

ASSESSING THE OUTCOME OF PMTCT OF HIV THERAPY AT THE EASTERN REGIONAL HOSPITAL, GHANA

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Abstract

The study assessed the outcome of the PMTCT of HIV therapy at the Eastern Regional Hospital. Specifically, the study sought to; determine the percentage of Retro-exposed babies infected with HIV; assess the health status of the Retro-exposed babies infected with HIV; determine the infant mortality rate of Retro-exposed babies infected with HIV; assess the PMTCT treatment options available and used at Eastern Region Hospital; and assess the demographic characteristics of the mother that may have influenced the outcomes of Retro-exposed babies infected with HIV. This is a descriptive study of HIV positive mothers enrolled on the PMTCT programme at Eastern Regional Hospital. Secondary data on demographic characteristics of the mothers, the treatment options in use and the outcome of the PMTCT programme after birth at Eastern Region Hospital were used. Data was analyzed descriptively using frequencies, percentages, means and standard deviations whereas relationship and difference were analyzed using t-test, ANOVA, chi-square techniques. Babies were protected from getting infected with HIV through PMTCT treatment while only 15 babies were infected with HIV. More females were infected. Also, aside the 2 babies who died, only few babies have health issues such as neonatal infection and low birth weight but the remaining were healthier. With infant mortality rate, out of the 15 babies who were infected with HIV, only 2 (13.3%) of them died. All the women (165, 100%) on the PMTCT were treated with TDF 300mg +3TC 300mg + EFV 600mg and they all tolerated it. 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 infection of HIV. PMTCT treatment is key since it is the window through which babies born to women with HIV can be protected from being infected with HIV. Again, there were differences between age, educational status of women and Retro exposed babies to infection of HIV. However, the results of the study indicated that income of the women had nothing to do with the Retro exposed babies to infection of HIV.

INTRODUCTION

Globally, about 37.9 million people were living with HIV/AIDS as at 2018. About 69 percent (approximately 19.4 million) among these people were from sub-Saharan Africa (SSA), (WHO/GHO, 2019). Progressive anti-retroviral therapy is administered across the globe, however, close to 74 percent of the 1.5 million AIDS-related deaths in 2013 was recorded in sub-Saharan Africa (Kharsany & Karim, 2016). According to Ramjee & Daniels, (2013), women have been the most impacted by HIV/AIDS, and according to UNAIDS, (2012), a young woman is predicted to contract HIV virtually every minute. In SSA, where females currently make up at least 56–59% of PLWHAs Kharsany & Karim, 2016; Ramjee & Daniels, 2013; Sia et al., (2016) the disease has proven particularly devastating. Currently, girls make about 75% of newly diagnosed cases of SSA among teenagers aged 15 to 19. Additionally, compared to men in the same age group in the sub-region, women aged 15 to 24 are twice as likely to be living with HIV (Addo et al., 2014). Female adolescents aged 10 to 19 made up 79% of the HIV incidence in Southern and Eastern Africa in 2017 (Brown et al., 2018).

In Ghana, women made up 65% of the projected 334,713 PLWHAs in 2018, while men made up 35% (NACP, 2009). Due to their higher vulnerability than men due to differences in culture and socioeconomic level, women have a disproportionately high risk of HIV/AIDS infection (Higgins, Hoffman & Dworkin, 2010; Igulot & Magadi, 2018). In order to prevent or limit the spread of HIV from women to men or children, especially among pregnant women, suitable steps should be taken. One of the primary obstacles to any HIV/AIDS program's efforts to stop the spread of HIV is mother-to-child transmission of the virus (MTCT). The risk of contracting HIV during pregnancy or at birth ranges from 15 to 30 percent in the absence of preventive measures, and it rises to 20 to 45 percent when breastfeeding. In wealthier nations, prevention of MTCT (PMTCT) measures can lower HIV vertical transmission to less than 1%; nevertheless, despite progress, middle- to low-income nations experience less success. Mother-to-Child Transmission of HIV (MTCT) puts pregnant HIV-positive mothers at a high risk of passing the virus to their unborn children during pregnancy, labour, or delivery, and postpartum through breastfeeding (Organization, 2010b). MTCT causes over 90% of new HIV infections in babies, which is a major public health problem, particularly in sub-Saharan African nations with high fertility rates and a high incidence of HIV infections among women of childbearing age (UNAIDS, 2012)

