FACTORS AFFECTING THE IMPLEMENTATION OF PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) OF HIV IN TEMA GENERAL HOSPITAL (TGH)

BY

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(1 0 2 6 9 6 1 1)

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE

JULY, 2018
DECLARATION

I, Ruth Ewuradjoa Panford hereby declare that this thesis is a result of my independent work. References to other works have been duly acknowledged. I further declare that this work has not been submitted for award of any degree in this institution or any other University elsewhere.

………………………………..                                  ……………………………………..

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(Academic Supervisor)
DEDICATION

I dedicate the success of this work to all HIV positive women and all the Health Workers in Tema General Hospital who are committed to ensuring that HIV infection is reduced to its barest minimum in children through hard work, commitment and dedication. It is also to my children; Emmanuella Ahema, Israel Kwame, Ewuraesi Nhyira and David Paa Kwesi Panford for their support and understanding.
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ACRONYMS

AIDS - Acquired Immune Deficiency Syndrome

ANC - Ante Natal Clinic

ART - Antiretroviral Therapy

ARV - Antiretroviral

DNA - Deoxyribonucleic Acid

EID - Early Infant Diagnosis

GAC - Ghana AIDS Commission

HAART - Highly Active Antiretroviral Therapy

HIV - Human Immunodeficiency Virus

HSS - HIV Sentinel Survey

HTC - HIV Testing and Counseling

MTCT - Mother-to-child Transmission

NACP - National AIDS/STI Control Program

OR - Odds Ratio

PCR - Polymerase Chain Reaction

PMTCT - Prevention of mother-to-child Transmission

RNA - Ribonucleic Acid
SVD - Spontaneous Vaginal Delivery

UNAIDS - Joint United Nations Program on HIV/AIDS

WHO - World Health Organization
## DEFINITION OF TERMS

<table>
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<tr>
<td>PMTCT burden</td>
<td>It is the extent of need for PMTCT service in a given population. It is measured by the expected number of HIV-positive antenatal clients and the trend of HIV prevalence among antenatal clients</td>
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<tr>
<td>Polymerase Chain Reaction</td>
<td>It is a common laboratory technique used to make many copies (millions or billions) of a particular region of DNA.</td>
</tr>
<tr>
<td>PMTCT outcome</td>
<td>The end result of the PMTCT intervention determined by testing the HIV-exposed baby’s blood for HIV at early infant diagnosis and the analysis of the associations of the results</td>
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<tr>
<td>PMTCT uptake</td>
<td>The extent to which the exposed PMTCT need is actually met. It is measured as the proportion of expected number of HIV-positive</td>
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<tr>
<td>PMTCT workload</td>
<td>The number of antenatal clients actually testing positive for HIV</td>
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<tr>
<td>Window Period</td>
<td>This is the period after the infection and before sero conversion, during which</td>
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markers of infection (HIV specific antigen and antibodies) are still absent or too scarce to be detectable. During this time, a person could be infected with HIV and be very infectious but may still test HIV negative.
ABSTRACT

Introduction: Mother-to-Child Transmission (MTCT) is the main source of HIV in children. In an attempt to curb this, the UNAIDS in the year 2009 called for the elimination of MTCT of HIV by the year 2015. Ghana began the implementation of PMTCT in the year 2001, using an intervention package made up of four prongs.

Study Objectives: This study investigated the factors that affected the implementation of PMTCT of HIV in Tema General Hospital from 2012 – 2016. It also assessed the knowledge of PMTCT Service Providers regarding PMTCT intervention, and further identified the socio-cultural and economic factors that influenced the implementation of PMTCT in TGH.

Methods: The study used both quantitative and qualitative methods. A review of folders of HIV positive pregnant women who attended the ART Clinic from January, 2012 – December 2016, an in-depth interview for PMTCT Service Providers in TGH and a focus group discussion for some current HIV positive nursing mothers in TGH were also used to obtain data. A quantitative data analysis was done using SPSS, STATA and EPI-DATA computer packages for windows. A qualitative data analysis was also done through a thematic analysis using NVivo.

Results: The results from the data reviewed indicated that 5 (2.24%) of the exposed children born to the 223 HIV positive women whose data were reviewed were infected with the virus. As high as 81.2% of the participants adhered to the PMTCT program by attending clinic regularly, taking their ARVs as prescribed, and giving ARV prophylaxis to their babies as prescribed. The mothers involved in the focus group discussions demonstrated adequate knowledge in PMTCT practices. They also mentioned stigmatization, beliefs (including superstition and religion) and partner attitude as some of the socio-cultural factors that may have either positive or negative
impact on adherence to PMTCT. The PMTCT Service Providers that were included in the in-depth interviews demonstrated an adequate level of knowledge by explaining the importance of PMTCT, the eligibility for PMTCT services, the exact time for PMTCT service initiation and the timelines for re-testing for HIV in all pregnant women who tested negative to the initial HIV test. They also knew of when to link-up HIV positive women to ART care.

Conclusion: Factors such as clients’ adherence to appointment dates, type of gestation (singleton or twins) and administration of ARV prophylaxis to exposed infants were identified to have significant effect on the PCR results of exposed babies. Both PMTCT clients and Service Providers expressed adequate knowledge in the PMTCT program. Some of the identified challenges that hindered the PMTCT program included long waiting time between the PCR tests and delivery of test results, lack of training for Service Providers, heavy workload on Service Providers and some amount of stigmatization meted out to clients by friends and relatives.
CHAPTER ONE

INTRODUCTION

1.1 Background

Approximately 39.5 million people are said to be living with HIV globally including an estimated 17.7 million women and 2.3 million children less than 15 years. The majority of these people are in the Sub Saharan Africa (UNAIDS, 2017). Some years ago, children living with Human Immunodeficiency Virus (HIV) were expected to die before they became adolescents. These children may now live healthier and longer lives with the introduction of Highly Active Anti-retroviral Therapy (HAART) and good paediatric care (Puthanakit et al, 2007; Mothi et al, 2011; Cardoso et al, 2012.) Without appropriate care and treatment, there is a high possibility of HIV infected mothers to transmit the virus to their children during pregnancy, labour, delivery, and breastfeeding (WHO 2008).

Prevention of mother-to-child transmission (PMTCT) of HIV programs was put in place by the World Health Organization (WHO) to reduce mother-to-child transmission (MTCT) of HIV in children born to HIV positive pregnant women. Globally, approximately 90% of HIV infection among infants is acquired through mother-to-child transmission of HIV (WHO, 2008; UNAIDS, 2010; UNICEF, 2011). WHO has estimated that 15-45% of infants exposed to HIV are likely to be infected vertically (WHO, 2014). This can however be reduced through the PMTCT intervention (Brocklehurst & Volmink, 2002; Azcoaga-Lorenzo et al, 2011; Anoje et al, 2012).
In Ghana, according to the 2016 National Sentinel Survey (NSS) report, the median prevalence of HIV among pregnant women attending antenatal clinics has increased from 1.8% in 2015 to 2.4% in 2016. The survey was successfully conducted in all the 40 antenatal clinic sites across the country. HIV prevalence among pregnant women in 2016 ranged from 0.4% in Nalerigu (rural) to 4.2 in both Agormanya and Sunyani which are both urban sites.

During a UN summit in September 2005, World Health Organization (WHO) member states that were present (including Ghana) reaffirmed their commitment to fully implement all goals enshrined in the 2001 United Nations General Assembly Special Session on HIV/AIDS (UNGASS). The declaration commitment included reducing the proportion of infants infected with HIV by 50% by the year 2010. The high level global partners’ forum in Nigeria held in December 2005 on the Prevention of mother-to-child transmission of HIV charged all members to work “towards an HIV/AIDS-free generation”. This call to action was aimed at eliminating HIV infection in infants and young children which will lead to a worldwide HIV/AIDS-free generation (WHO, 2006). This implied that, Governments including the Government of Ghana with the support from developing partners must speed up the provision of PMTCT services including the distribution of ARVs and to ensure an efficient monitoring and evaluating systems on the progress in the elimination of HIV transmission in infants and young children (GAC, 2006).

Although there is an availability of PMTCT interventions, some countries in Sub Saharan Africa are not fully patronizing the services and some children are still being infected with the virus. In 2012, PMTCT coverage in Sub Saharan Africa ranged from 13% to more than 95% across 21 Sub Saharan African countries (WHO, 2013).
The aim of this research was to identify the factors affecting the implementation of PMTCT program in TGH by looking at the gaps associated with the program such as the socio-cultural factors, client factors and knowledge of health-care providers with regards to the implementation of PMTCT.

1.2 Statement of the problem

Mother-to-child-transmission (MTCT) of HIV is the main source of HIV infection in young children. Early diagnosis of HIV in a pregnant woman provides a unique opportunity for the initiation of the PMTCT protocol against HIV infection in a new born (WHO, 2013). The risk of mother to child transmission of HIV can be reduced or eliminated through the detection of maternal HIV infection during pregnancy and administration of Antiretroviral Therapy (ART) (WHO, 2017).

Rural prevalence in 2016 ranged from 0.5% in Builsa, Kintampo and Salaga to 3.3% in Fanteakwa (GAC, 2017).

The Greater Accra Region was adjudged as the region with the highest HIV infection among pregnant women with an HIV prevalence of 3.2% in the year 2015. This however saw a drop in 2016 to 2.4% hence taking the seventh position in the 2016 National HIV Sentinel Survey (NSS) (GAC, 2017).

In Tema General Hospital, the DNA PCR test done to ascertain the HIV status of six hundred and sixty one (661) HIV exposed children which was made up of children whose mothers went through the PMTCT program and those who did not go through the program from 2012-2016 came out with the following results. In the year 2012, five (5) children out of eighty-three (83)
children (6.02%) between 6 weeks and less than 18 months tested positive to HIV. In 2013, fourteen (14) out of one hundred and thirty four (134) children (10.4%) that were screened were HIV positive. In 2014, eleven (11) out of one hundred and forty one (141) children (7.8%) that were screened were also positive. The year 2015 saw fourteen (14) out of 150 children (9.3%) screened for HIV to be positive. In the year 2016, as high as twenty-two (22) out of 153 children (14.4%) that were screened were positive (TGH, 2017). The percentage of HIV positives in children screened increased from 6.02% in 2012 to 10.4% in 2013. There was however a drop of 2.6% between 2013 and 2014. The percentage of HIV positive cases however increased again by 1.5% in 2015 and further rose to 5.1% in 2016. The above indicated that sixty-six (66) out of the six hundred and sixty-one (661) children (9.98%) born to HIV positive mothers during the period under review were infected with HIV.

