stigma reduction package. This strategy does not only tackle stigma reduction but also gives the PBWLH the skills to disclose their HIV status and adhere to biomedical treatment. However, the strategy addresses only personalized stigma. The high to loss to follow up rate among the participants could have influenced the results.

Although the intervention on community networks was inconclusive the strategy can be incorporated in the already existing HIV community-based strategies. Positive results on stigma reduction within the community would be beneficial for PBWLH as people in Zimbabwe respond positively to peer support within the community. Incomplete data due to lack of coordination is a sign of how involving and demanding it is to organize a community project involving many stakeholders. This would be a challenge for Zimbabwe where people have many competing priorities like sourcing for food and energy for household use. The strategy might not work properly currently.

Interventions on gender related issues

Knowledge empowerment through group health education for PBWLH would be ideally done during their routine visits for medication refills. Most health centers conduct opportunistic infection clinics (OIC) on stipulated days or daily in larger health centers. PBWLH can have their special days where they are given health education tailor made towards reducing MTCT of HIV. A multicomponent stigma reduction strategy and group education can be combined and spearheaded by lay counselors. In the Zimbabwean context the lengthy health education sessions which include an individual one and a group session for PBWLH may lead to loss to follow up or avoidance of health education sessions. The study is not representative as it was done in an urban setup.

Empowering women with knowledge and decision-making autonomy concerning their health as was discussed in the findings enables PBWLH to access health care services. Male involvement is essential. The Malawian Male motivator project is an ideal strategy for the Zimbabwean context in involving man in health-related issues. Already existing male CHW could be engaged. However, acceptance of the strategy by a community with a different culture needs to be verified.

Use of an invitation card to partners of PBWLH showed increase in male involvement. The intervention would be ideal for Zimbabwe where an invitation card for patients who have been treated for a sexually transmitted condition would be ideal. The study is not representative as it had a bias towards engaging the married leaving out those who do not live with their partners. The positive results need confirmation.

Social support interventions

Safe Motherhood promoter would be an ideal strategy to promote Maternal and child health care services including PMTCT within communities in Zimbabwe. The strategy's strength is that it brings different community stakeholders like religious and community leaders together. People in Zimbabwe generally respect their community leaders and this could strengthen the program for good outcomes in improving adherence to treatment among PBWLH. Its applicability in a PMTCT program needs assessment and modification as some people in Zimbabwe are opposed to home visits in an HIV program. They feel home visits unintentionally disclose one's HIV status to the community.

The social support networks 's achievement was stigma reduction. However, there were reports of self-harm by some participants post HIV status to the community. Although the extent of self-harm is not reported the results are contradictory raising the question whether disclosure of one's HIV status to the community reduces stigma or is a driver of stigma if an individual is not well prepared. This would not be an ideal community strategy for the Zimbabwean context where suicide rates are also high and as discussed above some people are opposed to disclosure of one's HIV status to the community. The intervention needs assessment and modification to suite the Zimbabwean context.

Interventions on financial constraints

Financial empowerment for PBWLH improves access as discussed in the study findings. The cash transfer study done in Congo is not conclusive due to misinterpretation of the results.

Community Savings groups for PBWLH would be feasible in Zimbabwe. There are number of organizations working with communities in improving their financial welfare. Financial empowerment only for women may not mean ability to make decisions independently in the Zimbabwean context were man hold the decision-making authority.

In conclusion the interventions can be divided into community-based interventions and health system-based interventions aiming at reducing the main demand side factors associated with MTCT of HIV in Zimbabwe. If these interventions are modified and applied to the Zimbabwean context, they can make a big impact in tackling stigma, gender issues, financial constraints and lack of social support which hinder disclosure, access and adherence to biomedical treatment.

Strengths and limitations of the study

The strengths of the findings are that a number of interventions can be applied to existing structures within the Zimbabwean health system and community structures with adaptations.

Some qualitative studies had small study populations even though they yielded positive results. Although the interventions are diverse and from different countries, differences in culture within the SSA countries can be a limiting factor in the feasibility of transferring the findings to the Zimbabwean situation. The small sample size in the study on Diabetes care knowledge in relation to beliefs about disease causation could have led to bias. A large sample size could assist in validating this hypothesis conducted in both a rural and urban setup for comparison among PBWLH. Structured interviews may lead to bias as participants report what they think the researcher is interested in other than reality. Mis interpretation of the results in the cash transfer study done in Congo rendered the findings invalid.

