

ASSESSING THE IMPLEMENTATION OF PMTCT OF HIV THERAPY AT ATUA GOVERNMENT HOSPITAL, GHANA

¹Twum Seth, ²Oscar Agyemang Opoku, ³Selina Achiaa Owusu, ⁴Henry Okudzeto,
⁵Jesse Anak

^{1,2,3}**Kwame Nkrumah University of Science and Technology, Ghana**

^{4,5}**University of Cape Coast**

Email : saintwum@yahoo.com, oscar.opoku@stu.ucc.edu.gh,

Selina.soa@gmail.com, hokudzeto@yahoo.com, jesse.anak001@stu.ucc.edu.gh

Abstract

The problem of mother to child transmission of HIV/AIDS has become a global concern. Prevention of mother-to-child transmission (PMTCT) programme has been implemented globally to help reduced its prevalence to about 5 percent. This programme addresses a wide range of prevention, care, treatment, and support services along a continuum of care from pregnancy through to early childhood. However, there is paucity of empirical data or evidence on the outcome of the programme in the Atua Government which incidentally has the highest prevalence of women with HIV/AIDS. The aim of the study was to assess the outcome of the PMTCT of HIV therapy at the Atua Government Hospital. This study is a descriptive and cross-sectional investigation conducted on HIV-positive mothers who are participating in the Prevention of Mother-to-Child Transmission (PMTCT) program at Atua Government Hospital. The study will collect data pertaining to the demographic characteristics of the women, the treatment choices employed, and the postnatal outcomes of the Prevention of Mother-to-Child Transmission (PMTCT) program at Atua Government Hospital. The data was subjected to descriptive analysis, employing measures such as frequencies, percentages, means, and standard deviations. Additionally, inferential analysis techniques, including t-tests, ANOVA, correlation, and regression, were utilized to examine relationships and differences within the data. The study findings indicate that the provision of PMTCT therapy plays a crucial role, as it serves as the primary means by which infants born to HIV-positive women can be safeguarded from HIV transmission. The findings revealed that among the total sample of 175 infants, a majority of 91.4 percent (n=169) tested negative for HIV infection, while a minority of 8.6 percent (n=15) tested positive for HIV infection. Once more, variations were seen in terms of age and educational attainment among women, as well as their infants' susceptibility to HIV infection due to retroviral exposure. Nevertheless, the findings of the study revealed that there was no significant association between women's income and the risk of Retro exposure leading to HIV infection in infants.

Keywords: implementation, pmtct of HIV, HIV therapy

INTRODUCTION

Globally, the year 2018 saw approximately 37.9 million individuals living with HIV/AIDS, with a significant majority, roughly 69 percent (around 19.4 million), located in sub-Saharan Africa (WHO/GHO, 2019). Despite the widespread administration of progressive antiretroviral therapy, nearly 74 percent of the 1.5 million AIDS-related deaths in 2013 occurred in this region (Kharsany & Karim, 2016). In terms of gender, women worldwide have borne the heaviest burden of HIV/AIDS (Ramjee & Daniels, 2013). Shockingly, it was estimated that a young woman was infected with HIV almost every minute (UNAIDS, 2012). Sub-Saharan Africa, in particular, has been severely impacted, with females accounting for at least 56–59% of People Living with HIV/AIDS (PLWHAs) (Kharsany & Karim, 2016; Ramjee & Daniels, 2013; Sia et al., 2016). In the sub-region, young girls aged 15–19 years old make up 75% of new infections, and women in the 15–24 age group are twice as likely to be living with HIV compared to their male counterparts (NACP, 2009). Furthermore, in 2017, 79% of HIV incidence in southern and eastern Africa occurred among adolescent females aged 10–19 years (Brown et al., 2018).