What accounts for the above problem is unknown. There is therefore the need to explore and determine the factors affecting the implementation of the PMTCT program in TGH by measuring the knowledge of health care providers in TGH to the PMTCT program and to also assess the level of adherence of HIV positive pregnant women to the program as well as to explore the community related factors affecting the implementation of PMTCT in TGH.

1.3 Theoretical Framework

There are several health care utilization models but one is widely used by researchers (Kroeger, 1983). For the purpose of this work, this health care utilization model was adapted for use as the theoretical framework for the study.
1.3.1 The Andersen Health Care Utilization Model

The Andersen behavioral model was developed in 1968 to study the factors that determine the use of health care services. This model can be influenced by three factors which are individual factors, societal factors and health service system factors. Though this model has undergone several modifications over the years, it still remains the most widely used in determining the utilization of health services (Kroeger, 1983).

The Anderson healthcare utilization model has been used in many studies as a theoretical or analytical framework to examine factors that determine the use of health services by several vulnerable populations such as the disabled, the elderly, those with HIV/AIDS or other conditions (Hausman-Muela S. 2003).

Andersen, in his work, described the individual factors as having three elements that relate to the individual’s ability to access and utilize health services. These elements are: predisposing factors such as age, gender, race, formal education, religion, knowledge about a particular health situation; enabling factors such as availability of services, socio-economic status, social class and social support networks; and needs factors such as the need for care, perception of illness, values and attitudes towards health services. (Greene, 2005)
1.4 Conceptual Framework on Factors Affecting Implementation of PMTCT in TGH
1.4.1 Individual factors

Paramount of the individual factors is the primary prevention of unwanted pregnancies. According to Newell (2001), vertical transmission of HIV infection can be prevented when unwanted pregnancy is avoided. Also a positive attitude of a pregnant mother towards antenatal clinic will expose the individual to voluntary counseling and testing units which will enable the identification of all HIV positive mothers so that relevant measures would be put in place if mother is found positive. This is very relevant since most pregnant women do not know their HIV status before they become pregnant. Psychological problems that may arise on HIV diagnosis, including depression, denial, fear of lifelong treatment, religion, ethnicity and limited formal education were also some individual factors reported by Gourlay et al. (2013) as hindrances affecting reduction in MTCT of HIV and if addressed properly would produce positive results.

1.4.2 Health System factors

With regards to the health care system, issues such as health workers’ attitude towards HIV positive clients, health workers’ motivation and fears, service delivery, shortage of qualified health care providers and availability of drug supply and other logistics tend to affect health outcomes. The long distance to clinics, coupled with its associated cost is also a key barrier towards attendance to antenatal clinics with a resultant limit in the opportunity to access ARV therapy. Poor referral and tracking systems is also a barrier breaking the link between antenatal and ART services, which when well integrated will improve service delivery (Gourlay et al 2013).
1.4.3 Socio-cultural factors

Studies have shown that socio-cultural factors which include the gender of the client, the amount of stigma and discrimination against that person, the socio-economic strength of the individual and the effects of cultural constraints on that individual, are major barriers to the implementation of PMTCT of HIV. Some cultural practices prevent women from negotiating for safer sex, others determine where a woman delivers as well as how to breastfeed a baby. All these practices serve as impediment to the utilization of PMTCT services and subsequent elimination of MTCT (Technau, 2014).

1.4.4 Attendance and Utilization of PMTCT Services

Attendance and utilization of PMTCT services including counseling and testing, availability of ARVs as well as feeding options for the child also affect the successful outcome of the program. Ensuring access to these services is pivotal in the reduction of MTCT of HIV (Newell, 2001).

1.5 Justification

Transmission of HIV from a mother to a child is an issue confronting countless number of HIV positive mothers. HIV transmission could occur during pregnancy, labour and delivery, or during breastfeeding (GAC, 2010). Almost all HIV infections in children in Ghana are attributed to vertical transmission from an infected pregnant mother occurring during pregnancy, labour, delivery or breastfeeding (GAC, 2010). About 3% of death in Ghanaian children under five (5) years in the year 2009 were attributed to HIV (GAC, 2010). It has been established that the higher the maternal viral load at delivery, the higher the MTCT risk (Bultreys & Lepage, 1998). The purpose of this research is to look into the factors that affect the implementation of PMTCT
taking into consideration the socio-cultural factors, the knowledge of healthcare providers regarding PMTCT use, the mothers’ adherence to the PMTCT protocol as well as the socio-cultural practices pertaining to the given community.

The outcome on the factors affecting the implementation of PMTCT, as well as the gaps that will be identified from the study will help determine the developing strategies to be used to improve the steps being taken by the Ghana Aids Commission (GAC), The National AIDS/STI Control program and all relevant stakeholders to reduce mother to child transmission of HIV in Ghana towards a generation free of HIV/AIDS.

1.6 Research Questions
The study sought to establish whether or not there was a relationship between HIV prevention in a child and a mother’s adherence to PMTCT services, and whether or not socio-cultural practices affected the use of the PMTCT services.

1.7 General Objective
The general objective of the study is to determine the factors affecting the implementation of Prevention of Mother-to-child Transmission (PMTCT) of HIV program in Tema General Hospital (TGH).

1.7.1 Specific Objectives
1. To determine the knowledge and practices of health care providers regarding the use of the PMTCT guidelines in TGH.

2. To assess the level of adherence of HIV positive pregnant women to the PMTCT services.

3. To identify the socio-cultural and economic factors influencing the use of PMTCT in TGH.
CHAPTER TWO

LITERATURE REVIEW

2.1 Pathology of HIV infection

The Human Immunodeficiency Virus (HIV) is the organism that is responsible for causing the disease; Acquired Immune Deficiency Virus (AIDS). HIV is a retro virus, belonging to the lentivirus group (Stannard et al, 1987). There are two types of the Human Immunodeficiency Virus; HIV 1 & HIV 2. Although there are some differences in their morphology, both HIV 1 and HIV 2 have the same mode of transmission. However, the progression of HIV 2 is slower than HIV 1 and it is also the least transmissible (Donnelly et al, 1993; Martinez-Steele et al, 2007; Nyamweya et al, 2013). When the virus enters the human body, it attacks the T-Helper cells which help the body to fight other infections. This renders the body weak and the individual becomes susceptible to all manner of illnesses and diseases. As the infection progresses the quantity of the virus in the body becomes higher and the CD4 counts of the T-Helper cells becomes decreased. The person’s immunity becomes so compromised and progresses to the end stage leading to Acquired Immune Deficiency Syndrome. (AIDS). There is no known cure for HIV infection or AIDS but there are available anti-retroviral drugs which delay the progression of the infection (WHO, 2013).

HIV spreads from person to person through the exchange of bodily fluids such as blood, vaginal secretions, semen and breast milk. Although it is believed that the exchange of bodily fluids and secretions during unprotected sexual intercourse is the commonest means of transmission, blood transfusion also accounts for some amount of the transmission. The
exchange of contaminated sharps and piercing objects as well as pregnancy, delivery and breastfeeding are also other sources of infection (Levy, 1993; UNAIDS, 2013).

The Prevention of Mother-to-Child Transmission (PMTCT) intervention is an integrated health service intervention which is offered to mothers and their children to reduce the risk of HIV transmission from the mother to the infant. It protects them from HIV-related risks, enhance early case detection and treatment of HIV infection (WHO, 2014). Mother-to-child transmission occurs when a mother transmits the HIV infection to her infant or young child. This mainly occurs during pregnancy (pre partum), labour and delivery (intra partum) or through breastfeeding after delivery. It has been estimated by World Health Organization (WHO) that without intervention, the risk of MTCT from an infected mother to her child is 15-45% with the greatest period of infection being during labour and delivery (WHO, 2014).

2.2 HIV prevalence in Ghana

In Ghana, it has been estimated that 1.3% of the adult population were living with HIV by 2012. The HIV sentinel survey for 2012 showed a median prevalence of 2.1% among pregnant women. According (NACP, 2013), about 30,395 children between the ages 0-14 years were estimated to be HIV infected in Ghana. Of this number, 1,704 were new infections in the year 2012. HIV infections in Ghanaian children are attributed to vertical transmission from an infected mother during pregnancy, labour, delivery, or breastfeeding (GAC, 2010). About 3% of deaths in children under 5 years in the year 2009 were due to HIV (GAC, 2010). 2,080 out of 18,000 deaths in Ghana in the year 2010 were children (NACP, 2011).

According to the 2016 national HIV sentinel survey report, the national HIV prevalence among pregnant women attending ante natal clinic in 2016 is 2.4%. HIV prevalence among the young
population (15-24) years which is an indication of new infections remained at 1.1%. The highest HIV prevalence by age group 45-49 was 5.6% followed by age group 35-39 at 3.5% with the age group 15-19 being the least at 0.6% (GAC, 2017).

The regional HIV prevalence ranged from 2.7% in the Volta Region and Brong Ahafo Region as the regions with the highest prevalence to 0.7% in the Northern Region as the lowest. HIV prevalence in the various service sites ranged from 0.4% in Nalerigu to 4.4% in Agormanya and Sunyani. The highest prevalence within urban sites was 4.2% in Agormanya and Sunyani followed by Wa with 3.7%. Rural prevalence in 2016 ranged from 0.5% in Builsa, Kintampo, and Salaga to 3.3% in Fanteakwa (GAC, 2017).

A linear trend analysis of Ante Natal Clinic HIV prevalence since 2001 shows a decline in the epidemic up to 2015 despite the increase from last year’s prevalence of 1.8%. The proportion of HIV subtype1 is 98.5% compared to 1.5% for dual HIV type 1 and 2 infections in the 2016 survey. There was however no HIV subtype 2 infection.

2.3 Mother to child transmission (MTCT) of HIV

During pregnancy, mother-to-child transmission can occur when the virus in the mother’s blood crosses the placenta into the baby’s blood (Ackerman and Kwie, 2013). The transmission of HIV can occur during pregnancy and this is shown by a study in which some babies were tested to have some amount of HIV in their blood within 48 hours after delivery by DNA Polymerase Chain Reaction (PCR) (Toth et al, 2001). HIV infection usually takes some weeks from the time of infection to see a detectable amount of the virus in the blood (Window Period). It could safely be concluded that these babies were infected during pregnancy (Kourtis and Bultreys,
There is a 5-10% chance of MTCT of HIV during pregnancy if no intervention is given to the pregnant woman (FMoH, 2007).