The study framework

The study framework by Levesque on access to health care was useful in exploring the demand side factors that influence a PBWLH and her infant to access PMTCT services. These factors were then linked to the relevant demand side interventions that have been found effective in SSA. The framework however does not include exploration of how a country's policy affects the ability of a PBWLH to seek health care services. Policy issues relating to MTCT of HIV in Zimbabwe were discussed under the results section. The framework does not explicitly include stigma as one of the elements and yet it is one of the cross-cutting issues in the whole PMTCT continuum of care. Stigma related issues were discussed under the ability of a PBWLH to seek health care services since it is influenced by personal social values and culture and impacts on the PBWLH's freedom to seek for health care services.

Chapter 6: Conclusion and recommendations:

6.1 Conclusion

Strengthening strategies to mitigate the demand side factors influencing MTCT of HIV will contribute enormously towards EMTCT of HIV in Zimbabwe. These should aim at enabling PBWLH to access health care services without obstacles. Four key factors influencing MTCT of HIV in Zimbabwe have been identified namely self-imposed and societal stigma, lack of a strong social support system, financial inadequacy among PBWLH and gender related issues.

Effective health facility-based interventions to mitigate the demand side barriers that hinder MTCT of HIV in Zimbabwe were identified. The multicomponent stigma reduction strategy conducted in South Africa, the group health education done in Ghana and the Malawian invitation card strategy can be incorporated into the existing Zimbabwean health system without overlooking the need for their adaptation.

Community-based interventions identified included community networks mobilization done in Uganda, the Malawian Male Motivator project and the spousal communication intervention conducted in Malawi to improve women's involvement. These need piloting and/or adaptation within the Zimbabwean context to assess their acceptability in the community. Although the structures to implement these exist, cultures differ and therefore adjusting the strategy to suit the local environment would be necessary.

Both the community based and health system-based interventions complement each other for instance a woman's savings group intervention empowers the PBWLH financially and boosts her decision-making capacity while a group health education intervention enhances her health literacy and stigma reduction skills. Therefore, a multi component approach of the demand side interventions would complement the existing supply side interventions in the Zimbabwean health care system resulting in good outcomes in PMTCT of HIV.

6.2 Recommendations

Policies

- The MoHCC should **formulate a stigma reduction policy using context specific evidence-based demand side interventions on PMTCT** which ensure access to biomedical and comprehensive care for the PBWLH and infant.
- The MoHCC, in liaison with the Ministry of Finance, should **develop a transport policy that exempts PBWLH** and this to be managed by an NGO in collaboration with health facilities offering PMTCT services.

Interventions

- The MoHCC, in collaboration with community based Organisations with an interest in Paediatric HIV, should **develop training guidelines on multicomponent stigma reduction for lay counselors**. The strategy to be incorporated into the basic counselling sessions of PBLWH in all health facilities offering PMTCT care.
- The MoHCC, in collaboration with NGO, civil society ,religious leaders, CHW and existing HIV support groups should **form context specific community PMTCT support groups** and / or incorporate the PMTCT element into the existing community support groups.
- The MoHCC in collaboration with NGOs, the civil society, community leaders and HIV community support groups should **organise anti-stigma campaigns through mass media, and at community events and education institutions**.
- The MoHCC should **formulate a curriculum for training lay councilors in group health education for PBWLH** aiming at strengthening women's decision-making capacity about their health in all health facilities offering PMTCT services.
- The MoHCC in collaboration with NGOs should **adapt the existing male invitation card for partners of clients with sexually transmitted illnesses to suite the PMTCT program** , to be utilised in all health facilities offering PMTCT services.
- MoHCC in liason with the Ministry of women Affairs,community, small and medium enterprises development should **spearhead self help projects that are specific for empowering PBWLH who have financial constraints** within the communities.

5.4.1.3. Research

- The Research Council of Zimbabwe in collaboration with community based organisations working with community leaders **should pilot community based interventions to assess their feasibility** in the rural and urban Zimbabwe and tailormake them to suit the local context.
- **To assess the acceptance of HIV and AIDS related home visits** the Research Council of Zimbabwe should conduct a qualitative study both in the urban and rural areas.