According to data from the National AIDS Control Program (NACP) in 2018, the female population in Ghana comprised 65% of the estimated 334,713 individuals living with HIV/AIDS (PLWHAs), whereas males formed 35% of the total. The gender difference in HIV infection and its consequences for women can be ascribed to the unequal cultural and socio-economic standing they hold in comparison to men (Higgins et al., 2010; Igulot & Magadi, 2018). Therefore, it is imperative to implement interventions aimed at preventing or mitigating the transmission of HIV from women to men or children, with a particular focus on pregnant women. The transmission of HIV from mother to child, also known as mother-to-child transmission (MTCT), continues to pose a substantial obstacle in the context of the worldwide HIV pandemic. In the absence of preventative interventions, the likelihood of HIV transmission to newborns throughout the course of pregnancy or childbirth varies between 15 and 30 percent, and this risk escalates to a range of 20 to 45 percent when nursing is practiced. The implementation of Prevention of Mother-to-Child Transmission (PMTCT) measures has proven effective in mitigating vertical HIV transmission to below one percent in industrialized nations. However, middle- and low-income countries have encountered very limited achievements in this regard. Pregnant women who are infected with HIV face a significant risk of transferring the virus to their offspring through mother-to-child transmission (MTCT). This is a prominent issue in sub-Saharan African nations characterized by elevated fertility rates and a high prevalence of HIV among women in their reproductive years (UNAIDS and JC2137E, 2011). Mother-to-child transmission (MTCT) is the primary cause of more than 90% of newly acquired HIV infections in babies, as reported by the World Health Organization in 2007 (Petersen, 2008).

Prevention of mother-to-child transmission (PMTCT) is a holistic strategy designed to encompass several interventions targeting the prevention, care, treatment, and support services for mothers who are HIV-positive and their offspring, spanning from the prenatal period to early childhood. According to Ngonyani et al. (2012), this strategy has played a pivotal role in decreasing HIV infection rates among the community and effectively eradicating HIV transmission to children on a global

scale. The World Health Organization (WHO) promotes a comprehensive strategy for the prevention of mother-to-child transmission (PMTCT) of HIV. This approach encompasses four key components: firstly, the prevention of HIV infection in women of reproductive age; secondly, the prevention of unintended pregnancies in HIV-positive women; thirdly, the interruption of HIV transmission from these women to their infants; and finally, the provision of adequate treatment, care, and support to mothers, children, and families affected by HIV (Arnold et al., 2006; Organization, 2010).

The administration of antiretroviral drugs (ARVs) as a preventive measure to women who are HIV-positive has effectively averted the transmission of HIV infection to over 350,000 children since 1995. Notably, a significant majority of these children, amounting to 86%, are located in sub-Saharan Africa, which is recognized as the region with the highest prevalence of HIV among women of reproductive age (WHO, UNAIDS, and UNICEF, 2011). Nevertheless, despite the notable advancements made by Prevention of Mother-to-Child Transmission (PMTCT) programs, it is worth noting that in 2013, approximately 30% of pregnant women living with HIV did not receive Antiretroviral (ARV) medications to mitigate the risk of Mother-to-Child Transmission (MTCT). Additionally, around 40% of HIV-positive women or their infants did not receive ARVs during the breastfeeding period to prevent MTCT (UNAIDS/JC2681/1/E, 2014) (UNAIDS, 2012).

According to the 2016 National Sentinel Survey (NSS) in Ghana, there was an observed rise in HIV prevalence among pregnant women attending prenatal clinics, with rates increasing from 1.8% in 2015 to 2.4% in 2016. The transmission of HIV from mother to child, commonly referred to as mother-to-child transmission (MTCT), is the predominant cause of HIV infections among young children in Ghana. The timely identification of HIV in expectant mothers presents a distinct possibility to commence the Prevention of Mother-to-Child Transmission (PMTCT) regimen as a means of safeguarding neonates against HIV infection (World Health Organization, 2013). The effective reduction or elimination of mother-to-child transmission (MTCT) can be achieved by promptly identifying maternal HIV infection during pregnancy and implementing Antiretroviral Therapy (ART) (WHO, 2017).

The study conducted at Tema General Hospital involved the utilization of DNA PCR testing to determine the HIV status of a cohort of six hundred and sixty-one (661) children who were exposed to HIV. This cohort consisted of children whose mothers had undergone the Prevention of Mother-to-Child Transmission (PMTCT) program, as well as those who had not received PMTCT intervention. The data collected spanned from 2012 to 2016, and the subsequent analysis yielded the following outcomes. In 2012, a total of 83 children aged between 6 weeks and less than 18 months were examined, of which 5 children (6.02%) were found to have tested positive for HIV. In the year 2013, a total of 134 children underwent screening, and among them, 14 children were found to be HIV positive, representing a prevalence rate of 10.4%. In the year 2014, a total of 141 children were screened, out of which 11 children (7.8%) tested positive. In the year 2015, a total of 150 children were examined for HIV, with 14 of them testing positive. This corresponds to a prevalence rate of 9.3%.