Mother-to-child transmission of HIV during labour and delivery is the most occurring of MTCT (FMoH, 2007). This could occur due to so many reasons. The baby may be infected either through micro-transfusion between the fetus and the mother which occurs during contractions or through a bruises on the baby’s skin which exposes the virus in the mothers body fluids and blood into the child’s circulatory system. It could also occur if the child swallows infected liquor from the mother during delivery. All these increase the child’s chances of being infected by 10-15% if the mother has not had any intervention (FMoH, 2007; Jourdian et al, 2007). Such babies may test negative for the virus by DNA PCR within 48 hours of delivery but may test positive after a few weeks of life. The virus may however be detected by 6 weeks after delivery (Early Infant Diagnosis) (Toth et al, 2001; FMoH 2007).

The risk of mother-to-child-transmission increases when labour is prolongs or when there is a premature rapture of membranes, pre-term delivery, difficult labour in which episiotomy is given (Mandelbrot et al., 1996; Carter, 2011). (The International perinatal HIV group, 1996) through their study have shown that there is a significant reduction in the MTCT rate if a caesarian section is done before the onset of labour independent of Anti-retroviral use.

A prospective study by Duliege et al, (1995) showed that a higher HIV transmission rate occurs among first twin as compared to the second twin in twin delivery. A study conducted by Scavalli and colleagues also came out with similar findings and came to the conclusion that twin pregnancies increase the risk of mother to child transmission of HIV (Scavalli et al).
The transmission of HIV from a mother to her child can occur during breastfeeding too. The virus may be detected through a DNA PCR by 6 weeks of life if the infection occurred through breast feeding during the first few days of life (Ziegler et al, 1985; Lehman and Farquhar, 2007; FMoH, 2007). It has been established that certain maternal factors can greatly influence the transmission of HIV from an infected pregnant mother to her infant. It is established that the higher the maternal viral load during delivery the higher the risk of mother-to-child transmission of HIV (Bultreys and Lepage, 1998). Breastfeeding exposes the baby to HIV infection but an effective ART reduces the risk significantly (Carter, 2011). Exclusive breastfeeding however reduces the risk of MTCT than mixed feeding does (Coutsodis, 2000; Coutsoudis et al, 2001). The estimated risk of mother-to-child transmission from pregnancy through to breastfeeding is summarized in table 1 below.
Table 1: MTCT risk during pregnancy through to 24 months of delivery

<table>
<thead>
<tr>
<th>TRANSMISSION PERIOD</th>
<th>MAXIMUM RISK OF MTCT OF HIV WITHOUT INTERVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>During pregnancy</td>
<td>5-10%</td>
</tr>
<tr>
<td>During labour and delivery</td>
<td>10-15%</td>
</tr>
<tr>
<td>During breastfeeding after birth</td>
<td>5-10%</td>
</tr>
<tr>
<td>Overall risk without breastfeeding</td>
<td>15-25%</td>
</tr>
<tr>
<td>Overall risk with breastfeeding by 18-24 months</td>
<td>20-35%</td>
</tr>
<tr>
<td>Total risk of MTCT</td>
<td>20-40%</td>
</tr>
</tbody>
</table>

2.4 Other factors associated with MTCT

A low maternal CD4 count is an indicator of an advanced stage of HIV infection or even AIDS. This also can highly predispose the fetus to mother-to-child transmission (Delicio et al., 2011). A high level of HIV-RNA in maternal genital fluids at the time of delivery increases the risk of MTCT (Abrams, 2004).

Chorioamnionitis (infection of the placenta, the membranes and other genital infections such as chlamydia) are likely to increase the risk of in utero transmission of HIV. (Mwanyumba et al, 2002).
The risk of intra partum MTCT increases due to prolonged labour, pre-mature rapture of membranes, pre-term delivery, difficult labour which may require episiotomy (Mandelbrot et al, 1996), Health Bridge(2007), documented that other factors that affect PMTCT implementation in many African countries include home delivery, one’s adherence to ARVs, ARV prophylaxis for the exposed infants, stigma and discrimination, follow up, feeding options, availability of ARVs and health system factors including human resource. A lot of infants that are born in the developing countries get infected as compared to infants born in the developed countries such as the United States of America, (USA), Germany, and Great Britain, among others (Bultreys, & Lepage, 1998; Tess et al, 1998).

A prospective study by Duliege et al (1995) revealed a higher HIV transmission rate among first twin as compared to the second twin in twin deliveries. In a similar research finding, Scavalli and colleagues also concluded that twin pregnancy was the risk factor for MTCT (Scavalli et al, 2007).

Breastfeeding generally exposes the infants to the virus and increases the risk of transmission although a mother’s effective ART intake reduces the risk significantly (Carter, 2011). Exclusive breastfeeding however poses less risk for MTCT compared to the practice of mixed feeding (Coutsodis, 2000; Coutsoudis et al, 2001).

2.5 PMTCT Intervention

PMTCT delivery in Ghana has undergone several changes over the years with regards to the WHO directives on the PMTCT protocol. PMTCT in Ghana started in 2003 with just a single dose of Tablet Nevirapine given to the pregnant woman on the onset of labour. The baby was also given Syrup Nevirapine for one (1) month.
The program received a boost in 2007 when a better option of combining two tablets of Zidovudine and Lamivudine (Combivir) for HIV positive pregnant women from 28 weeks of pregnancy and then one (1) week medication was given to the baby too.

In 2010, the World Health Organization changed the arrangement to enable every pregnant woman to have ARV Prophylaxis to prevent Mother-to-Child Transmission. With this, the treatment began at about 14 weeks and continued throughout pregnancy, delivery to one (1) year after delivery with the aim of reducing transmission substantially to the child.

Currently, every pregnant woman is put on ARVs as soon as she tests positive to HIV. This treatment continues throughout one’s life. The babies are also given ARV Prophylaxis for 6 weeks. Such babies could be breastfed from birth till they are one year old when there is a complete cessation of breastfeeding.

The national guideline for prevention of mother-to-child transmission in Ghana by the NACP, (2008) has the following implementation strategies.

1. Primary prevention of HIV infection in all.
2. Prevention of unintended pregnancies in women infected with HIV.
3. Prevention of mother-to-child transmission of HIV from mothers to their infants.
4. Provision of treatment, care and support to infected women, their infants and their families.

The above can be achieved through the testing of every pregnant woman attending antenatal clinic for HIV and treatment with Highly-Active Antiretroviral Therapy (HAART) for those found to be HIV positive (WHO). Ghana has adopted the use of HAART as soon as an HIV positive woman becomes pregnant and this treatment continues throughout the person’s life.
Infants exposed to HIV infection are also given a daily ARV prophylaxis from birth till 6 weeks of age. They then continue with daily Cotrimoxazole prophylaxis till they do their final test at 18 months of life. These exposed infants can then be breastfed exclusively for the first 6 months of life after which other foods and water could be added to the breast milk until complete cessation of breastfeeding at 1 year. This is a family based approach of provision of MTCT services in Ghana and the key service providers are trained clinicians made up of midwives, nurses, pharmacists, physician assistants and Doctors.

According to (Marino, 2012), in the United State, PMTCT is seen as one of the most effective Public Health interventions. The implementation of PMTC package comprises of HIV testing, counseling, provision of ARVs, delivery by caesarian session before the onset of labour and discourage breastfeeding. These, have reduced the risk of MTCT from as high as 25-30% without intervention to less than 2% in the United States (Fowler et al, 2007; Carter, 2011; Marino, 2012). Similar trends are recorded from the European Community study (EC Study, 2006)

2.6 Testing for HIV in the infant

WHO recommends that children born to HIV positive women are diagnosed as early as possible through HIV DNA PCR. This will allow health-care providers to provide optimal care and treatment for HIV-infected babies, including offering relevant advice on infant feeding. Early infant diagnosis (EID) of HIV also relieves the mother and family of undue stress of the uncertainty of the outcome (WHO, 2007).

In Ghana the NACP/GAC has adopted the WHO recommendation for Early Infant Diagnosis (EID) (GAC, 2012). HIV DNA PCR is a Virologic test method used for Early Infant Diagnosis
in Ghana. It provides a qualitative information (detected, not detected) about the presence of the virus in the blood sample. It has a sensitivity of > 98%.
CHAPTER THREE

METHODS

3.1 Study Area

The research was done at the Anti-Retroviral Therapy (ART) Clinic of Tema General Hospital (TGH). TGH is a district hospital established in 1954 by J.W Harrow and Sons Ltd and handed over to the government of Ghana in 1962. It is located in the Tema Metropolis and serves a population of 397,220. It is patronised by the people of Tema and its satellite towns and villages extending as far as Sakumono, Lashibi and Nungua.

The ART clinic is an Out Patients Department (OPD) service providing unit in TGH. It also provides HIV service which was started in 2003 as just HIV testing and counselling for only pregnant women during ante natal visits. It now has an average attendance of 110 general HIV clients per each clinic day.

Provision of PMTCT services is key at the ART Clinic. The Clinic sees an average of 5 newly diagnosed HIV positive pregnant women per clinic day which is run twice in a week (Tuesdays and Thursdays). The services offered include testing and counselling (HTC) for the general public as well as provision of Anti-Retroviral Drugs (ARVs) for People Living with HIV in general. The ART Clinic also provides Post Exposure Prophylaxis (PEP) of ART to Staff who accidentally get exposed to HIV in their line of duties.
3.2 Quantitative Methods

3.2.1 Study Design

A retrospective analysis was done on folders of 223 HIV positive pregnant women who attended the ART clinic in TGH from January 2012 to December 2016 to determine their level of adherence to the PMTCT program. Adherence here was measured by reviewing clients’ visits to the ART Clinic on given appointment dates, reviewing records on pill counts to ascertain how often they missed doses of ARVs or otherwise, identifying how many of them were able to disclose their HIV status to their sexual partners and significant others in their lives, determining how many of them were able to do either exclusive breastfeeding, replacement feeding or mixed feeding, assessing how many of them gave ARV prophylaxis to their HIV exposed infants from birth till they were six week old.

3.2.2 Quantitative/Outcome variables explored were:

1. Expected number of HIV positive pregnant women within the period under review as well as the rate of mother-to-child transmission of HIV.

3.2.3 Study Population, Sampling Method and Sample Size

The study population was all 316 HIV positive pregnant women who utilized the ART Clinic from January 2012 to December 2016. There was a Total Enumeration of all eligible folders for the study. However, only 223 folders were used for the study due to incomplete data gathered on 93 of the study participants.
3.2.4 Data Collection Techniques

Data collection was mainly review of records on 223 HIV positive pregnant women from the ART Clinic of TGH to describe the factors associated with the implementation of PMTCT from January 2012 to December 2016, such as the gestational age at the time of ART initiation, and their adherence to ARVs among others.