REFERENCES

1. World Health Organization. WHO | Accessibility. Who. 2015. Accessed 20/07/2020
2. World Health Organization - Western Pacific Region. WHO Guidance on operations and service delivery:Adherence to ART. 2013. Accessed 20/07/2020
3. World Health Organization. Who Validates Elimination of Mother-To-Child Transmission of HIV and Syphilis in Cuba. Vol. 36, Saudi medical journal. World Health Organization; 2015. p. 1018–9. Accessed 20/07/2020
4. World Health Organization - Western Pacific Region. WHO - Mother-to-child transmission of HIV. WHO. 2017. Accessed 20/07/2020
5. World Health Organization. Criteria and processes for validation:Elimination of Mother-to-child-transmission of HIV and syphilis. Vol. 143, International journal of gynaecology and obstetrics. 2018. p. 43–991.
6. Coutsoudis A. Is Option B+ the best choice_ _ A _ Southern African Journal of HIV Medicine. South Afr J HIV Med. 2013;
7. Zimbabwe Ministry of Health and Child Care. Extended Zimbabwe National HIV and AIDS strategic plan 111 Government of Zimbabwe [Internet]. 2015 Accessed 17/12/2019
8. United Nations Joint Programme on HIV/AIDS (UNAIDS). UNAIDS Data 2019. unaids. 2019. p. 476.
9. International Monetary Fund. Kuwait: 2019 Article IV Consultation; Press Release; Staff Report; and Statement by the Executive Director for Kuwait. Vol. 19, IMF Staff Country Reports. 2019.
10. Barrientos M, Soria C. IndexMundi - Country Facts. 2016. Accessed 12/06/2020
11. Ni P, Karl Kresl P. The global Urban competitiveness report - 2010. The Global Urban Competitiveness Report - 2010. 1–320
12. Ministry of youth Gender and employment creation in Zimbabwe. Youth Empowerment : the Key To Development Produced By the. 2000.
13. United Nations. Where we are : Eastern and Southern Africa : Zimbabwe| UN Women – Africa. 2020. p. 10–1. Accessed 27/07/2020
14. United Nations. Zimbabwe Population 2020 (Demographics, Maps, Graphs)- United nations. 2019. 2020. Accessed 10/06/2020
15. knoema. World and regional statistics, national data, maps, rankings- knoema [Internet]. 2019 Accessed 08/06/2020
16. Zimbabwe National Statistics Agency. Zimbabwe National Statistics [Internet]. 2014 Accessed 20/06/2020.
17. UNESCO. Zimbabwe _ UNESCO UIS education levels. Unesco institute for statistics. 2020. Accessed 07/08/2020
18. Zimbabwe National Statistics Agency- ZIMSTAT. Zimbabwe Demographic and Health Survey 2015. Statistics (Ber) [Internet]. 2016 Accessed 10/06/2020

19. Ministry of Health and Childcare Zimbabwe. Zimbabwe National Health Financing Policy: Resourcing Pathway to Universal Health Coverage - 2016.
20. Zimbabwe Ministry of Health and Child Care. The-National-Health-Strategy-Equity-and-Quality-in-Health-Leaving-No-One-Behind-for-Zimbabwe-2016-2020-Zimbabwean NHS. 2016.
21. MoHCC Zimbabwe. Ministry of Health and Child Care - website Accessed 10/06/2020.
22. UNICEF. Health and Child Care 2018 Budget Brief [Internet]. 2018. Accessed 10/06/2020
23. World Bank Group. Adolescent fertility rate (births per 1,000 women ages 15-19) | Data. World Bank Group. 2019. Accessed 12/06/2020
24. Burden G, Health D, Collaborator F. Spending on health and HIV / AIDS : domestic health spending and development assistance in 188 countries , 1995 – 2015. *Lancet*. 2018.
25. MoHCC Zimbabwe. The plan for elimination of mother to child Transmission of HIV & Syphilis in Zimbabwe 2018-2022. 2018.
26. Olakunde BO, Adeyinka DA, Olawepo JO, Pharr JR, Ozigbu CE, Wakdok S, et al. Towards the elimination of mother-to-child transmission of HIV in Nigeria: A health system perspective of the achievements and challenges. *Int Health*. 2019;11(4):240–9.
27. Yah CS, Tambo E. Why is mother to child transmission (MTCT) of HIV a continual threat to new-borns in sub-Saharan Africa (SSA). *J Infect Public Health* [Internet]. 2019;12(2):213–23. Available from: <https://doi.org/10.1016/j.jiph.2018.10.008>
28. McCoy SI, Fahey C, Buzdugan R, Mushavi A, Mahomva A, Padian NS, et al. Targeting elimination of mother-to-child HIV transmission efforts using geospatial analysis of mother-to-child HIV transmission in Zimbabwe. *Aids*. 2016;30(11):1829–37.
29. UNICEF. Antenatal Care - UNICEF data [Internet]. 2019. 2019 [cited 2020 Jun 10]. p. 1–7. Accessed 10/06/2020.
30. Mushavi A. Zimbabwe Elimination of Mother to Child Transmission of HIV (emctct) Program. 2018, Harare Zimbabwe.
31. Ministry of Health and Child Care Zimbabwe (MoHCC). Zimbabwe National and Sub-National: HIV Estimate Report 2017. 2018;(July):1–53. Accessed 10/06/2020
32. EGPAF(Elisabeth Glaiser Paediatric AIDS Foundation). the Zimbabwe Program [Internet]. 2019 p. 2014–5. Accessed 12/12/2019
33. Simmonds FM, Cohn JE, Mafaune HW, Nyamundaya TH, Mahomva A, Chadambuka A. Task shifting for point-of-care early infant diagnosis: A comparison of the quality of testing between nurses and laboratory personnel in Zimbabwe. *Hum Resour Health*. 2020;18(1):1–7.
34. Zimbabwe Ministry of Health and Child Care. 2018 EMTCT Validation and PMTCT Updates, Harare, Zimbabwe. 2018.
35. Levesque JF, Harris MF, Russell G. Patient-centred access to health care: Conceptualising access at the interface of health systems and populations. *Int J Equity Health* [Internet]. 2013;12(1):1. Available from: *International Journal for Equity in Health*