According to TGH (2017), in 2016, a total of 153 children were screened, and out of this sample, 22 children tested positive, representing a prevalence rate of

14.4%. The prevalence of HIV-positive cases among children subjected to screening witnessed a rise from 6.02% in the year 2012 to 10.4% in the year 2013. However, there was a decrease of 2.6% observed between the years 2013 and 2014. The prevalence of HIV-positive cases, however, had a further increase of 1.5% in 2015, followed by a further rise to 5.1% in 2016. The aforementioned data reveals that a total of 66 out of 661 children, accounting for 9.98%, were found to be HIV positive among those born to mothers who were also HIV positive over the specified time frame.

The transmission of Human Immunodeficiency Virus (HIV) from an HIV-positive mother to her child is a significant worry that affects a substantial percentage of moms living with HIV. The transmission of HIV has been observed to potentially occur during the stages of pregnancy, labor and delivery, as well as nursing. The vast majority of HIV infections in children in Ghana are ascribed to vertical transmission, which occurs when an infected pregnant woman passes the virus to her kid during pregnancy, labor, delivery, or breastfeeding (Mariwah et al., 2017). According to the Ghana AIDS Commission (GAC, 2010), approximately 3% of mortality cases among children under the age of five (5) in Ghana in the year 2009 were directly linked to HIV.

Despite the widespread implementation of interventions aimed at reducing Mother to Child HIV Transmission on a worldwide level, sub-Saharan Africa, especially Ghana, continues to have a significant burden of pediatric HIV infections (Dako-Gyeke et al., 2016). Furthermore, it is worth noting that the Atua Government has a significant prevalence of HIV/AIDS, and there are currently several ongoing global studies focused on the Prevention of Mother-to-Child Transmission (PMTCT) program. These studies aim to investigate the challenges associated with the program and identify ways to enhance it, ultimately aiming to reduce the transmission of HIV from mothers to their children by the year 2030. However, it is important to highlight that there is a lack of empirical evidence regarding the outcomes of the PMTCT program specifically implemented in the Atua Government. This study aims to investigate the outcomes of the Prevention of Mother-to-Child Transmission (PMTCT) program at Atua Government Hospital.

RESEARCH METHODS

The research design outlined in this document is focused on conducting a retrospective study of mothers who have tested positive for HIV and have delivered children less than 5 years old. The research design encompasses various stages, from data collection to data analysis. It also includes criteria for inclusion and exclusion of patient records, sample size determination, data collection methods, statistical analysis, and ethical considerations. The research design serves as the framework that guides the entire research project. It aims to investigate the relationship between HIV-positive mothers and the health outcomes of their children. This retrospective study looks back at past situations and exposures to suspected risk factors related to HIV infection.

Study Population:

The targeted population for this study consists of pregnant women and nursing mothers who have tested positive for HIV and have sought services at Atua Government Hospital. Given the difficulty of studying an entire population, a census approach was used in this study. All 198 women who have tested positive for HIV

and have utilized services at Atua Government Hospital were considered for the study.

Inclusion Criteria:

Patient records that included in the study met the following criteria:

- a. All mothers who attend antenatal care (ANC) at Atua Government Hospital.
- b. All mothers who have tested HIV positive, attended ANC, and given birth at Atua Government Hospital.
- c. All HIV-positive mothers who have given birth to children under 5 years old.

Exclusion Criteria:

Patient records that do not meet the inclusion criteria are excluded from the study. These include:

- a. Mothers who do not attend ANC at Atua Government Hospital.
- b. Mothers who do not seek services at Atua Government Hospital.
- c. Mothers who come only for Early Infant Diagnosis (EID) testing at Atua Government Hospital
- d. Mothers who deliver at Atua Government Hospital without attending ANC there.

Data collection was guided by the study's objectives. Information is collected from the HIV patients' register, which includes data on the number of registered HIV-positive women, their demographics (age, education, income), and the number of children. Additionally, data on the status of both the child and mother during pregnancy, delivery, and after delivery are collected. Patient outcomes following the Prevention of Mother-to-Child Transmission (PMTCT) program are obtained from clinicians' discharge summaries and ANC record books.

Data analysis was conducted using SPSS statistical software. Descriptive statistics, such as means and standard deviations, are used for quantitative variables, while frequencies and percentages describe categorical variables. Pearson correlation and linear regression are used to explore the relationships between various factors and the health outcomes of retro-exposed babies infected with HIV. Independent t-tests and ANOVA are employed to assess differences related to respondents' sex, age, education, income, and HIV infection in their children.