3.2.5 Inclusion Criteria

The study involved all HIV positive women who attended the ART Clinic for PMTCT in TGH from January 2012 to December 2016.

3.2.6 Exclusion Criteria

The study excluded all HIV positive clients in TGH who were not pregnant within the period under review; January 2012 to December 2016.

3.2.7 Data Processing and Analysis

A retrospective data on 223 HIV positive pregnant women out of the initial 316 were analyzed in a quantitative study to describe the factors that affect the implementation of PMTCT in TGH such as ART use during pregnancy, adherence to appointment dates, feeding options for their infants, type of pregnancy (singleton/multiple) and type of delivery among others. Information on 93 out of the 316 initial study participants were discarded due to incomplete data recorded on them. The rest were analyzed using SPSS Version 20; a quantitative data analysis software.
### PLAN FOR ANALYSIS ON PMTCT SERVICES

<table>
<thead>
<tr>
<th>FACTORS/VARIABLES</th>
<th>OPERATIONAL DEFINITION OF FACTOR/VARIABLE</th>
<th>INDICATORS TO MEASURE FACTOR/VARIABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of utilisation of PMTCT program</td>
<td>The extent to which the PMTCT services was patronised.</td>
<td>Proportion of HIV positive antenatal clients that accessed PMTCT services.</td>
</tr>
<tr>
<td>Expected number of HIV positive women</td>
<td>The number of HIV positive women the hospital had on record</td>
<td>Expected number of HIV positive pregnant women. This was calculated by multiplying HIV prevalence in TGH by expected number of pregnancies for a given year.</td>
</tr>
<tr>
<td>The rate of mother to child transmission</td>
<td>Proportion of mothers whose baby tested positive for HIV</td>
<td>This was measured by calculating a proportion of children that tested positive.</td>
</tr>
</tbody>
</table>
3.3 Qualitative Methods

3.3.1 Study Designs

A Focus Group Discussion (FGD) was done with 30 HIV positive nursing mothers currently attending the Child Welfare Clinic with their babies in TGH. This was done to assess their level of adherence to the PMTCT program, as well as identify some socio-cultural and economic factors affecting PMTCT services. In depth interviews were also conducted for 15 PMTCT Service Providers to determine their knowledge and practices regarding the use of PMTCT guidelines in TGH.

3.3.2 Themes

The following themes associated with PMTCT services were explored to describe the implementation of PMTCT program.

The Client factors included the following; Clients knowledge and practice towards the PMTCT program, as well as barriers to HIV positive pregnant women’s adherence to follow-up schedule.

Health facility factors, these included the clinic days of the health facility, the knowledge and practices of health care providers regarding the use of PMTCT services in TGH, frequency of HIV testing done for negative pregnant women before delivery, as well as the challenges faced by healthcare providers in the implementation of PMTCT program.

Other socio-cultural factors based on information gathered from interviews were also considered.
3.3.3 Independent variables

Factors that influenced the implementation of PMTCT in TGH

1. Maternal variables comprised of their demographic characteristics such as age, religion and area of residence among others.

2. Socio-cultural and economic factors such as marital status, occupation, and level of income as well as family support with respect to status disclosure to spouse were also explored by interviewing the clients.

3.3.4 Study Population, Sampling Method and Sample Sizes

The study population comprised of all PMTCT Service Providers from the Ante Natal Clinic, the Labour Ward, and the ART Clinic. All HIV positive mothers who delivered within the last two years and are attending the Child Welfare Clinic were also involved in the study.

A purposive sampling on 31 PMTCT Service Providers who have worked for more than 6 months at the Ante Natal Clinic, Labour Ward, and the ART Clinic was done to select 15 of them for an interview. Where there was more than the estimated number of health workers available, the most senior was selected for the interview.

A random selection for 30 HIV positive mothers who were currently assessing the Child Welfare Clinic were engaged in 3 different sections of focus group discussions with 10 members in each group. (This number was independent of the 223 folders for the quantitative analysis).
To determine the knowledge and practices of health care workers regarding the use of PMTCT guidelines in TGH, a total of 15 PMTCT service providers from the antenatal clinic, labour ward, and the ART clinic were interviewed. The categories of health workers included the following:

- Purposive sampling for eight (8) midwives who were also part of PMTCT staff from the antenatal clinic and the labour ward and offer ante-natal care, HIV testing and counselling (HTC) and also assist the women during delivery. They also initiate ARV prophylaxis of syrup Zidovudine or Nevirapine to the new infants right after delivery to be continued at home by the nursing mothers until the babies are six weeks old.

- One (1) Medical Officer and one (1) Physician Assistant who initiate ART to the clients and manage opportunistic infections in them; two (2) General nurses two (1) Public Health Nurse who test and counsel the public as well as execute pre-treatment adherence counselling and follow-up counselling; one (1) Pharmacist who serve the clients their prescribed medications and one (1) data officer who registers the clients and manages the data generated at the unit, all working at the ART clinic.

There were 3 sessions of Focus Group Discussions (FGD’s) consisting of 10 women in each group. A total of 30 HIV positive women who recently delivered and are attending the child welfare Clinic were engaged in 3 different FGD’s to assess their level of adherence as well as the socio-cultural and economic factors that influenced their use of PMTCT services in TGH. (They were not part of the 316 for the Quantitative analysis).
3.3.5 Data Quality Control Measures

Pretesting was done at the Ashaiman Polyclinic by the data collection team to ensure that questions posed were clearly understood by the participants. A few of the questions were then amended to improve clarity.

3.3.6 Training of Data Collection Team

The team was made up of a Public Health Nurse, 2 Community Health Nurses and a Pharmacy Assistant. They were trained to ask the questions in a uniformed manner.

The socio-cultural factors that affected the implementation were determined through a Focus Group Discussion with 30 HIV positive nursing mothers.

The knowledge and practices of PMTCT Service Providers regarding the use of the PMTCT guidelines in TGH were also determined through an in-depth interview with an interview guide for PMTCT Service providers. Their interviews were conducted in English. They were both live recordings as well as field notes taken simultaneously.

3.3.7 Data Collection Tools

The main tools used in collecting data for the study were interview guides which were pre-tested in Ashaiman Polyclinic, a clinic which has similar conditions as that for the study site. Other tools used for the data collection included notepads, pens and digital tape recorders. The focused group discussions, interviews and review of the secondary data were done within a period of three (3) weeks; from 4th to 25th of June 2018.
3.3.8 Inclusion Criteria

All PMTCT Service Providers who have worked at the Ante Natal Clinic, Labour Ward and the ART Clinic for more than 6 months and HIV positive mothers who delivered within the past two years and were attending the Child Welfare Clinic were also included.

3.3.9 Exclusion Criteria

Health workers who had not worked as PMTCT Service Providers for more than six (6) months and HIV positive mothers whose children were older than two (2) years at the time data was being collected.

3.3.10 Data Processing and Analysis

An open as well as a selective coding for categorizing data and describing the implications of various categories were employed for qualitative analysis. Data gathered from the focus group discussion with the PMTCT clients and interviews with the PMTCT Staff were analyzed using NVivo qualitative software after a familiarization process with pooled data set. Using the framework of thematic analysis as described by Braun, V. and Clarke, V. (2006), sections of the data that were relevant to the subject matter were coded. This method was employed due to its flexible and yet rigorous approach in qualitative data analysis. Generated codes and their respective contents were then used to generate potential themes and sub-themes for each factor in focus. These were then reviewed to ensure corroboration with the original data pool after which final themes and subthemes were subsequently generated. The above was done after the in-depth interviews had been transcribed and the comparisons had been made between the handwritten field notes and the recorded in-depth interviews to make sure that every bit of the data collected had been captured.
3.4 Ethical Considerations

The proposal was submitted to the Ghana Health Service Ethics Review Committee of Research and Development Division for Ethical Clearance (with the ethical approval identification number **GHS-ERC:054/02/18**). This was because the research was conducted in a Ghana Health Service facility. It also involved a vulnerable group of people; HIV positive pregnant women.

Informed consent was sought for from the management of Tema General Hospital to be able to use the ART clinic. Consent was also sought from clients and health care providers before engaging them in any form of discussion. There was therefore an assurance of confidentiality to participants and same was ensured.

Retrospective data collected was stored on a password restricted computer network.

Codes were used to identify participants so that names of HIV positive pregnant women were not visible to data collectors.

To safeguard confidentiality, information recorded during the focus group discussions has been securely stored under lock and key and will be kept for one (1) year, but transcripts from the recordings will be kept for a maximum of five (5) years after the research, and be destroyed through incineration afterwards.
CHAPTER FOUR

RESULTS

4.1 Background on Data Retrieved and Respondents

This chapter is a presentation of findings from secondary data on HIV positive women who went through the PMTCT program in TGH from January 2012 to December 2016. It also discusses findings from an in-depth interview done for 15 PMTCT Service Providers and a focus group discussion for 30 HIV positive nursing mothers who were still attending the Child Welfare Clinic with their infants in TGH. It also presents the socio-demographic characteristics of the study participants, clients’ adherence to the PMTCT program, socio-cultural practices and beliefs of the people as well as the knowledge and skills of PMTCT Service Providers that facilitate the progress of PMTCT service delivery or act as a barrier to the implementation of PMTCT services in TGH.

4.1.1 Socio-Demographic Characteristics

Socio-demographic information gathered from the secondary data indicates that, majority of the women in the study; 62.78% were within the age range of 25 – 34 years. About 49.33% of them had Junior High Secondary School education, 5.38% had tertiary education whiles 13.9% had no education at all. About 71.3% of them were self-employed whiles 6% of them were still schooling at the time the data was collected. There were 88.79% of Christians among them whiles only 1 (0.45%) of them belonged to an unspecified form of religion.
About 80.72% of the women were married and were living with their spouses. However, 0.9% of them were widowed at the time the data was collected.