36. UNAIDS. Towards the Elimination of Mother-to-Child Transmission of HIV: Report of a WHO Technical Consultation. 2011. p. 1–86.
37. Dinh TH, Mushavi A, Shiraishi RW, Barr BT, Balachandra S, Shambira G, et al. Impact of timing of antiretroviral treatment and birth weight on mother-to-child human immunodeficiency virus transmission: findings from an 18-month prospective cohort of a nationally representative sample of mother–infant pairs during the transition fro. *Clin Infect Dis*. 2018;66(4):576–85.
38. Vogt F, Ferreyra C, Bernasconi A, Ncube L, Taziwa F, Marange W, et al. Tracing defaulters in HIV prevention of mother-to-child transmission programmes through community health workers: Results from a rural setting in Zimbabwe. *J Int AIDS Soc*. 2015;18(1):1–10.
39. Chevo T, Bhatasara S. HIV and AIDS Programmes in Zimbabwe: Implications for the Health System. *ISRN Immunol* ;2012:1–11.
40. Mudzviti T, Dhliwayo A, Chingombe B, Ngara B, Monera-Penduka TG, Maponga CC, et al. Perspectives on oral pre-exposure prophylaxis use amongst female sex workers in Harare, Zimbabwe. *South Afr J HIV Med*. 2020;21(1):1–6.
41. Gregson S, Nyamukapa CA, Sherr L, Mugurungi O, Campbell C. Grassroots community organizations’ contribution to the scale-up of HIV testing and counselling services in Zimbabwe. *Aids*. 2013;27(10):1657–66.
42. Marcos Y, Phelps BR, Bachman G. Community strategies that improve care and retention along the prevention of mother-to-child transmission of HIV cascade: A review. *J Int AIDS Soc*. 2012;15(Suppl 2).
43. Chikwari CD, Simms V, Dringus S, Kranzer K, Bandason T, Vasantharoopan A, et al. Evaluating the effectiveness and cost-effectiveness of health facility-based and community-based index-linked HIV testing strategies for children: Protocol for the B-GAP study in Zimbabwe. *BMJ Open*. 2019;9(7):1–7.
44. Sarnquist CC. Integrating family planning and prevention of mother to child HIV transmission in Zimbabwe. *NIH Public access*. 2014;23(1):1–7.
45. Shroufi A, Mafara E, Saint-Sauveur JF, Taziwa F, Viñoles MC. Mother to Mother (M2M) Peer Support for Women in Prevention of Mother to Child Transmission (PMTCT) Programmes: A Qualitative Study. *PLoS One*. 2013;8(6).
46. Muchini B, Benedikt C, Gregson S, Gomo E, Mate R, Mugurungi O, et al. Local perceptions of the forms, timing and causes of behavior change in response to the AIDS epidemic in Zimbabwe. *AIDS Behav*. 2011;15(2):487–98.
47. Amoah PA, Phillips DR. Health literacy and health: rethinking the strategies for universal health coverage in Ghana. *Public Health [Internet]*. 2018;159:40–9. Available from: <https://doi.org/10.1016/j.puhe.2018.03.002>
48. McClintock HF, Alber JM, Schrauben SJ, Mazzola CM, Wiebe DJ. Constructing a measure of health literacy in Sub-Saharan African countries. *Health Promot Int*. 2019;1–9.
49. McTavish S, Moore S, Harper S, Lynch J. National female literacy, individual socio-economic status, and maternal health care use in sub-Saharan Africa. *Soc Sci Med [Internet]*. 2010 Accessed 02/08/2020
50. Chadambuka A, Katirayi L, Muchedzi A, Tumbare E, Musarandega R, Mahomva AI, et