Ethical clearance was sought from both the Hospital Research Committee (HRC) and the Committee on Human Research, Publications, and Ethics (CHRPE). Patient confidentiality and anonymity are rigorously maintained throughout the study to protect their privacy and rights.

RESULTS AND DISCUSSION

Demographic characteristics

This section considers the background information or characteristics of the participants. This included their sex, age, educational level, marital status, and employment status of the respondents.

Only females were considered for the study. This was due to the target population of the study, thus, female, since PMTCT occurs within women. A larger number of the respondents were within 30-39 years old, followed by 65 respondents who were within 20-29 years while few of the respondents (30) were 50 years or more. This shows that majority of the respondents were within the fertility age range. More than half of the mothers have had Junior High School education (97, 56.7%). This was followed by 32 respondents who have had their primary form of

education. However, 23 percent of the respondents had no form of formal education, thus, illiterate. Education is key when it comes to observing and taking in medicine or therapy observation. Therefore, it is expected that only few people could observe and implement their medication as prescribed and follow the review process. Income of the parents of the children is key when it comes to access to health care and securing of health care delivery or services. Income also affect access to health care delivery. Occupation of the respondents also provide them with this income. A larger number of respondents were into trading (68, 39.8%) while 31 of the respondents were unemployed. In addition, para-profession formed 13.5 percent of the respondents while 35(20.5%) of the respondents were engaged in other occupation such as artisans. A greater number of the respondents were married, followed by 54 of the respondents who were single, thus, either married and divorced or separated. In addition, 38 of the respondents were co-habiting while 3 of the respondents were divorced.

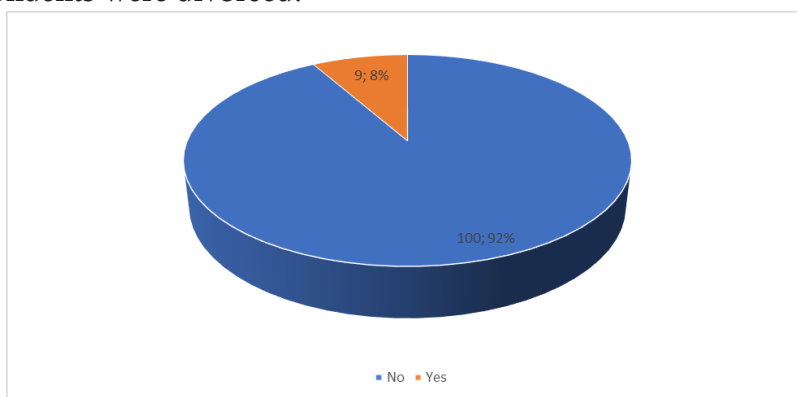


Figure 1: Disclosure to sexual partner

Data were gathered from respondents on whether they have declare their status to their partner or not. Figure 1 shows that only 8 percent of respondents have disclosed. Thus, majority of the respondents have not disclosed their status to their partner. However, it was also found that all the respondents were sexually active.

The percentage of Retro-exposed babies infected with HIV

This objective sought to estimate the percentage of children that were infected with HIV after the treatment. This was to examine the efficacy of the treatment and to examine other factors that might have led to the infection. Data were gathered from mothers on their status and the result is presented in Table 1.

Table 1: The Retro-exposed babies infected with HIV

Results/sex	Male	Female	Total(%)
HIV positive	6	9	15(8.6)
HIV negative	73	87	160(91.4)
Total	79	96	175(100%)

From Table 1, it came to bare that out of the 175 babies, 8.6 percent (15) of them were infected with HIV while 91.4 percent (169) were negative. This means that the treatment or regiments administered to the mothers were effective. Thus, majority of the children were protected from getting infected with HIV. Focusing on the sex, it can be deduced that more females (two-third of males) were infected. This may be due to chance or due to the fact that females were a little more than male for the total sample size for the study.

Health status of the Retro-exposed babies infected with HIV

After determining the rate and percentage of Retro-exposed babies infected with HIV, there is the need to examining their health in order. This health status covers the fitness of the babies after birth, death status, whether the baby is affected with any neonatal diseases, birth weight issues, congenital issues among others. Data were gathered on these parameters and presented in Table 5.