Table 2: Socio-Demographic Characteristics of PMTCT Clients (2012-2016)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 – 24</td>
<td>34</td>
<td>15.25</td>
</tr>
<tr>
<td>25 – 34</td>
<td>140</td>
<td>62.78</td>
</tr>
<tr>
<td>35 – 44</td>
<td>49</td>
<td>21.97</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>223</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td><strong>Educational Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>31</td>
<td>13.9</td>
</tr>
<tr>
<td>Primary</td>
<td>30</td>
<td>13.45</td>
</tr>
<tr>
<td>JSS</td>
<td>110</td>
<td>49.33</td>
</tr>
<tr>
<td>MSLC</td>
<td>4</td>
<td>1.79</td>
</tr>
<tr>
<td>Secondary/Technical</td>
<td>36</td>
<td>16.14</td>
</tr>
<tr>
<td>Tertiary</td>
<td>12</td>
<td>5.38</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>223</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td><strong>Type of Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-employed</td>
<td>159</td>
<td>71.3</td>
</tr>
<tr>
<td>Employed</td>
<td>22</td>
<td>9.87</td>
</tr>
<tr>
<td>Unemployed</td>
<td>36</td>
<td>16.14</td>
</tr>
<tr>
<td>Student</td>
<td>6</td>
<td>2.69</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>223</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christianity</td>
<td>198</td>
<td>88.79</td>
</tr>
<tr>
<td>Islam</td>
<td>24</td>
<td>10.76</td>
</tr>
<tr>
<td>Other (unspecified)</td>
<td>1</td>
<td>0.45</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>223</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>19</td>
<td>8.52</td>
</tr>
<tr>
<td>Co-habiting</td>
<td>17</td>
<td>7.62</td>
</tr>
<tr>
<td>Married</td>
<td>180</td>
<td>80.72</td>
</tr>
<tr>
<td>Separated/Divorced</td>
<td>5</td>
<td>2.24</td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>223</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
4.2 Performance of PMTCT in TGH

The results displayed in Table 3 below indicates that only 5 (2.24%) of the exposed children were infected with HIV during the period under review. However, as high as 218 (97.76%) of them were not infected and this can be attributed to a mother’s adherence or non-adherence to the PMTCT program. Adherence in this study was measured using the following variables; adherence to appointment dates, number of missed ARV doses during pills count, disclosure of ones HIV status to spouse and significant others, and feeding options for the baby among others.

Table 3: PCR Results from the PMTCT Program

<table>
<thead>
<tr>
<th>Result</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>5</td>
<td>2.24</td>
</tr>
<tr>
<td>Negative</td>
<td>218</td>
<td>97.76</td>
</tr>
<tr>
<td>Total</td>
<td>223</td>
<td>100.0</td>
</tr>
</tbody>
</table>

4.3 Factors Associated with PMTCT Services

Out of 181 women who were punctual to appointment dates, only 1 of them (0.55%, n=181) had her baby infected with HIV. However, 4 women (9.52%, n=42) who on several occasions missed appointment dates for more than 2 months got the virus transferred to their babies (Table 4). A further analysis shows that holding other factors constant, one’s adherence to scheduled follow-up visit dates has a significant effect on the outcome of the EID results of their babies since the Fisher’s exact probability of 0.005 is less than 0.05 level of significance.
Relatively, those who disclosed their HIV status to their spouses and significant others had a higher rate of their babies testing positive to the virus (Table 4). A further analysis however indicated that this is not statistically significant as shown by the Fisher’s exact test probability of 0.229 in Table 4, which is greater than 5% level of significance.

Data analyzed revealed that 3 out of 210 infants (1.43%, n=210) whose mothers never missed ARVs tested positive for HIV, holding other variables constant, whiles 2 out of 7 (28.57%, n=7) whose mother never took any ARVs during pregnancy tested positive. Mothers who were not on ARVs were mostly those diagnosed during labour or right after delivery. This could imply that the positive tests may have resulted from some other factors and not necessarily from missing ARV pills, as observed from the data gathered.

PCR results based on the age of pregnancy at the time of delivery show that only 5 women who delivered at term had their babies infected with HIV (Table 4). However, further analysis revealed that holding all other variables constant, maturity of pregnancy does not have any significant influence on the PCR results at 5% significant level since the p-value of 0.611 is greater than the 5% level of significance (Table 4).

All the 5 HIV positive cases were babies that were delivered spontaneously through the vagina. Four HIV positive cases (1.99%, n=201) were recorded for babies whose parents gave them exclusive breastfeeding after delivery. On the other hand, only 1 out of 9 babies (11.1%) who were given replacement feeding for the first 6 six months tested positive for HIV.

From Table 4, it can be deduced that the MTCT rate was relatively higher when no ARV prophylaxis was given to babies soon after birth through to the first 6 weeks of delivery. The Fisher’s exact test for ARV prophylaxis (Table 4) has also buttressed this by proving that there is
a significant effect of giving ARV prophylaxis to babies in order to avoid mother-to-child transmission of HIV.
Table 4: Results of Bivariate Analysis of Factors Influencing PMTCT in TGH

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>PCR RESULTS</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>POSITIVE N (%)</td>
<td>NEGATIVE N (%)</td>
</tr>
<tr>
<td>Adherence to Appointment Dates:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>1 (0.55)</td>
<td>180 (99.45)</td>
</tr>
<tr>
<td>Not regular</td>
<td>4 (9.52)</td>
<td>38 (90.48)</td>
</tr>
<tr>
<td>Disclosure to Spouse/Significant Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3 (1.65)</td>
<td>179 (98.35)</td>
</tr>
<tr>
<td>No</td>
<td>2 (4.88)</td>
<td>39 (95.12)</td>
</tr>
<tr>
<td>Missed ARVs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 pills missed</td>
<td>3 (1.43)</td>
<td>207 (98.57)</td>
</tr>
<tr>
<td>Ever missed ARV pills</td>
<td>0 (0.00)</td>
<td>6 (100.0)</td>
</tr>
<tr>
<td>Not on ARVs</td>
<td>2 (28.57)</td>
<td>5 (71.43)</td>
</tr>
<tr>
<td>Maturity of Pregnancy:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-term</td>
<td>0 (0.00)</td>
<td>12 (100.0)</td>
</tr>
<tr>
<td>Term</td>
<td>5 (2.67)</td>
<td>182 (97.33)</td>
</tr>
<tr>
<td>Post-term</td>
<td>0 (0.00)</td>
<td>24 (100.0)</td>
</tr>
<tr>
<td>Mode of Delivery:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spontaneous Vaginal Delivery</td>
<td>5 (2.67)</td>
<td>182 (97.33)</td>
</tr>
<tr>
<td>Caesarean Section</td>
<td>0 (0.00)</td>
<td>36 (100.0)</td>
</tr>
<tr>
<td>Type of Gestation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singleton</td>
<td>2 (0.91)</td>
<td>217 (99.09)</td>
</tr>
<tr>
<td>Twins</td>
<td>3 (75.0)</td>
<td>1 (25.0)</td>
</tr>
<tr>
<td>Infant Feeding Option:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusive Breastfeeding</td>
<td>4 (1.99)</td>
<td>197 (98.01)</td>
</tr>
<tr>
<td>Replacement Feeding</td>
<td>1 (11.11)</td>
<td>8 (88.89)</td>
</tr>
<tr>
<td>Mixed Feeding</td>
<td>0 (0.00)</td>
<td>13 (100.0)</td>
</tr>
<tr>
<td>Administration of ARV Prophylaxis:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2 (0.10)</td>
<td>199 (99.0)</td>
</tr>
<tr>
<td>No</td>
<td>3 (13.64)</td>
<td>19 (86.36)</td>
</tr>
</tbody>
</table>
4.4 Description of Study Participants

A total of 30 eligible HIV positive mothers aged between 22 and 42 years were engaged in a Focus Group Discussion. Five (5) of the predominantly Christian mothers had no formal education. Majority (27) of them were self-employed, however, they are mostly low-income earners. Apart from one who was still single at the time of data collection, majority of them were either married or cohabiting with their partners.

Fifteen (15) PMTCT Service Providers were engaged in an In-depth Interview. They included one Medical Officer, one Physician Assistant, one Pharmacist, one Rotation Midwife, three Nurse-Midwives, four Midwives, three Nurses and one Data Officer. There were three males and twelve females. They had all worked for six months or more in their various Units.
Table 5: Socio-demographic Characteristics of Clients and Staff Interviewed

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLIENTS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Age Group</strong></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>5</td>
</tr>
<tr>
<td>30-39</td>
<td>22</td>
</tr>
<tr>
<td>40+</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Highest Educational Level</strong></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>5</td>
</tr>
<tr>
<td>Primary</td>
<td>5</td>
</tr>
<tr>
<td>JHS</td>
<td>14</td>
</tr>
<tr>
<td>SHS</td>
<td>4</td>
</tr>
<tr>
<td>Tertiary</td>
<td>1</td>
</tr>
<tr>
<td>Vocational/Technical</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>1</td>
</tr>
<tr>
<td>Cohabiting</td>
<td>12</td>
</tr>
<tr>
<td>Married</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
</tr>
<tr>
<td>Christianity</td>
<td>27</td>
</tr>
<tr>
<td>Islam</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Type of Employment</strong></td>
<td></td>
</tr>
<tr>
<td>Self-employed</td>
<td>25</td>
</tr>
<tr>
<td>Employed</td>
<td>1</td>
</tr>
<tr>
<td>Unemployed</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Estimated Monthly Income (GHC)</strong></td>
<td></td>
</tr>
<tr>
<td>&lt; 100</td>
<td>4</td>
</tr>
<tr>
<td>100 – 500</td>
<td>23</td>
</tr>
<tr>
<td>501 – 1000</td>
<td>2</td>
</tr>
<tr>
<td>&gt; 1000</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
</tr>
<tr>
<td><strong>HEALTH WORKERS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
<tr>
<td><strong>Cadre</strong></td>
<td></td>
</tr>
<tr>
<td>Data Officer</td>
<td>1</td>
</tr>
<tr>
<td>Nurse</td>
<td>3</td>
</tr>
<tr>
<td>Midwife</td>
<td>4</td>
</tr>
<tr>
<td>Nurse-Midwife</td>
<td>3</td>
</tr>
<tr>
<td>Rotation Midwife</td>
<td>1</td>
</tr>
<tr>
<td>Physician Assistant</td>
<td>1</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1</td>
</tr>
<tr>
<td>Medical Officer</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
</tbody>
</table>
4.5 Knowledge and Practices towards the PMTCT Program

4.5.1 Client Knowledge

According to the PMTCT guidelines, a pregnant woman who has been diagnosed of HIV must take ARVs as soon as she is diagnosed. She must give ARV prophylaxis to her child from birth till the child is six weeks old and then follow it up with syrup Septrin until the child is 18 months. She must also do either exclusive breastfeeding for the first six months of the child’s life or replacement feeding if she chooses to do so. All clients interviewed demonstrated adequate knowledge on the above practices and were able to explain the rationale behind why they adhere to their ARVs, give ARV prophylaxis and syrup Septrin to their infants and why they do not have to do mixed feeding within the first six months of the child’s life. During the Focus Group Discussion (FGD), some clients expressed their views as follows:

“I knew that if I took my medicine, I would become healthier and would give birth to a child who does not have HIV.” (#8; PMTCT client; FGD)

A mother, who got to know of her HIV status after her first child got infected with the virus and so vowed never to give birth to more infected babies expressed the efforts she made to protect her second child from being infected:

“I gave my child the HIV prophylaxis for six weeks and followed it up with Septrin syrup as I was told to do. I also made sure I gave her only breast milk during the first six months.” (#4; PMTCT client; FGD)
4.5.2 Staff Knowledge

Staff interviewed in the In-depth Interview (IDI) demonstrated an adequate level of knowledge in the PMTCT guidelines. They knew of the importance of PMTCT. They were able to talk about the eligibility for PMTCT services, when to offer HIV testing to ANC clients and they also expressed a high level of knowledge in the timelines for HIV re-testing in all pregnant women who tested negative to their initial PMTCT HIV test. They also knew when to link-up HIV positive pregnant women to ART care.