- al. Acceptability of lifelong treatment among HIV-positive pregnant and breastfeeding women (Option B+) in selected health facilities in Zimbabwe: A qualitative study. *BMC Public Health*. 2017;18(1):1–8.
51. Mufunda E, Albin B, Hjelm K. Differences in Health and Illness Beliefs in Zimbabwean Men and Women with Diabetes. *Open Nurs J*. 2012;6:117–25.
 52. Nyati-Jokomo Z, Chitsike I, Mbizvo E, January J. 'If nurses were in our shoes would they breastfeed their own babies?' A qualitative inquiry on challenges faced by breastfeeding mothers on the PMTCT programme in a rural community in Zimbabwe. *BMC Pregnancy Childbirth*. 2019;19(1):1–9.
 53. Kyei-Nimakoh M, Carolan-Olah M, McCann T V. Access barriers to obstetric care at health facilities in sub-Saharan Africa-a systematic review. *Syst Rev*. 2017;6(1):1–16.
 54. Bradley S, McCourt C, Rayment J, Parmar D. Disrespectful intrapartum care during facility-based delivery in sub-Saharan Africa: A qualitative systematic review and thematic synthesis of women's perceptions and experiences. *Soc Sci Med [Internet]*. 2016;169:157–70. Available from: <http://dx.doi.org/10.1016/j.socscimed.2016.09.039>
 55. Onyeneho NG, Amazigo U V., Njepuome NA, Nwaorgu OC, Okeibunor JC. Perception and utilization of public health services in Southeast Nigeria: Implication for health care in communities with different degrees of urbanization. *Int J Equity Health [Internet]*. 2016;15(1):1–11. Available from: <http://dx.doi.org/10.1186/s12939-016-0294-z>
 56. Dunkley E, Ashaba S, Burns B, O'Neil K, Sanyu N, Akatukwasa C, et al. 'i beg you...breastfeed the baby, things changed': Infant feeding experiences among Ugandan mothers living with HIV in the context of evolving guidelines to prevent postnatal transmission. *BMC Public Health*. 2018;18(1).
 57. J January, Nyati-Jokomo J, Rugaranganda W, Chitsike I. Risky traditional practices and prevention of mother-to-child transmission of HIV: The case of Chiota community in Zimbabwe. *AIDS Care - Psychol Socio-Medical Asp AIDS/HIV*. 2016;28(1):52–6.
 58. Adjiwanou V, LeGrand T. Gender inequality and the use of maternal healthcare services in rural sub-Saharan Africa. *Heal Place [Internet]*. 2014;29:67–78. Available from: <http://dx.doi.org/10.1016/j.healthplace.2014.06.001>
 59. Ndaimani A, Chitsike I, Haruzivishe C, Stray-Pedersen B. An exploration of barriers and enablers of retention in a program to reduce vertical transmission of HIV at health centers in zimbabwe. *Int J Prev Med*. 2019;10(1):1–6.
 60. Nyati-jokomo Z. University of Zimbabwe socio-cultural realities of following through with prevention of mother to child transmission of HIV program in Chiota district ,Zimbabwe implications for elimination of paediatric infection. Zimbabwe; 2015.
 61. Makoni A, Chemhuru M, Chimbetete C, Gombe N, Mungati M, Bangure D, et al. Factors associated with male involvement in the prevention of mother to child transmission of HIV, Midlands Province, Zimbabwe, 2015 - A case control study. *BMC Public Health [Internet]*. 2016;16(1):1–9. Available from: <http://dx.doi.org/10.1186/s12889-016-2939-7>
 62. MA Gillentine, LN Berry, RP Goin-Kochel, MA Ali, J Ge, D Guffey, JA Rosenfeld, V Hannig, P Bader, M Proud, M Shinawi, BH Graham¹, A Lin, SR Lalani, J Reynolds, M