Table 2: Health status of the Retro-exposed babies infected with HIV

Status	Frequency	Percentage
Live birth	175	98.87
Neonatal death	2	1.37
Low birth weight	42	23.73
Neonatal infection	18	10.29
Congenital microcephaly	0	0

Table 2 shows that there were 175 live birth. This is good news since majority of the babies were protected from being infected with HIV. Also, there was a low birth weight case of 42. These were babies that weigh below 2.50kg at birth. This forms 23.73 percent out of the total babies. However, 2(1.13%) babies dead due to neonatal issues, which the cause of death data was not available. Moreover, there were eighteen (18) neonatal infection, while there was no congenital microcephaly. The result shows that about 33 percent had issues with their health while majority (67%) of the babies were healthy.

Infant mortality rate of Retro-exposed babies infected with HIV

Infant mortality rate looks at the death of young children under the age of 1. However, this objective sought to examine the infant mortality rate of Retro-exposed babies infected with HIV. Thus, the death of these infants due to their infection with HIV. The results of the data gathered on these variables are presented in Table 3.

Table 3: Infant mortality rate of Retro-exposed babies infected with HIV

Status	Male	Female	Total
HIV Positive	6	7	13(86.7%)
Death	0	2	2(13.3%)
Total	6	9	15(100%)

Table 3 shows that out of the 15 babies who were infected with HIV, 2 of them who were females died. This represents 13.3 percent of the infected babies. This is low but still needs attention since 2 out of 15 infected cases as death is not good and appropriate measures should be taken to help reduce or eliminate such mortality rate if possible.

PMTCT treatment options available and used at Atua Government Hospital.

This objective sought to identify the various PMTCT treatment options available and used at the Atua Hospital. Data was gathered from the records to the women on PMTCT treatment and the result is presented in Figure 2.

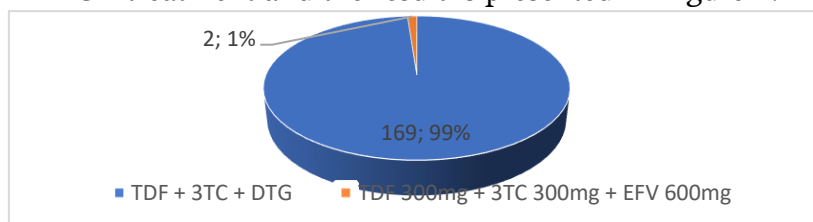


Figure 2: Regimen given to Women on the PMTCT treatment

Normally, there are two different regimen given to women on PMTCT programme, however, TDF +3TC + DTG and TDF 300mg +3TC 300mg + EFV 600mg were the first option given to all women for the first time. Subsequently, if any of the women do not tolerate it, then it is change for the person. According to Figure 3, 169 of the respondents (98.8%) were on the PMTCT protocol of TDF +3TC + DTG while 2 of the respondents were put on TDF 300mg +3TC 300mg + EFV 600mg and all of them tolerated it (according to Figure 3).

Table 4: ARV status

Status	Frequency	Percent
Change ARVs	3	1.8
Continue ARVs	118	69
PMCTCT treatment	48	28.1
Re-start ARVs	2	1.2
Total	171	100

Table 4 shows that more than half of the respondents have continue ARVs while 3 of the respondents have changed ARVs. Moreover, 48 of the respondents have received PMTCT treatment and 2 of the respondents have re-start ARVs. This shows that as majority of the respondents have continued the ARVs, about 30 percent of the respondents have also been under the treatment of PMTCT.

Table 5: Source of Funding

Status	Frequency	Percent
NHIS	166	97.1
Out pocket	5	2.9
Total	171	100

Data were gathered from the respondents on how they fund their treatment and medication and the result is presented in Table 5. It shows that about 97 percent of the respondents fund their treatment or medication through the NHIS while only 5 respondents do so through out pocket system. This means that majority of the respondents fund their treatment by using the NHIS system.

Differences between demographic characteristics of the mother and Retro exposed babies infected with HIV

The potential influence of mother demographic variables on the outcomes of infants retro-exposed to HIV infection. The final purpose of this study aims to analyze the variations in demographic features of mothers that may have an impact on the outcomes of infants exposed to Retro and infected with HIV. It is believed that parents who were aged, married and were well educated are highly compliance to the implementation of administration of drugs or therapy. Therefore, data were gathered on these characteristics and the outcome of Retro exposed babies infected with HIV to test these differences. These results were presented in Table 6, 7 and 8.