“HIV testing is offered to all pregnant women attending the ANC for the first time. When they are positive, they are referred for counseling and initiation of ARVs. But when they are negative, we follow them up with further HIV testing at 28 weeks, 32 weeks and even during labour.” (#2; Nurse–Midwife; IDI)

One PMTCT Service Provider also expressed her idea on the need to retest the negative pregnant women for HIV before or during delivery:

“It is very important that a negative pregnant woman is re-tested for HIV before delivery because she might have been in the window period at the time of the initial test. So if she is tested again weeks after the first one, the virus might be picked at that time and the right intervention can be put in place to save the child from being infected.” (#9; Medical Officer; IDI)

4.5.3 Socio-Cultural and Economic Factors Influencing PMTCT

The Ghanaian society believes that since HIV infection is mainly acquired through sex, anybody who acquires the infection is promiscuous. As a result of this belief, most people tend to ascribe their infection to other spiritual things apart from unprotected sex. It is believed by a section of
Ghanaians that HIV is a spiritual disease and so cannot be cured in the hospital. Due to this, some clients may seek for health from shrines and spiritualists. Some however may decide not to seek for any help at all because they feel embarrassed for others to know of their status, or they may want to seek for treatment at a distant place where no one knows him or her, and this is as a result of stigmatization. In their quest to seek for treatment from places far from where they stay, some may not be able to honour their appointment dates as scheduled because they may not have adequate funds to use for transportation. Data gathered revealed some trending behaviours that strongly influenced the acceptance or otherwise of the PMTCT program. These factors included beliefs, stigmatization from family and friends, attitude of clients and their partners as well as the economic status of the clients.

**Beliefs (Superstitious or Religious)**

Some data gathered in the study showed some beliefs that were expressed by some clients when they tested positive for HIV. Some believed the infection was spiritual and could only be cured through spiritual means. Some therefore expressed profound hope and trust in their pastors and spiritual leaders and had a belief that God could cure them.

"*My pastor said we should pray and that everything will be alright. I prayed and also took my medications and by the grace of God, I am fine and the baby too is negative.*"  (#29; PMTCT client; FGD)

Stigmatization from family and friends is another socio-cultural factor that affected the PMTCT program adversely. Some clients refused to test to know their HIV status because of the fear of stigmatization should people get to know their HIV status. Due to this reason, the determined
ones had to go through a lot of troubles to hide their status from friends and relatives who may stigmatize them because of their HIV status.

“Some clients refuse to test because they fear being stigmatized. They feel it is better for them not to do the test so that people around them do not stigmatize them if they should be positive.” (#10; Midwife; IDI)

Some clients also described ways by which they hide their HIV status from others.

“We often remove our drugs from their containers and throw the boxes away before we leave the hospital so that no one finds out that we are taking HIV drugs.” (#21; PMTCT client; FGD)

The attitude of clients and their partners also affected the implementation of the program either positively or negatively. These attitudes ranged from acceptance and supportive, to harsh as well as indifference and even denial. It was learnt from the study that, the above were some of the attitudes put up by either the clients when they got to know their status or by their partners when they disclosed their status to them.

**Denial and Fear**

Some clients find it very difficult to accept their HIV status and would therefore refuse to accept their test results. Some may request to have the test repeated elsewhere to make sure that they are really positive. A PMTCT Service Provider recounts a denial moment:

“Some clients never accepted they were HIV positive. They denied the test findings and refused treatment.” (#13; Physician Assistant; IDI)
Some of the clients feared being positive and the thought about some perceived side-effects of the ARVs also scared them. They would rather be ignorant of their status than having to deal with taking medications throughout their lifetime.

“I can’t do this test, because I can’t take medicine throughout the rest of my life. I also learnt they have very bad side-effects that may even make my condition worse.” (#7; Pharmacist; IDI)

Majority of the clients have and accepting attitude towards the PMTCT program. They accepted the test results and were willing to go through the program to protect their infants from being infected after counseling.

“I was very sad when I got to know of my HIV status, but I had to accept it and start treatment when I was counseled that if I take my medication properly, I will feel healthier and my baby will also be protected from the infection.” (#13; PMTCT client; FGD)

**Partner’s Attitude**

A client expressed how supportive her HIV negative partner has been:

“I am HIV positive but my husband is negative. He has been so supportive to the extent that he goes to the ART Clinic to pick my drugs for me whenever I am unable to go.” (#22; PMTCT client; FGD)

Another client however recounted a harsh situation she went through with her partner because of her HIV status:

“….He sent me out of the house, refused to take care of the pregnancy and I am now living with the child in my parents’ house in a different town because of how he embarrassed me in the area in which I was living.” (#18; PMTCT client; FGD)
The study revealed that, some of the clients had very low income earnings and this occasionally affected their visit to the ART Clinic on appointment dates because they had no money for transportation. This however was not indicative of a strong direct determinant of non-adherence to the program.

“I am a self-employed hairdresser and I make between GH₵ 100 and GH₵ 200 in a month. There were times that I had to go to the hospital hospital a week after my appointment date because I had no money and my husband too had travelled.” (#16; PMTCT client; FGD)

4.5.4 Health System Related Factors

Heavy workload, shortage of Staff, lack of training on PMTCT, lack of motivation, delays in receiving PMTCT test results for children tested are some of the health system-related factors that were identified to affect the delivery of PMTCT services.

Majority of PMTCT Service Providers stated that they have not had any formal training with regards to PMTCT service delivery. They claimed to have acquired whatever knowledge they are working with on the job.

“I don’t really remember the last time I went for training on PMTCT. The last training I attended will be well over 10 years ago.” (#9; Midwife; IDI)

Unanimously, all health workers interviewed lamented on the heavy workload situation in the facility. They said the workload is overwhelming and this results in spending very limited contact time with each client. They expressed the need to have adequate time for each client so that holistic counseling can be done for each client. They also mentioned the need to be motivated to serve as a bait to attract more Staff to work in the Unit.
“The time is often insufficient to do all we need to do for all the clients. You will always see the other patients waiting impatiently for their turn.” (#14; Nurse; IDI)

“More Nurses must be trained and employed to work in this Unit. There is too much work here.” (#12; Midwife; IDI)

A concern was also raised on the frequent breakdown of the PCR machine resulting in delays in getting results for assessing the outcome of the PMTCT program.

“The results are sometimes delayed unduly. It may take 3 – 6 months or even more and the mothers would keep on asking about when the results would be ready.” (#14; Nurse; IDI)

Some PMTCT Service Providers were of the opinion that incentives must be given to serve as motivation for them to do more and also to encourage more people to desire to work there.

A concern was raised with regards to late referrals of HIV positive pregnant women by private hospitals in the Tema Metropolis from where they start their ANC. Most private hospitals do not offer PMTCT service in their facilities. Instead of referring clients to the hospitals where they can access PMTCT services, they keep them in their hospitals until they are almost due to deliver.

“It takes some hospitals too long to refer their patients to our facility. These delays do not make the women to start the ARVs early and this often affects the babies negatively.” (#15; PMTCT Nurse; IDI)

“I was never offered HIV testing at where I used to attend ANC although I was a regular attendant of their ANC. The test was done when I was about to deliver in this hospital [TGH] and the result was positive. I was made to start ARVs with my baby as soon as I delivered. I was
asked to continue giving her some ARV prophylaxis until she was 6 weeks old. At six weeks the test was done for the baby and the result came out positive.” (#23; PMTCT client; FGD)
CHAPTER FIVE

DISCUSSION

5.1 Introduction

The current study examined the knowledge and practices of HIV positive nursing mothers as well as PMTCT Service Providers towards the use of the PMTCT guidelines in TGH. Also, the study assessed the level of adherence of HIV positive pregnant women to PMTCT services. Further, the socio-cultural and economic factors influencing the use of PMTCT among HIV positive pregnant women were explored. The study sampled 223 HIV positive pregnant women who assessed PMTCT services in TGH from January 2012 to December 2016 as well.

The study included 30 PMTCT nursing mothers whose babies were less than 2 years at the time of the study. Ages of these mothers ranged from 22–42 years. Majority of them were either married to or cohabiting with their partners. Twenty five of them were self-employed; mostly traders. Only 6 of them had attained a higher education in Senior High Secondary School and beyond.