- Chen, T Grebe, CG Minard, P Stankiewicz, AL Beaudet and C, Schaaf. Men's hopes, fears and challenges in perinatal health and the prevention of mother to child transmission of HIV in the rural Kenya. *J Autism Dev Disord.* 2017;47(3):549–62.
63. Kuonza LR, Tshuma CD, Shambira GN, Tshimanga M. Non-adherence to the single dose nevirapine regimen for the prevention of mother-to-child transmission of HIV in Bindura town, Zimbabwe: A cross-sectional analytic study. *BMC Public Health.* 2010;10:1–8.
 64. Mucheto P, Chadambuka A, Shambira G, Tshimanga M, Notion G, Nyamayaro W. Determinants of nondisclosure of HIV status among women attending the prevention of mother to child transmission programme, Makonde district, Zimbabwe, 2009. *Pan Afr Med J.* 2011;8:1–12.
 65. Turan JM, Bukusi EA, Onono M, Holzemer WL, Miller S, Cohen CR. HIV/AIDS stigma and refusal of HIV testing among pregnant women in rural Kenya: Results from the MAMAS study. *AIDS Behav.* 2011;15(6):1111–20.
 66. Dirisu O, Eluwa G, Adams E, Torpey K, Shittu O, Adebajo S. "I think this is the only challenge... The stigma" Stakeholder perceptions about barriers to Antenatal care (ANC) and Prevention of mother-to-child transmission (PMTCT) uptake in Kano state, Nigeria. *PLoS One [Internet].* 2020;15(4):1–14. Available from: <http://dx.doi.org/10.1371/journal.pone.0232028>
 67. Muchedzi A, Chandisarewa W, Keatinge J, Stranix-Chibanda L, Woelk G, Mbizvo E, et al. Factors associated with access to HIV care and treatment in a prevention of mother to child transmission programme in urban Zimbabwe. *J Int AIDS Soc [Internet].* 2010;13(1):38. Available from: <http://www.jiasociety.org/content/13/1/38>
 68. Heestermans T, Browne JL, Aitken SC, Vervoort SC, Klipstein-Grobusch K. Determinants of adherence to antiretroviral therapy among HIV-positive adults in sub-Saharan Africa: A systematic review. *BMJ Glob Heal.* 2016;1(4):1–13.
 69. McCoy SI, Buzdugan R, Mushavi A, Mahomva A, Cowan FM, Padian NS. Food insecurity is a barrier to prevention of mother-to-child HIV transmission services in Zimbabwe: A cross-sectional study. *BMC Public Health [Internet].* 2015;15(1):1–9.
 70. Clouse K, Schwartz S, Van Rie A, Bassett J, Yende N, Pettifor A. What they wanted was to give birth; Nothing else: Barriers to retention in option B+ HIV care among postpartum women in South Africa. *J Acquir Immune Defic Syndr.* 2014;67(1):1–14.
 71. Bergmann JN, Wanyenze RK, Stockman JK. The cost of accessing infant HIV medications and health services in Uganda. *AIDS Care - Psychol Socio-Medical Asp AIDS/HIV [Internet].* 2017;29(11):1426–32. Available from: <https://doi.org/10.1080/09540121.2017.1330531>
 72. Feinstein L. Antenatal and delivery services in Kinshansa,DRC. NIH Public access. 2014;18(10):1–17.
 73. Gregson S, Mushati P, Grusin H, Nhamo M. Europe PMC Funders Group Social Capital and Women ' s Reduced Vulnerability to HIV infection in Rural Zimbabwe. *Popul Dev Rev.* 2012;37(2):333–59.
 74. Orne-Gliemann J, Font H, Maphosa T, Kangwende A, Rusakaniko S, Magezi V, et al. Patterns of attendance at mother support groups in Zimbabwe. the EPAZ trial (2014-2016). *J Acquir Immune Defic Syndr.* 2017;75:S216–23.

75. Erlwanger AS, Joseph J, Gatora T, Muzunze B, Orne-Gliemann J, Mukungunugwa S, et al. Patterns of HIV care clinic attendance and adherence to antiretroviral therapy among pregnant and breastfeeding women living with HIV in the context of option b+ in Zimbabwe. *J Acquir Immune Defic Syndr.* 2017;75:S198–206.
76. Ministry of Women Affairs Gender and Community Development. The national gender policy (2013-2017) [Internet]. 2013 [cited 2020 Aug 10]. p. 1–26. Accessed 10/08/2020.
77. Lori JR, Ofosu-Darkwah H, Boyd CJ, Banerjee T, Adanu RMK. Improving health literacy through group antenatal care: A prospective cohort study. *BMC Pregnancy Childbirth.* 2017;17(1):1–9.
78. Nyondo-Mipando AL, Chimwaza AF, Muula AS. 'he does not have to wait under a tree': Perceptions of men, women and health care workers on male partner involvement in prevention of mother to child transmission of human immunodeficiency virus services in Malawi. *BMC Health Serv Res.* 2018;18(1):1–8.
79. Nyondo AL, Choko AT, Chimwaza AF, Muula AS. Invitation cards during pregnancy enhance male partner involvement in Prevention of Mother to Child Transmission (PMTCT) of Human Immunodeficiency Virus (HIV) in Blantyre, Malawi: A randomized controlled open label trial. *PLoS One.* 2015;10(3):1–13.
80. Mohlala BKF, Boily MC, Gregson S. The forgotten half of the equation: Randomized controlled trial of a male invitation to attend couple voluntary counselling and testing. *Aids.* 2011;25(12):1535–41.
81. Hartmann M, Gilles K, Shattuck D, Kerner B, Guest G. Changes in couples' communication as a result of a male-involvement family planning intervention. *J Health Commun.* 2012;17(7):802–19.
82. Prudden HJ, Hamilton M, Foss AM, Adams ND, Stockton M, Black V, et al. Can mother-to-child transmission of HIV be eliminated without addressing the issue of stigma? Modeling the case for a setting in South Africa. *PLoS One.* 2017;12(12):1–19.
83. Peltzer K, Babayigit S, Rodriguez VJ, Jean J, Sifunda S, Jones DL. Effect of a multicomponent behavioural pmtct cluster randomised controlled trial on hiv stigma reduction among perinatal hiv positive women in mpumalanga province, south africa. *Sahara J.* 2018;15(1):80–8.
84. Mburu G, Iorpenda K, Muwanga F. Expanding the role of community mobilization to accelerate progress towards ending vertical transmission of HIV in Uganda: The Networks model. *J Int AIDS Soc.* 2012;15(June 2011):1–9.
85. Ngoma-Hazemba A, Ncama BP. The role of community volunteers in PMTCT programme: Lessons from selected sites in Zambia to strengthen health education on infant feeding and follow-up of HIV-positive mother-infant pair. *African J Prim Heal Care Fam Med.* 2018;10(1):1–8.
86. Salmen CR, Hickey MD, Fiorella KJ, Omollo D, Ouma G, Zoughbie D, et al. 'Wan Kanyakla' (We are together): Community transformations in Kenya following a social network intervention for HIV care. *Soc Sci Med [Internet].* 2015;147:332–40.
87. Mushi D, Mpembeni R, Jahn A. Effectiveness of community based safe motherhood promoters in improving the utilization of obstetric care. The case of Mtwara Rural District in Tanzania. *BMC Pregnancy Childbirth.* 2010;10.