A comprehensive approach to addressing a wide range of prevention, care, treatment, and support services along a continuum of care from pregnancy through childhood is the prevention of mother-to-child transmission of HIV (PMTCT). Following the success of short-course Zidovudine and single-dose Nevirapine clinical trials, this strategy has been at the forefront of international HIV prevention efforts since 1998 (Organization, 2010a). It has since evolved into a crucial intervention to lower HIV infection rates in the general population and virtually eradicate HIV infection in children around the world (Chantry et al., 2012). The

WHO promotes a four-pronged comprehensive approach to preventing HIV infection among women of childbearing age, preventing unintended pregnancies among women living with HIV, preventing HIV transmission from women living with HIV to their infants, and providing appropriate treatment, care, and support to mothers living with HIV, their children, and their families.

Since 1995, more than 350,000 children have not contracted HIV thanks to the use of antiretroviral medications (ARVs) as prophylaxis to moms with HIV. According to WHO, UNAIDS, and UNICEF (2011), sub-Saharan Africa has the greatest prevalence of HIV infection among women of reproductive age and is home to about 86% of the children who may have avoided infection thanks to the benefits of PMTCT. In 2013, 3 out of 10 pregnant HIV-positive women did not receive ARVs to prevent MTCT of HIV, and 4 out of 10 HIV-positive pregnant women or their infants did not receive ARVs during breastfeeding to prevent MTCT of HIV (UNAIDS/JC2681/1/E, 2014) (Greene, 2007). This is despite the enormous contribution of PMTCT programmes in the 21 global priority countries.

The median prevalence of HIV among pregnant women attending prenatal clinics in Ghana has grown from 1.8% in 2015 to 2.4% in 2016, according to the 2016 National Sentinel Survey (NSS) report. All 40 of the prenatal clinic locations around the nation were able to successfully conduct the survey. In 2016, the prevalence of HIV among pregnant women varied from 0.4% in the rural area of Nalerigu to 4.2% in the urban areas of Agormanya and Sunyani. In Ghana, the predominant method of HIV transmission from mother to child (MTCT) is through young children. An exceptional opportunity for the start of the PMTCT protocol to prevent HIV infection in a newborn is presented by an early HIV diagnosis in a pregnant woman (WHO, 2013). By identifying maternal HIV infection during pregnancy and providing antiretroviral therapy (ART), the risk of mother-to-child HIV transmission can be decreased or eliminated (Organization, 2014).

The Tema General Hospital reported that from 2012 to 2016, the following results were obtained from DNA PCR tests conducted to determine the HIV status of 661 HIV-exposed children, including both those whose mothers participated in the PMTCT programme and those whose mothers did not. In 2012, 5 out of 83 children (6.02%) aged between 6 weeks and less than 18 months who had HIV testing were children. In 2013, 14.6% of the 134 children who were screened for HIV were under the age of 14 (14/134). Eleven (11) of the 141 children (7.8%) who were screened for the disease in 2014 also tested positive. In 2015, 14.7% of 150 kids who were screened for HIV were found to be positive. Twenty-two (22) of the 153 children that were screened in 2016 (14.4%) were positive (TGH, 2017). Children who tested positive for HIV climbed from 6.02% in 2012 to 10.4% in 2013. However, there was a 2.6% decline between 2013 and 2014. However, the rate of HIV-positive patients grew once more by 1.5% in 2015 and then increased further to 5.1% in 2016. According to the information above, sixty-six (66) of the six hundred and sixty-one (661) children (9.98%) born to mothers who were HIV positive during the time period under consideration were HIV positive. 181 (1.56%) of the 11,589 pregnant women who underwent ANC testing were found to be retroviral positive.

Numerous HIV positive mothers struggle with the problem of HIV transmission from mothers to their offspring. During pregnancy, labour and delivery, or while nursing, HIV transmission is possible. (GAC, 2010). According to GAC (2010), vertical transmission from an infected pregnant mother that occurs during pregnancy, labour, delivery, or nursing is the primary cause of HIV infections in children in Ghana. In 2009, HIV infection was responsible for 3% of deaths among children under five in Ghana. (GAC, 2010).