Table 6: Differences between age of the mothers and Retro exposed babies infected with HIV

Age	N	Yes	No	χ^2 statistic	P-value
				1.199	0.878
Less than 20	13	0	13		
20-29	65	2	63		
30-39	85	1	84		
40-49	5	0	5		
50 and above	3	0	3		
Total	171	3	168		

According to Table 6, there is difference between age of the women and the Retro-exposed babies infected with HIV. Specifically, women who were less than 20 years were more exposed to Retro exposed babies infected with HIV. However, women who were within 40-49 years were not susceptible to Retro exposed babies infected with HIV. Moreover, the Chi-square test was run to examine the significant of the difference and the result shows that there was statistically significant difference between age of the women and Retro exposed babies infected with HIV. This means that the aged were adherence to ART as compared to the young women less than 20 years.

Table 7: Differences between educational status of the mothers and Retro exposed babies infected with HIV

Education	N	Yes	No	χ^2 statistic	P-value
None	23	0	23	4.797	0.441
Pre school	6	0	6		
Primary	30	2	30		
JHS	96	1	96		
SHS	10	0	10		
Tertiary	3	0	3		
Total	171	3	168		

With regards to educational status of the women and Retro exposed babies infected with HIV, Table 7 shows that there is difference between educational status of the women and the Retro-exposed babies infected with HIV. Specifically, women who were primary form of formal education were more exposed to Retro exposed babies infected with HIV as compared with women who had tertiary or SHS education. However, women who have had their secondary and tertiary education were not susceptible to Retro exposed babies infected with HIV. Moreover, the Chi-square test was run to examine the significant of the difference and the result shows that there was no statistically significant difference between educational status of the women and Retro exposed babies infected with HIV. Thus, whether a woman is educated or not, it has nothing to do with infecting their children.

Table 8: Differences between occupational status of the mothers and Retro exposed babies infected with HIV

Occupation	N	Yes	No	χ^2 statistic	P-value
Unemployed	31	0	31	4.625	0.463
Trader	68	3	65		
Business	5	0	5		
Para-profession	23	0	23		
Student	9	0	9		
Others	35	0	35		
Total	171	3	168		

Occupational status of women were assessed against Retro exposed babies infected with HIV due to its significant effect on access to health care services among others. Table 8 shows that there is slightly difference between women who were into trading and the others. In addition, the Chi-square analytical technique was used to examine the significance of the difference and the result shows that there was no statistically significant difference between marital status of the women and Retro exposed babies infected with HIV. Thus, whether a woman is into trading, business or para-profession, it has nothing to do with their children infection.

Table 9: Differences between marital status of the mothers and Retro exposed babies infected with HIV

Income	N	Yes	No	χ^2 statistic	P-value
Single	54	0	54	9.931	0.042
Married	70	2	68		
Divorced	3	1	3		
Co-habiting	38	0	38		
Total	171	3	168		

Marital status of women were assessed against Retro exposed babies infected with HIV due to its significant effect on access to health care services among others. Table 9 shows that there is slightly difference between women were married and single or co-habiting.

Therefore, the Chi-square analytical technique was used to examine the significance of the difference and the result shows that there was statistically significant difference between marital status of women and Retro exposed babies infected with HIV. Thus, women who were married were more likely to affect their children with HIV.

On the background information or characteristics of the participants including; sex, age, mother's educational level, and average monthly income of mothers or women. The study found that females dominated among the babies delivered in the Atua Government Hospital. With their ages, babies who were five years were more while few was a year old. On the mothers, those who were within 20-29 years were more, followed by those who were within 30-39 years while 28 were more than 40 years old. On educational status of the mothers, majority of them were educated at least most women had their basic education while 29 women have no form of formal education. With regards to the average monthly income of the women, only few were earning high as compared to majority of the women who earned less than Gh 1500.

This objective sought to estimate the percentage of children that were infected with HIV after the treatment. The study found that out of the 175 babies, 8.6 percent

(15) of them were infected with HIV while 91.4 percent were negative or non-reactive. This shows that the treatment or regimens administered to the mothers were effective. Thus, majority of the children were protected from getting infected with HIV. Focusing on the sex, it can be deduced that more females (two-third of males) were infected. This may be due to chance or due to the fact that females were a little more than male for the total sample size for the study.

After determining the rate and percentage of Retro-exposed babies infected with HIV, there is the need to examining their health in order. This health status covers the fitness of the babies after birth, death status, whether the baby is affected with any neonatal diseases, birth weight issues, congenital issues among others. It came to bear that there were 173 live birth out of the 175 babies. This is a great result since majority of the babies were protected from being infected with HIV. Also, there was 4 low birth weight cases. However, 2 babies were dead due to neonatal issues. Moreover, there were four (4) neonatal infection. The result shows that only 5.71 had issues with their health while majority of the babies were healthy.