88. Tabala M, Kawende B, Wenzel LK, Okitolonda EW. Conditional cash transfers improve retention in PMTCT services by mitigating the negative effect of not having money to come to the clinic. *HHS Public Access*. 2018;74(2):150–7.
89. Tura HT, Story WT, Licoze A. Community-based savings groups, women’s agency, and maternal health service utilisation: Evidence from Mozambique. *Glob Public Health*. 2020;

ANNEXURE

Annex i

Table 1a. Health systems related interventions of PMTCT of HIV in Zimbabwe.

Supply side interventions			
Stage	MTCT without intervention (27).	Intervention	Outcome with intervention
Pre-pregnancy	Not applicable	Increased HIV testing And pre- conception ART (27) (36)	Early ART initiation of the positive women reduces Viral load by 90% and reduces MTCT by 88%.
Pregnancy	5-10%	Early ART initiation (36).	MTCT reduced by 88%
		Recurrent retesting for the HIV negative pregnant women at 3months,6/52 post-delivery and 3 monthly (27).	Early Art initiation reducing MTCT to < 2%
		OPT-OUT testing strategy during ANC visits led by lay counselors (29).	Increased number of women tested, receiving results and honoring 6 weekly follow up visits.
Labor and delivery	10-20%	Safe delivery methods (27).	Associated with reduced MTCT of HIV.
Breast feeding period	10-20%	Exclusive breastfeeding for 6 months (27).	Reduces MTCT by 1-4% Risk of MTCT lowered 3-4-fold
		Health information on exclusive breast feeding (27).	Reduces MTCT of HIV
Breastfeeding period		No breastfeeding- use of infant formula	No information found
Infant diagnosis		Early infant diagnosis (EID) (31).	Reduction of turnaround time for results to 1 day compared to 1 month

			for HIV exposed infants.
All stages	25-40%		
		Tracing ART defaulters through community health care workers (37).	Peri natal MTCT was not reduced but their retention in care was improved
		3 monthly viral load monitoring at all stages with adherence counselling (27).	Reduces MTCT rate to below 1% if woman is virally suppressed.
		Availability of information on SRHR services for women of child bearing age living with HIV (27).	Patriarchal and religious influence on decision making has been shown to have an influence on use of FP services.
		HIV testing and counselling by Primary care counselors (PCC) (38)	Increased number of HIV testing for pregnant women
		Pre exposure prophylaxis (PREP) among sero discordant couples/high risk groups and women enrolled in PMTCT program (39).	No impact recorded among women enrolled in the PMTCT program

Annex ii

Table 1b. Demand side interventions of PMTCT of HIV in Zimbabwe

Demand side interventions			
Stage	MTCT without intervention (27).	Intervention	Outcome with intervention
ALL STAGES	25-40%	Incorporating HIV debates in established community-based organizations which also target women of child bearing age (40).	High uptake of HIV counseling and testing, PMTCT among educated women and those of rural background. Low uptake among employed women.
Pre-pregnancy		Community support groups and home visit by lay counselors for additional health education to women enrolled in PMTCT program (41).	Improved knowledge of the risk of vertical transmission and the need for consistent condom use for women enrolled in the PMTCT program
Pregnancy		Peer educators and use of influential community members in the general population including women in the PMTCT program (41).	Reduction of stigma and empowerment to seek health care services among women enrolled in the PMTCT program
Labor and delivery		Index- linked HIV testing approach for children 2- 18 years (42).	Low uptake of HIV testing due to user fee barrier in some health institutions
Breastfeeding		Integrating family planning and PMTCT services (43).	Enhanced condom use, sexual negotiation skills and chance of condom use among women enrolled in the PMTCT program to prevent HIV infection

			of the unborn/breastfeeding infant.
		Mother to mother support groups in the PMTCT program (42) (44).	Knowledge empowerment leading to increased use of Family planning and ability to negotiate for condom use
		Stigma and Discrimination reduction (45).	Stigma reduction not always achieved in all study settings.
		National behavior Change program Run by National AIDS council(NAC) (46).	Addresses the general population through community engagement. No data on impact of the program.