Despite increased global efforts to prevent mother-to-child HIV transmission, paediatric HIV infections remain high in sub-Saharan Africa, particularly Ghana (Dako-Gyeke et al., 2016). Despite the fact that there have been numerous studies conducted on the PMTCT programme on a global scale, examining the difficulties and ways to improve the programme in order to reduce mother-to-child HIV transmission by 2030, there is a paucity of empirical data on the effectiveness of the PMTCT programme implemented in the Eastern Region. This study looked at how the PMTCT programme at the Eastern Regional Hospital performed.

RESEARCH METHODS

Research design provides the glue that holds the research project together. This encompasses the stratified stages employed in the data collection procedures and the steps used in the analysis of the data gathered. Research design is therefore a summary of how the survey is to be conducted right from collection of data to data analysis stage (Sullivan, 2001). The research design consisted of a cross sectional and descriptive retrospective assessment of mothers who received PMTCT and delivered children who are now less than 5 years old. Leedy and Ormrod (2005) viewed a descriptive survey as collection of data in order to test hypothesis or answer questions concerning the current status of a study. It provides opportunities for researchers to gain valuable insight into the existing state of a phenomenon.

This refers to the total number of respondents involved in a study. For this study, the targeted population consisted of all pregnant women and nursing mothers who tested retro-positive and have been coming for services at the Eastern Regional Hospital.

Patients' records that included in the study were:

- a. All mothers who come for ANC at the facility of Eastern Regional Hospital
- b. All mothers who have tested HIV positive, attending ANC and have given birth at the facility of Eastern Regional Hospital
- c. All HIV positive mothers who had their children after birth (children less than 5 years)
- d. All pregnant women who have tested retro-positive

Patients records that were excluded in the study were:

- a. All mothers who maybe retro-positive but do not attend ANC at the facility of Eastern Regional Hospital
- b. mothers who do not come for PMTCT services at the Eastern Regional Hospital
- c. mothers who come for only EID test at the Eastern Regional Hospital

d. mothers who come to only deliver at the Eastern Regional Hospital without attending ANC.

With regards to this study, census was used. Census refers to the attempt to collect information on all eligible elements in a defined population. Therefore, all the 198 women who have been tested positive for HIV and have been coming for services at the Eastern Regional Hospital were considered for the study.

Table 1: Sample Size For The Study

| | Frequency | Percent |
|-----------------------|-----------|---------|
| Targeted population | 198 | 100 |
| Criteria of inclusion | 165 | 83.3 |
| Criteria of exclusion | 33 | 16.7 |

Table 1 shows that there were 198 women who were tested positive for HIV. However, out of 198, 165 were attending services as the Eastern Regional Hospital while the others were not. Therefore, only women (165) who had HIV positive and have been on the treatment for more than 6 months and receives services from Eastern Regional Hospital.

Data gathered from the patients register and other records were entered into Microsoft Excel, edited, cleaned and then export to SPSS for further analysis. Data analysis were performed using SPSS statistical software. Descriptive statistics such as means and standard deviation (*mean ± SD*) were used to describe the quantitative variables while frequencies and percentages n (%) was used to describe categorical variables and the pattern. Also, Chi-square test was used to establish the association between women's demographic characteristics and Retro-exposed babies to HIV infection. Moreover, independent t-test was used to test the difference between respondents' sex and treatment or regimen received

RESULT AND DISCUSSION

Demographic characteristics

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 Eastern Regional 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.

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. From Table 2, it came to bare 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.

Table 2: 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%) |

Treatment for babies PMTCT

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. Therefore, data were gathered and the result were presented in Table 3.