The PMTCT Service Providers that were interviewed included a Data Officer, Nurses, Midwives, Nurse-Midwives, a Physician Assistant, a Pharmacist and a Medical Officer. These PMTCT Service Providers had worked directly as Service providers for years with an average of 7 years.
5.1.1 Factors Affecting the Implementation of PMTCT

As observed from the results obtained from the secondary data, regular adherence to ART refill appointment dates was key among mothers whose babies tested negative to HIV. Only 0.55% of the children whose mothers adhered to ART refill appointment date became HIV positive. This could be as a result of key knowledge on MTCT prevention by women as observed in the client knowledge levels of PMTCT. Regarding disclosure of one's HIV status to partners and significant others, it was found out that it did not have much significance on the outcome of the study since it was only 4.88% of women who did not disclose their HIV status who had their babies become HIV positive. This refuted the assertion that women who do not disclose their HIV status to their partners get their children infected. Kim et al (2012), argued that the reluctance on the part of HIV positive mothers to disclose their status to partners is mostly due to the fear of stigma and this they believed leads to HIV infection in their children. Though, several studies over the years have shown stigma to be on the decrease it can be attributed to the reluctance or fear to disclose one's HIV status. Majority of the clients however asserted to the fact that the disclosure of their HIV status made it easier for them to earn the support of their partners and significant others in their lives. It also made it easier for them to continue to receive HIV care for themselves and their babies. This is because when a client is able to disclose her status to the partner and significant others, the partner may also go for HIV testing too. Based on this, the appropriate counseling could be given to them and this would enable them avoid unprotected sex with their HIV positive pregnant partners. This reduces the incidence of re-infection in the pregnant women, thereby reducing the chances of the foetus from been infected while in the uterus. It also helps the man to monitor the treatment of the woman to ensure that she takes her ARVs as prescribed to reduce her viral load for the baby to be protected from the
infection. This also makes it possible for the partner and the significant others around her to do all that is necessary to help her stay healthy and to protect the baby from being infected. This goes to support the views and conclusions in literature reviewed that one’s disclosure of HIV status to partners and significant others is a major facilitator for retention in care while non-disclosure represents a barrier (Adeniyi et al, 2015; Adetokunboh & Oluwasanu, 2015; du Plessis et al, 2015; Hassan et al, 2012; Mugasha et al, 2014; Shaffer et al, 2004).

Another critical adherence measure to sustainability of PMTCT is regular intake of one's ARVs. The study found that most of the cases sampled did not miss any of their ARV during the period under review. However, 1.43% of babies born to these mothers became HIV positive, holding all other variables constant. The positive test result may be due other factors and not necessarily from missing ARV pills. The type of delivery a mother had also had a significant impact on MTCT outcomes. From the results obtained, all the 5 HIV positive babies recorded in the study were delivered spontaneously per the vagina (SVD). However, none of the 36 that were delivered by Caesarean Sections was positive. This goes to support the findings of an old prospective research done by the International Perinatal HIV Group that there is a significant reduction in the MTCT rate if a Caesarean Section is done before the onset of labour independent of ARV use (The International Perinatal HIV Group, 1996).

The type of Gestation whether a Singleton or a twin pregnancy was found to have an impact on the study outcome of the cases sampled. The sample analyzed in the study included two sets of twins whose mothers went through the PMTCT program. Out of the 5 positive infants that were recorded, 3 of them were from the two sets of twins. From the first set of twins, only the first twin got infected with the virus. However, both twins in the second set got infected. This goes to corroborate the findings of a prospective study by Dulliege et al (1995). They stated that a higher
HIV transmission occurs among first twins as compared to the second twin in twin delivery. Another study conducted by Scavalli and colleagues also came out with similar findings and concluded that twin pregnancies increase the risk of MTCT of HIV (Scavalli et al).

5.1.2 Knowledge and Practices of Clients and Service Providers towards the PMTCT Program

With regards to client knowledge and practices of PMTCT guidelines, it was observed that clients interviewed demonstrated adequate knowledge on the practices. Further as observed they were able to explain the rationale behind why they had to adhere to their ARVs, by giving ARV prophylaxis and syrup Septrin to their infants. Also they knew why they did not have to do mixed-feeding within the first six months of the child’s life. Ackerman and Kwiek (2013) also reported similar high levels of PMTCT knowledge among sampled cases in Tanzania. They argued that such level of PMTCT knowledge among HIV positive mothers is crucial in minimizing the rate of MTCT.

It is difficult to compare the level of knowledge in this current study with that found in other studies. However, this study may have documented a higher overall level of PMTCT knowledge than that found in many previous studies (Ackerman & Kwiek, 2013; Fitchett, 2013; Kim et al., 2012; Kim et al., 2012a, 2012b; Hae-Young Kim et al., 2012; Prifti et al., 2016). In the current study, the researcher realized that, mothers involved in the study had a great knowledge in the PMTCT guidelines which contributed to the realization of better program outcomes.

Regarding staff knowledge on PMTCT guidelines, it was found that interviewed staff at TGH demonstrated an adequate level of knowledge in the PMTCT guidelines. They knew of the importance of PMTCT. They were able to talk about the eligibility for PMTCT services, when to
offer HIV testing to ANC clients, and also expressed a high level of knowledge in the timelines for re-testing for HIV in all pregnant women who tested negative to their initial PMTCT HIV test. They also knew of when to link up HIV positive pregnant women to ART care and this, they explained as knowing that a delay or lack of ART initiation increases the MTCT risk by 15–45%.

This study has documented a higher overall level of PMTCT knowledge than that found in many previous studies (Ackerman & Kwick, 2013; Fitchett, 2013; Kim et al., 2012; Kim et al., 2012a, 2012b; Hae-Young Kim et al., 2012; Prifti et al., 2016).

5.1.3 Socio-Cultural and Economic Factors Influencing the use of PMTCT Services

From the study factors such as beliefs, stigmatization from family and friends, attitude of clients and their partners as well as the economic status of the clients were found to be key socio-cultural and economic factors militating against the use of PMTCT in TGH. The case of beliefs in terms of tradition, spirituality and superstition served as key determining factors against the use of PMTCT and is also prominent in almost all areas of Ghanaian health care delivery. Israel et al. (2014) attributed this observation to the cultural dimension of the African society. Stigmatization from family and friends is still a militating factor against HIV status disclosure in the Ghanaian society. Most of the mothers were not economically empowered because their monthly earnings fell within GHC 100 and GHC 200 (between US$ 20.83 and US$ 41.67). This served as a constraint in honouring their appointment dates as scheduled because some could not afford the transportation cost to the health facility. There have been studies in many parts of Africa that have reported similar financial challenges that affected the patronage of PMTCT services by HIV positive mothers (Coulibaly et al, 2014; Hassan et al, 2012).
5.2 Limitations

The study encountered the following limitations:

1. Incomplete data from the secondary source. The inability to access complete information on 93 cases out of the 316 cases that were originally intended for the research.

2. The population used for the research is just a part of pregnant women who went through PMTCT program at the hospital and therefore findings cannot be generalized to the population of pregnant women as a whole.
CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

According to the conceptual framework used for this study, individual factors, healthcare system, and socio-cultural factors come together to determine the use of PMTCT services. The clients’ individual factors largely constituted of their acceptance of their HIV status and their readiness to seek help for themselves and their unborn infants. This therefore made it easier for a majority of them to get involved in the PMTCT program. The health system factors was mainly about the service delivery, shortage of qualified PMTCT service providers and the delays in getting DNA PCR test results on tests done for the infants to determine their status. Some socio-cultural factors such as the gender of the clients, the amount of stigma and discrimination against that person, the socio-economic strength of the individual and the effects of cultural constraints on that individual are major barriers to the implementation of PMTCT of HIV.

The results obtained from the study showed that the client factors, health facility factors and socio-cultural practices are all principal factors that can be exploited in influencing the implementation of PMTCT. These three factors work interdependently to influence the overall outcome of the PMTCT program. Although addressing these factors individually can provide substantial results, a greater effect will be realized if all three factors are appropriately addressed.

The client factors appeared to be the strongest of the three factors. This stems from the fact that, the final decision to adhere to the program depended largely on the individual even if the health facility and the society were both enabling. The study revealed that majority of the women
whose babies tested positive for HIV after the Early Infant Diagnosis did not strictly follow the instructions given them under the program. One of the five (5) was enrolled onto the program in the initial stages of the pregnancy but later defaulted treatment until after delivery before visiting the facility by which time the baby was already exposed to the virus. Three (3) of the women were diagnosed after delivering their babies. That is to say that they were not on anti-retroviral drugs during pregnancy but were given prophylaxis for their babies, which might not have worked as the babies were already infected probably through pregnancy, delivery or initial breastfeeding before the introduction of the prophylaxis. There was one (1) woman among the two who gave birth to twins but only the first twin got infected. In another instance, another woman who gave birth to twins was enrolled onto the program, but had on several occasions missed appointment dates (and for that matter her ARVs) and also failed to give the prophylaxis to the babies right after delivery, and both babies were eventually infected with the virus.

Reasons accounting for these may range from denial of one’s HIV status, fear of stigmatization, rejection by family and/or spouse upon discovery of one’s status, to lack of money among others. Others also may have resorted to prayer camps for divine healing. This may cause a major setback in the gains of the PMTCT program because many of them might have infected their children unknowingly even though there was an opportunity to prevent this from happening if they had followed the PMTCT program through to the end.

Training of PMTCT service providers via workshops and other in-service training opportunities is a key necessity to be addressed to keep service providers abreast with current trends in HIV care as a whole. Just as a chain is as weak as its weakest link, likewise will the lack of
knowledge in the implementation of PMTCT on the part of workers negatively affect service delivery.

Counselling was observed to be a very important contributing factor towards PMTCT adherence. Through counselling, doubts are cleared, nerves are calmed and all concerns that might have hindered the implementation of PMTCT are addressed. Most successful clients attributed their success to good counselling they received during the early stages of the PMTCT program.

6.2 Recommendations

**Tema General Hospital:**

The Hospital must organize routine in-service training on PMTCT services for all Staff especially the Midwives for them to be kept abreast with the current trends in PMTCT guidelines. As stigmatization remains a major hindrance in PMTCT implementation from a socio-cultural context, public education on HIV must be highlighted. Key areas such as the mode of transmission, how to avoid getting infected and an awareness creation on the fact that HIV positive individuals can live a normal life like any other person so far as they take their medications religiously and adhere to all treatment instructions.

**Ministry of Health/Ghana Health Service:**

It was gathered from the study that heavy workload was a major problem to effective PMTCT service delivery in TGH. It is therefore recommended that the Ministry of Health and the Ghana
Health Service train and employ more healthcare providers to help improve the client-staff ratio to enhance health service delivery.

**National AIDS/STI Control Programme (NACP):**

The National AIDS/STI Control Programme must ensure that all the private health facilities in the Tema Metropolis are offering PMTCT services to their pregnant clients. This would ensure that late initiation of ARVs in pregnancy is prevented to protect infants from being infected with HIV. It is also recommended that NACP procures more machines to aid the testing of HIV in infants. This will prevent the delays in delivering PCR results to the various health facilities. Results can be transmitted through the use of electronic mailing, *WhatsApp* texting or mobile SMS texting. Confidentiality can be ensured by labelling samples with unique codes when results are being transmitted through such media.

**Ghana AIDS Commission (GAC):**

The Ghana AIDS Commission must intensify the HIV/AIDS awareness creation and stigma reduction campaigns. This would make it easier for more people to avail themselves for testing and treatment and also make it easier for people to accept persons living with HIV.