Annex iii

Table 2. Search strategy:

	Objective				Context
1	To identify and describe the major demand side factors that influence MTCT of HIV in Zimbabwe	Factors influencing mother to child transmission of HIV		<ul style="list-style-type: none"> • Health literacy/ Health beliefs • Trust/ stigma • Expectations • Personal values • Social values • Culture • Gender • Autonomy/independence/self sufficiency • Living conditions/environment 	Zimbabwe/ SSA
2	To discuss and analyze the relevant demand side interventions focusing on biomedical methods and provision of comprehensive care treatment and support that have proven to be effective in SSA	Pregnant women living with HIV (PWLHIV) OR MTCT of HIV	Interventions OR Prevention of OR Prevention strategy	<ul style="list-style-type: none"> • Transport/accessibility • Social support • Income/salary • Assets/resources • Health insurance/health cover • Social capital/shared identity/shared norms • Knowledge/information • Empowerment/enablers • Adherence • Care giver support • Community support system 	SSA

Annex iv

Table 4. Summary of PMTCT interventions in SSA

No	Author/publication year	Country/Region	Study design	Study location	Sample size	Duration of intervention	Intervention ON	Intervention	% women	Retention rate	Outcome
1	K.Peltzer et al 2018	South Africa	CRCT	12 rural CHC(Gerd Sibande & Nkangala districts)	699(I-342 C-357)	2 years	Stigma reduction for PWLH	Multi component stigma reduction	100	59.5%	Positive Stigma reduction in the intervention group
2	A Nyondo et al 2015	Malawi	RCT	Blantyre (South Lunzu and Mpemba HC)	462	6 months	Assess the impact of invitation card on Male partner involvement in ANC	Invitation card	100	I-91.7% C-89.2%	Intervention group women more likely to be accompanied by their husbands(p=0.02)
3	Jody R el al. 2017	Ghana	Retrospective cohort study	Kumasi Urban district	240	-	To assess if group ANC health education improves women's health literacy	Group health education + shared experiences	100	73% (dropout due to miscarriage, transfers and LTFU)	Enhanced knowledge on pregnancy related stigma(I-94%, C-72%) Improved knowledge on exclusive breastfeeding (I-90% , C-75.9%)
4	R.Byamugisha et al. 2011	Malawi	Qualitative	Mbale Regional Referral Hospital from		4 months	To assess the facilitation spousal communication and FP use among partners.	Malawian male Motivator project	-	Not stated	78 % contraceptive use compared to 58% in the control group. Improved joint decision making and empowerment of

											women to make decisions
5	D.Mushi et al 2010	Tanzania	Pre and post comparison study	4 villages in rural Mtwara district	512 deliveries	2 years	Explore community intervention in increasing use of obstetric care services	Community Safe motherhood promoters	Not given	Not stated	Increase in ANC bookings (P<0.001) deliveries by skilled birth attendants(p<0.05) Knowledge increase on safe motherhood not statistically significant (P>0.05)
6	G.Mburu et al 2012	Uganda	Retrospective review	Uganda	750 groups		Evaluation of the community mobilisation to accelerate progress towards EMTCT	Community networks	Not given	Not applicable	Improved retention of PBWLH and reduction in stigma (figures not stated)
7	C. Salmen 2015	Kenya	Qualitative	Mfangano Island	369	4 months	Encourage engagement of social networks in care of PLWH	Microclinic	-	Not stated	Change in perception of PLWH and associated stigma
8	M Yotebieng et al 2017	Democratic Republic of Congo (DRC)	Secondary data analysis	Kinshasa 86 urban clinics	433	16 months	To assess impact of cash transfers on PMTCT retention	Cash transfer	100		Cash payment improved LTFU (95%CI-0.35,0.10)
9	T.Halkeno et al 2020	Mozambique	Survey	Semi urban area	205 (I-105 C-100)	2 weeks	To assess if community savings group (SG) had an impact on Maternal health services utilisation	Community savings	100	Not stated	>4 ANC attendance-72.4% Skilled birth attendance-94.2% PNC attendance-60% in SG group