Table 3: Treatment for babies PMTCT

| Status | (ABC+3TC+DTG) | ABC+3TC+NVP | AZT+3TC+EFV | AZT+3TC+NVP |
|--------|---------------|-------------|-------------|-------------|
| Sex | | | | |
| Male | 21 | 17 | 19 | 39 |
| Female | 15 | 21 | 19 | 24 |
| Total | 36 | 38 | 38 | 63 |
| Age | | | | |
| 0 | 0 | 9 | 0 | 10 |
| 1 | 0 | 5 | 7 | 9 |
| 2 | 9 | 9 | 0 | 17 |
| 3 | 6 | 7 | 9 | 11 |
| 4 | 0 | 7 | 9 | 14 |
| 5 | 8 | 0 | 9 | 20 |
| Total | 23 | 37 | 34 | 81 |

According to Table 3, there are four main types of treatment options available for babies of PMTCT treatment at the Eastern Regional 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). Table further depicts the number of children, sex of the children and the age at which each and every treatment is administered to the children. With sex, there were no difference between the administration of various treatment and sex. This means that whether male or female, they all received either Abacavir + Lamivudine+Dolutegravir (ABC+3TC+EFV), Tenofovir + Lamivudine + Dolutegravir (ABC+3TC+DTG), Zidovudine + Lamivudine + Efavirenz (AZT+3TC+EFV), or Zidovudine + Lamivudine + Nevirapine (AZT+3TC+NPV). The independent t-test conducted shows that there are no statistically significant different between sex and the various treatment ($t=-0.26$, $p>0.05$).

However, with the age of the children, Zidovudine + Lamivudine + Nevirapine (AZT+3TC+NPV) treatment was normally administered more to children of either 4 or 5 years old. None of the Abacavir + Lamivudine+ Dolutegravir (ABC+3TC+DTG) was administered to either 0, a year old or 4 years children. This shows that there were some differences among the various treatment and the years of children. Despite the differences in the means of the various treatment, the result of One-way Analysis of Variance shows that there is no statistically significant difference between the various treatment and age of the children ($F\text{-stat} = 0.948$, $p<0.46$).

In all, the Zidovudine + Lamivudine + Nevirapine (AZT+3TC+NPV) was the treatment that was highly used for PMTCT treatment for children mostly more than 2 years old. It was followed by Tenofovir + Lamivudine + Dolutegravir (TDF+3TC+DTG) and Zidovudine + Lamivudine + Efavirenz (AZT+3TC+EFV).

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 4.

Table 4: Health status of the Retro-exposed babies infected with HIV

| Status | |
|-------------------------|-----|
| Live birth | 173 |
| Death | 2 |
| Low birth weight | 4 |
| Neonatal infection | 4 |
| Congenital microcephaly | 0 |

Table 4 shows that there were 173 live birth out of the 175 babies. 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 4. These were babies that weigh below 2.50kg at birth. This forms 2.3 percent out of the total babies. However, 2 babies were dead due to neonatal issues. Moreover, there were four (4) neonatal infection while there was no congenital infections. The result shows that only 5.71 had issues with their health while majority 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 5.

Table 5: 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 5 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.

PMTCT treatment options available and used at Eastern Region Hospital.

This objective sought to identify the various PMTCT treatment options available and used at the Eastern Regional Hospital. Normally, there are three different regiment given to women on PMTCT treatment, however, TDF 300mg +3TC 300mg + EFV 600mg is 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.

Data revealed that all the women (165, 100%) on the PMTCT were treated with TDF 300mg +3TC 300mg + EFV 600mg and they all tolerated it.

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

Demographic characteristics of the mother that may have influenced the outcomes of Retro-exposed babies infected with HIV. Last objective, which is meant to examine the differences between demographic characteristics of the mother that may influence the outcome of Retro exposed babies infected with HIV. It is believed that parents who earn high income and are 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 |
|--------------|-----|-----|-----|--------------------|---------|
| | | | | 3.9684 | 0.023 |
| Less than 20 | 32 | 8 | 26 | | |
| 20-29 | 57 | 5 | 55 | | |
| 30-39 | 48 | 2 | 47 | | |
| 40-49 | 28 | 0 | 28 | | |
| Total | 165 | 9 | 156 | | |

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 | 29 | 9 | 23 | 12.842 | 0.041 |
| Primary | 38 | 3 | 36 | | |
| JHS | 45 | 1 | 44 | | |
| Secondary | 35 | 1 | 35 | | |
| Tertiary | 18 | 0 | 18 | | |
| Total | 165 | 9 | 156 | | |

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 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. 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 educational status of the women and Retro exposed babies infected with HIV. Thus, women who were educated were responsive to the demands and the instructions with regards to dosage, and completion of ART.