Infant mortality rate looks at the death of young children under the age of 1. However, objective three sought to examine the infant mortality rate of Retro-exposed babies infected with HIV. Thus, the death of these infants due to their infection with HIV. The results show that out of the 15 babies who were infected with HIV, 2 of them who were females died. This represents 13.3 percent of the infected babies. This is low but still needs attention since 2 out of 15 infected cases as death is not good and appropriate measures should be taken to help reduce or eliminate such mortality rate.

Treating babies of PMTCT is crucial. This is due to the fact that such treatment either protect the babies from future infection of HIV, it can also cure the HIV from their system within first 18 days after birth as well as protecting them from other deadly diseases that may be harmful to their system. There are four main types of treatment options available for babies of PMTCT treatment at the Atua Government Hospital in Ghana. These treatments included Abacavir + Lamivudine+ Dolutegravir (ABC+3TC+DTG), Tenofovir + Lamivudine + Dolutegravir (ABC+3TC+DTG), Zidovudine + Lamivudine + Efavirenz (AZT+3TC+EFV), Zidovudine + Lamivudine + Nevirapine (AZT+3TC+NPV). With sex, there was no statistically significant difference between the administration of various treatment and sex. Thus, whether male or female, they all received either ABC+3TC+EFV, ABC+3TC+DTG, AZT+3TC+EFV, or AZT+3TC+NPV. This is similar to study conducted by Twum et al. 2023 that found that the common drug for PMTCT treatment were Abacavir + Lamivudine+ Dolutegravir (ABC+3TC+DTG), Tenofovir + Lamivudine + Dolutegravir (ABC+3TC+DTG), Zidovudine + Lamivudine + Efavirenz (AZT+3TC+EFV), Zidovudine + Lamivudine + Nevirapine (AZT+3TC+NPV).

However, with the age of the children, AZT+3TC+NPV treatment was normally administered more to children of either 4 or 5 years old. None of the ABC+3TC+DTG was administered to either 0, a year old or 4 years children. Nevertheless, there was no statistically significant difference between age and the treatment given to the babies. In all, the AZT+3TC+NPV was the treatment that was highly used for PMTCT treatment for children mostly more than 2 years old with small attention to the use of ABC+3TC+DTG and AZT+3TC+EFV as treatment for the babies.

Objective four sought to identify the various PMTCT treatment options available and used at the Atua Government Hospital. ABC+3TC+DTG was the first-line, first option given to all women for the first time. Normally, there are two different regimens given to women on PMTCT programme, however, TDF +3TC + DTG and TDF +3TC + EFV were the first option given to all women for the first time. Subsequently, if any of the women do not tolerate it, then it is change for the person. 169 of the respondents (98.8%) were on the PMTCT protocol of TDF +3TC + DTG while 2 of the respondents were put on TDF +3TC + EFV and all of them tolerated it .

The purpose of this study aims to analyze the variations in demographic features of mothers that may potentially impact the outcomes of infants exposed to Retro and infected with HIV. There was statistically significant difference between age of the women and the Retro-exposed babies infected with HIV. Specifically, women who were less than 20 years were more exposed to Retro exposed babies infected with HIV. However, women who were within 40-49 years were not susceptible to Retro exposed babies infected with HIV. This means that the aged were adherence to ART as compared to the young women less than 20 years. This was similar to the findings of Gourlay et al., (2013) that, younger maternal age influence adherence to the uptake of ART.

In addition, Meyers et al., (2015) examined early initiation of ARVs during pregnancy to move towards virtual elimination of mother-to-child transmission of HIV-1 in Yunnan in China and found that the likelihood of pregnant women between the ages of 20-30 years to start ARVs early is higher as compared to those beyond 35 years. Remarkably, 8 (more than half) out of 15 babies who were infected with HIV were born to women who were of the ages of 20-29 years.

There was statistically significant difference between educational status of the women and the Retro-exposed babies infected with HIV. Specifically, women who were illiterate or have no form of formal education were more exposed to Retro exposed babies infected with HIV as compared with women who had primary, JHS education. However, women who have had their secondary and tertiary education were not susceptible to Retro exposed babies infected with HIV. Gourley et al., (2013) concluded that inadequate knowledge of HIV coupled with lower educational level may lead to poor uptake of ART. Therefore, it is not surprise to found that the result of this study shows that 9 out of the 15 babies infected with HIV were born to women who have no form of formal education or illiterate. Comparatively, those women who were educated were less likely to born babies infected with HIV due to their strictly adherence to the dictates and instructions concerning ART.