Ensuring adherence to PMTCT program requires a multifaceted approach which aims at creating an enabling environment for a successful adherence to PMTCT implementation and this may be greatly enhanced by the involvement of every stakeholder.
REFERENCES


Strategic Intelligence and Alliance Division, UNAIDS. (2010). Trends in HIV Prevalence and Sexual Behaviour among Young People aged 15-24 years in Countries most affected by HIV. Sex Transm Infect, 86, ii72-ii83.


WHO. (2008). *Prevention of Mother to Child Transmission of HIV (PMTCT) and Paediatric*.


APPENDICES

APPENDIX 1: FACTORS AFFECTING PMTCT

Client Factors

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<tr>
<th>Theme</th>
<th>Sub-theme</th>
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<tr>
<td>Knowledge</td>
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<td></td>
<td>HIV education</td>
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<tr>
<td>Attitude</td>
<td>Motivation</td>
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<td></td>
<td>Fear</td>
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<tr>
<td>Socio-Economic Status</td>
<td>Low income</td>
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Health Facility Factors

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<tr>
<td>Worker’s Knowledge</td>
<td>Training</td>
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<tr>
<td>Working Condition</td>
<td>Work Load</td>
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<td></td>
<td>Technical Issues</td>
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<td></td>
<td>Incentives</td>
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<tr>
<td>Service Delivery</td>
<td>Duration</td>
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<td></td>
<td>Quality</td>
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### Socio-Cultural practices

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<td>Partner’s attitude</td>
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<tr>
<td></td>
<td>Harsh</td>
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<td></td>
<td>Indifferent</td>
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<td>Beliefs</td>
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<td>Denial</td>
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APPENDIX 2: DATA COLLECTION TOOLS

KEY INFORMANT GUIDE (HEALTH CARE PROVIDERS)

Interview schedule for Staff at the Antenatal Clinic, Labour Ward and the ART Clinic of Tema General Hospital

Thank you for granting me this interview. The information that will be gathered will help us to improve the implementation of PMTCT in this facility.

1. Code

2. What is your cadre?

3. For how long have you been working in this hospital?

4. For how long have you been involved in the PMTCT program?

A. Have you had any training on PMTCT?

5. When was your last PMTCT training or refresher?

6. When do you test your ANC clients for HIV?

7. When they test negative at that time, do you do any re testing later?

a. If Yes, when?

b. If No, why?

8. Which ANC client qualifies to be put on ARVs?
9. Why do you think some ANC clients refuse to test for HIV?

10. When does your work as a caregiver end for the PMTCT clients?

11. Have you experienced any PMTCT client’s baby test positive before?
   a. If yes, what did you do about the situation?

12. What advice will you give to a PMTCT client whose baby test negative at 6 weeks?

13. Do men accompany their pregnant female partners to ANC care service?
   b. If no what are the reasons (based on your experience as a caregiver)?

14. Do HIV positive pregnant women on treatment come for regular appointment?
   b. If not, what do you think accounts for that?

15. Do you think some women avoid HIV counselling and testing because of stigma?
   b. If so, what do you think is the best way to overcome stigma?

16. Do you believe your facility attends to more clients than the health workers can handle?
   b. How would you describe the work load in this facility?

17. Do you do HIV counselling and testing for partners of HIV negative women in your facility?
   b. If not, why?
18. Does your facility always have ARVs for clients?

b. If not, what is the hospital doing to ensure a constant supply of ARVs?

19. What do you think can be done to improve shortage of health workers, lack of PMTCT trainings and shortage of ARVs in your facility?

20. Are there any issues concerning PMTCT services that you would wish to talk about?

21. If you are given an opportunity to change something about PMTCT practices in your facility, what would that be?
APPENDIX 3: DATA COLLECTION TOOL INTERVIEW GUIDE FOR PMTCT CLIENTS

INFORMED CONSENT FORM

RESEARCH TOPIC; FACTORS AFFECTING THE IMPLEMENTATION OF MOTHER-TO-CHILD TRANSMISSION (PMTCT) OF HIV IN TEMA GENERAL HOSPITAL (TGH)

PRINCIPAL INVESTIGATOR

(STUDENT): Ruth Ewuradjoa Panford

Address: School of Public Health, University of Ghana, Legon.

Telephone No; 0244579979

Email; ruthpanford@gmail.com

General Information:

The general objective of the study is to determine the factors affecting the implementation of Prevention of Mother-to-child Transmission (PMTCT) of HIV program in Tema General Hospital (TGH). This study seeks to explore and understand issues related to the implementation of PMTCT in TGH. This study will contribute to the elimination of Mother-to-Child Transmission of HIV in Ghana. I would be very grateful if you could voluntarily answer the following questions to help in achieving this aim.
Nature of Research;

This study will employ both quantitative and qualitative approaches of data collection. This study will comprise a review of folders of HIV positive pregnant women who attended the ART Clinic from 2012-2016, an interview for PMTCT service providers in TGH and a focus group discussion for some current HIV positive nursing mothers in TGH will be used to obtain data. A quantitative data analysis would be done by census using STATA and EPI-DATA computer packages for Windows. A qualitative data analysis would also be done through a thematic analysis. The expected outcome is to identify some gaps and barriers in Tema General Hospital that result in the increasing prevalence of mother-to-child-transmission of HIV in Tema despite the intervention.
Possible Risks and Discomforts;

You may feel uncomfortable with some of the questions that might be posed to you. This research might not pose any physical risks to you although you may be required to spend about 15 - 30 minutes of your time to answer some questions. However, it may pose some amount of emotional discomfort on you as may be required to answer a few sensitive questions with regards to your HIV status and its outcome on the health of your child/children. I therefore apologize for any emotional stress this might cause you.

Possible Benefits;

You may not have a direct or an immediate benefit from this research, but its findings would benefit Ghanaians in general because of its potential to guide the Ghana Health service with information on how to achieve a generation-free of HIV.

Confidentiality;

This interview will be recorded using an audio recorder. You will be given a unique code for the purpose of this study. Your responses will be kept confidential and be solely used for the purpose of this research. Audio recordings will be kept for one year but transcripts from the recordings will be kept for a maximum of five years after the research, and be destroyed through incineration afterwards.

Compensation;

Participation in this research is purely voluntary and no monetary compensation is available but you will be given a refreshment of water, malt drink and Perk biscuits.
Voluntary participation/Withdrawal of Participants;

You are at liberty to participate or not to participate. The care you receive in this facility will not be affected in any way if you choose not to participate and your refusal to participate will not attract any penalty. If you choose to participate, you are free to end your participation at any time.

Contact Numbers;

If you have any questions regarding your participation in the study, please feel free to call any of the following numbers;

Dr. Phyllis Dako-Gyeke, (Academic Supervisor) School of Public Health (0207970370) or Ruth Ewuradjoa Panford, (The Principal Investigator) School of Public Health (0244579979)
VOLUNTEER AGREEMENT

The document containing the risks, discomforts, benefits and procedures involved in the research entitled ‘Factors affecting the implementation of mother-to-child transmission (PMTCT) of HIV in Tema General Hospital (TGH)’ has been read and adequately explained to me. I have been given an ample opportunity to ask any questions I may have and have been answered to my satisfaction. I therefore agreed to participate as a volunteer.

……………………

……………………

(Signature or thumbprint of volunteer) (Date)

If a volunteer cannot read the document then a witness is needed;

I was present during the reading and explanation of the consent document to the volunteer; all questions from the volunteer were duly answered and the volunteer agreed to participate in the study.

……………………

(Signature of witness) (Date)
INTERVIEW GUIDE

CODE NUMBER ;

DATE OF INTERVIEW;

INITIALS OF INTERVIEWER;

INTERVIEW SITE;

1. DEMOGRAPHY

i. Age of respondent

ii. Date of Birth of child

iii. Usual place of residence

iv. Highest educational level completed

1. None

2. Primary

3. JHS

4. SHS

5. Tertiary

6. Vocational/Technical

v. Religion
1. None

2. Islam

3. Christianity

4. Other………………

2. SOCIO-ECONOMIC STATUS

i. Marital Status

1. Single

2. Cohabiting

3. Married

4. Divorced

5. Widowed

ii. Type of Employment

1. Self-employed

2. Employed

3. Unemployed

4. Apprentice/Student

5. Other………

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iii. Income Level

1. Less than 100GHC per month

2. 100-500GHC per month

3. >500-1000GHC

4. 1000GHC

iv. What type of accommodation do you live in?

1. Rented compound house

2. Rented self-contain

3. Self-owned compound house

4. Rented compound house

3. FAMILY SUPPORT;

Disclosure of status to partner

i. For how long have you been in a relationship with your partner?

ii. Is your partner aware of your HIV status? YES / NO

iii. If yes how did he get to know?

a. I told him

b. Other……………………
iv. When did he get to know of your status?

   1. Before I got pregnant

   2. During pregnancy

v. Did his attitude change after he got to know your status?

   1. Yes       2. NO

   a. If Yes, how did he change?

vi. Do you know your partner's status?

   1. Yes       2. No

   vii. If Yes, how did you get to know?

      1. He told me

      2. Other……………….

viii. How many children have you had since you got to know of your HIV status?

ix. What is the birth order of this child?

x. Did you deliver by yourself or by caesarian section?

xi. What is the HIV status of your youngest child before this one?

Xii. What is the HIV status of this child?

xiii. Did you do anything to reduce the risk of transmission to this child?
APPENDIX 4: GHANA HEALTH SERVICE ETHICAL CLEARANCE

In case of reply the number and date of this Letter should be quoted

My Ref: GHS-RDD/ERC/Admin/App18/18
Your Ref. No.

Ruth Ewuradjoa Panford
University of Ghana
School of Public Health
Legon, Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

<table>
<thead>
<tr>
<th>GHS-ERC Number</th>
<th>GHIS-ERC:054/02/18</th>
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<td>Project Title</td>
<td>Factors Affecting the Implementation of Prevention of Mother to Child Transmission (PMTCT) of HIV in Tema General Hospital (TGH)</td>
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<tr>
<td>Approval Date</td>
<td>4th May, 2018</td>
</tr>
<tr>
<td>Expiry Date</td>
<td>3rd May, 2019</td>
</tr>
<tr>
<td>GHS-ERC Decision</td>
<td>Approved</td>
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This approval requires the following from the Principal Investigator:

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol.

SIGNED...

DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Co: The Director, Research & Development Division, Ghana Health Service, Accra