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

| Income | N | Yes | No | χ^2 statistic | P-value |
|-------------------|-----|-----|-----|--------------------|---------|
| Less than 500 | 42 | 5 | 39 | 6.357 | 0.135 |
| 500-999 | 55 | 4 | 53 | | |
| Gh 1000-1499 | 32 | 4 | 34 | | |
| Gh 1500-1999 | 25 | 0 | 25 | | |
| Gh 2000 and above | 11 | 2 | 9 | | |
| Total | 165 | 9 | 156 | | |

Income 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 earned less than Gh 500 in a month, women who earned Gh 500-999, women who earned Gh 1000-1499 and women who earned Gh 2000 and more.

However, 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 average monthly income of the women and Retro exposed babies infected with HIV. This is due to the fact that the differences between the income of the women were not that much, therefore, could not cause any difference in the Retro exposed babies infected with HIV. Thus, whether women earned lower income or higher income, there was no difference in the Retro exposed babies infected with HIV.

Percentage of Retro-exposed babies infected with HIV

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 regiments administered to the mothers were effective. According to the WHO, without treatment or intervention, the rate of transmission is between 15 – 45% and with intervention, the rate of infection is reduced to 5% in a breastfeeding population and less than 2% in a non-breastfeeding population (Achyut et al., 2016). Comparing the rate of transmission in the study which is 3.6% above the WHO guideline which is quite remarkable, it can be that some of these mothers did not take their medications as required. 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. It came to bear

that there were 173 live births 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 of Retro-exposed babies infected 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 Eastern Regional 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 statistical significant difference between the administration of various treatment and sex. Thus, whether male or female, they all received either Abacavir + Lamivudine+ Dolutegravir (ABC+3TC+EFV), Tenofovir + Lamivudine + Dolutegravir (ABC+3TC+DTG), Zidovudine + Lamivudine + Efavirenz (AZT+3TC+EFV), or Zidovudine + Lamivudine + Nevirapine (AZT+3TC+NPV).

However, with the age of the children, Zidovudine + Lamivudine + Nevirapine (AZT+3TC+NPV) treatment was normally administered more to children of either 4 or 5 years old. None of the Abacavir + Lamivudine+ Dolutegravir (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 Zidovudine + Lamivudine + Nevirapine (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 Tenofovir + Lamivudine + Dolutegravir (ABC+3TC+DTG) and Zidovudine + Lamivudine + Efavirenz (AZT+3TC+EFV) as treatment for the babies.

PMTCT treatment options available and used at Eastern Region Hospital

The result shows that TDF 300mg +3TC 300mg + EFV 600mg was the first option given to all women for the first time. All the women (165, 100%) on the PMTCT were treated with TDF 300mg +3TC 300mg + EFV 600mg and they all tolerated it. It can be deduced that women who were treated with TDF 300mg +3TC 300mg + EFV 600mg had no complications or whatsoever. This drug was also effective since it was able to prevent majority of the babies from being infected with HIV.

Demographic characteristics of the mother that may have influenced the outcomes of Retro-exposed babies infected with HIV

Demographic characteristics of the mother that may have influenced the outcomes of Retro-exposed babies infected with HIV. It was revealed that 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 (Gourley et al., 2013) that, younger maternal age influence adherence to the uptake of ART. In addition, Whelan 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.

Income of women were assessed against Retro exposed babies infected with HIV due to its significant effect on access to health care services among others. There was slightly difference between women who earned less than Gh 500 in a month, women who earned Gh 500-999, women who earned Gh 1000-1499 and women who earned Gh 2000 and more. However, this difference was not statistically significant.

CONCLUSION

After conducting the study, based on the findings, it can therefore, be concluded that PMTCT treatment is crucial since it is the window through which babies born to women with HIV can be protected from being infected with HIV. Babies were protected from getting infected with HIV while only 15 babies were infected with HIV. Focusing on the sex, more females were infected. Also, aside the 2 babies who died, only few babies have health issues such as neonatal infection and low birth weight but the remaining were healthier. With infant mortality rate, out of the 15 babies who were infected with HIV, only 2 (13.3%) of them died. All the women (165, 100%) on the PMTCT were treated with TDF 300mg +3TC 300mg + EFV 600mg and they all tolerated it. 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 infection of HIV

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