CONCLUSION

After conducting the study, based on the findings, it can therefore, be concluded that PMTCT treatment protocol is crucial since it is the window through which babies born to women with HIV can be protected from being infected with HIV. It came to bare that out of the 175 babies, 8.6 percent (15) of them were infected with HIV, while 91.4 percent (169) were not infected with HIV. Focusing on the sex, more females were infected. Also, aside the 2(1.13%) babies who died, only few babies have health issues such as neonatal infection (18,10.29%) and low birth weight(42, 23.73%) but the remaining were healthier. With infant mortality

rate, out of the 15 babies who were infected with HIV, 2 (13.3%) of them died. 169 (98.8%) of the respondents were on TDF +3TC + DTG while 2(1%) were put on TDF+3TC+ EFV in appropriate doses, and all of them well tolerated the medicines. Finally, there were differences between age, educational status of women and Retro exposed babies to infection of HIV. However, income of the women had nothing to do with the Retro exposed babies to be infected with HIV.

BIBLIOGRAPHY

- Arnold, S. ... Osborne, E. W. (2006). Experiential learning in secondary agricultural education classrooms. *Journal of Southern Agricultural Education Research*, 56(1), 30–39.
- Brown, A. E. ... Delpech, V. C. (2018). HIV in Europe and Central Asia: progress in 2018 towards meeting the UNAIDS 90-90-90 targets. *Eurosurveillance*, 23(48), 1800622.
- Gourlay, A. ... Wringe, A. (2013). Barriers and facilitating factors to the uptake of antiretroviral drugs for prevention of mother-to-child transmission of HIV in sub-Saharan Africa: a systematic review. *Journal of the International AIDS Society*, 16(1), 18588.
- Gourley, S. L. ... Koleske, A. J. (2013). Corticosteroid-induced neural remodeling predicts behavioral vulnerability and resilience. *Journal of Neuroscience*, 33(7), 3107–3112.
- Higgins, J. A. ... Dworkin, S. L. (2010). Rethinking gender, heterosexual men, and women's vulnerability to HIV/AIDS. *American Journal of Public Health*, 100(3), 435–445.
- Igulot, P., & Magadi, M. A. (2018). Socioeconomic status and vulnerability to HIV infection in Uganda: evidence from multilevel modelling of AIDS indicator survey data. *AIDS Research and Treatment*, 2018.
- Kharsany, A. B. M., & Karim, Q. A. (2016). HIV infection and AIDS in sub-Saharan Africa: current status, challenges and opportunities. *The Open AIDS Journal*, 10, 34.
- Mariwah, S. ... Atuahene, K. (2017). Knowledge, attitudes and barriers towards prevention of mother-to-child transmission of HIV in Ghana. *UDS International Journal of Development*, 4(1), 1–9.
- Meyers, K. ... Zhou, Z. (2015). Early initiation of ARV during pregnancy to move towards virtual elimination of mother-to-child-transmission of HIV-1 in Yunnan, China. *PLoS One*, 10(9), e0138104.
- NACP. (2009). HIV/AIDS/STI Surveillance Report No. 21. Ministry of Health. Tanzania Mainland. National AIDS Control Programme (NACP
- Organization, W. H. (2010). WHO recommendations on the diagnosis of HIV infection in infants and children. World Health Organization.
- Petersen, P. E. (2008). World Health Organization global policy for improvement of oral health-World Health Assembly 2007. *International Dental Journal*, 58(3), 115–121.
- Ramjee, G., & Daniels, B. (2013). Women and HIV in sub-Saharan Africa. *AIDS Research and Therapy*, 10(1), 1–9.
- Sia, D. ... Nandi, A. (2016). What explains gender inequalities in HIV/AIDS

prevalence in sub-Saharan Africa? Evidence from the demographic and health surveys. BMC Public Health, 16(1), 1–18.
UNAIDS. (2012). UNAIDS world AIDS day report. UNAIDS Geneva, Switzerland.
WHO. (2017). WHO, 2017. In World Health Organization.

Copyright holders:

Twum Seth, Oscar Agyemang Opoku, Selina Achiaa Owusu, Henry Okudzeto, Jesse Anak (2023)

First publication right:

AJHS - Asian Journal of Healthy and Science



This article is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International](https://creativecommons.org/licenses/by-sa/4.0/)