

https://dspace.org/

Preventing Mother-to-Child transmission of HIV in Raleigh Fitkin Memorial Hospital, Swaziland: A review of the first year

Akindele, Florence Olukemi

2007-02-26T10:27:16Z
http://hdl.handle.net/10539/2116

Downloaded from a DSpace repository. https://dspace.org/

CHAPTER ONE

INTRODUCTION

In this chapter, an overview of the global HIV/AIDS epidemic is done with particular reference to the magnitude of the problem in sub-Saharan Africa. Emphasis is laid on the Mother to Child Transmission of the virus and its prevention within the context of the general HIV/AIDS reduction programmes internationally. The peculiarity of the epidemic in Swaziland, and the general response of the Swaziland government are discussed and a focus placed on the PMTCT programme in the Raleigh Fitkin Memorial Hospital, Manzini, Swaziland. The existing published literature on PMTCT programmes world wide is reviewed. This was done by reviewing scientific journals, Pub med and relevant literature from the library. The Google website was used as an additional search engine; with the key words PMTCT, Swaziland, South Africa, WHO/UNAIDS. Additional information was gathered from the booklets on PMTCT and RFM hospital produced by the Ministry of Health and Social Welfare (MOHSW), Swaziland. The chapter is concluded with the aim and objectives of the study described in this report.

1.1. BACKGROUND

1.1.1. HIV/AIDS in sub-Saharan Africa

During 2004, the global HIV/AIDS epidemic killed about 3.1 million people and an estimated 4.9 million people acquired the infection, bringing to 39.4 million the number of people living with the virus around the world (UNAIDS/WHO 2004). The problem has become even more critical in sub-Saharan Africa, where a disproportionate number of all HIV/AIDS infections occur. The region has just over 10% of the world's population but

has more than 60% of all people living with HIV. More than three quarters of all women living with HIV globally are in sub-Saharan Africa. Southern Africa remains the worst affected sub-region in the world and accounts for one-third of all AIDS death globally (UNAIDS/WHO 2004). An estimated 700,000 children were newly infected with HIV globally in 2003, and there were 500,000 AIDS deaths among children less than 15 years of age. The majority of these estimated new infections and AIDS deaths were as a result of Mother to Child Transmission of HIV (UNAIDS/WHO 2003).

1.1.2. Mother to child transmission of HIV

Mother to child transmission (MTCT) is the vertical transmission of HIV from mother to child during pregnancy, delivery and the breast-feeding period. It is the major mode of acquiring the infection for young children. In many African countries, HIV positive infants and children face severe morbidity and mortality due to the fact that sophisticated and costly treatments are often not available and even the availability of basic medications to treat opportunistic infections is not certain (Preble & Piwoz 2001). The most cost effective way of dealing with the issue of paediatric HIV is preventing mother to child transmission of the virus (WHO 2005).

1.1.3. Preventing mother to child transmission of HIV

Preventing mother-to-child transmission (PMTCT) of HIV has now become an important part of HIV/AIDS reduction programmes worldwide. These programmes are targeted at primary prevention of HIV among women and their partners; prevention of unintended pregnancies among HIV-infected women; prevention of HIV transmission from HIV-

infected women to their children; and the provision of treatment, care and support for women living with HIV/AIDS and their families - PMTCT plus (WHO 2004). Programmes directed at prevention of HIV transmission from HIV-infected women to their children focus mainly on interventions during pregnancy, labor and delivery and the postpartum period. Where breastfeeding is the norm, exclusive breast-feeding is promoted, and this period is extended to at least the first 4-6 months after birth (Moore 2003). There are three essential mechanisms for the effective reduction of MTCT during pregnancy and these include:

a) Reducing maternal viral load with prophylactic antiretroviral therapy (ART)
b) Preventing avoidable exposure to maternal virus at birth through improved obstetric practice
c) Reducing infant's exposure to the virus through breastfeeding.

Antiretroviral drugs given to HIV infected mothers during the course of pregnancy and/or delivery can reduce the risk of HIV transmission during pregnancy, delivery and early postnatal period by two-to-three fold (WHO 2004). Improved obstetric practices focus on avoiding practices that may facilitate the infant's exposure to infected blood and other fluids from the mother. On this note, elective caesarean section contributes to the prevention of MTCT but due to the cost and lack of surgical facilities, this form of delivery has not been feasible for most women in resource poor settings in Africa. Other improved obstetric practices include avoidance of artificial rupture of membranes and episiotomy where there is no obstetric indication.

The World Health Organization (WHO) recommends the avoidance of all breastfeeding from birth by HIV-positive women in places where replacement feeding is acceptable, feasible, affordable, sustainable and safe. Where replacement feeding is not possible then exclusive breastfeeding is recommended during the first six months of life (WHO 2004). Reducing the exposure of the infant to the virus through breastfeeding has become one of the greatest challenges of PMTCT programmes in Africa where prolonged breastfeeding is the norm but exclusive breastfeeding is not generally practiced (Preble & Piwoz 2001). Preventing transmission during the post partum period remains a problem where replacement feeding cannot be safely provided. Ongoing research to determine the efficacy of ARV prophylaxis given to the infant during the first six months of life coupled with early cessation of breastfeeding should inform future recommendations regarding this matter (WHO 2004).

Enough experience has been gained and lessons learned from pilot projects and clinical research in both developed and developing settings to demonstrate the importance of PMTCT programmes in reducing the burden of paediatric HIV/AIDS in the world (Moore, 2003; Rutenberg et al, 2003; Doherty et al, 2003). The challenge is to translate these lessons into practice and provide effective PMTCT interventions as part of national HIV/AIDS control progammes.

1.1.4. The PMTCT programme in Swaziland

The Kingdom of Swaziland, a landlocked country with a population of about a million people in Southern Africa is currently ranked the country with the world's highest

HIV/AIDS prevalence rate. The adult HIV prevalence was 38.8% at the end of 2003 and at the end of 2004, the HIV prevalence rate among pregnant women was estimated to be 42.6% (RHAP 2005). Already, HIV/AIDS in Swaziland is having a negative impact on hard won gains achieved through child survival programmes such as the Expanded Programme of Immunization (EPI), breastfeeding promotion and control of diarrhoeal diseases (MOHSW 2002). Infant and child mortality rates were on the downward trend in the 1980's but both have increased between 1991 and 2000 from 72 and 89 in 1991 to 87 and 122 per 1000 in 2000, respectively (Multi-indicator survey 2000, sourced from MOHSW 2002). The total fertility rate is 5.5 and many women are infected at the start of their reproductive lives. This predicts an enduring HIV epidemic among infants and young children if there are no interventions (MOHSW 2002).

In 2000, the national average antenatal coverage was 87%, and 70% of deliveries occurred in hospitals. The exclusive breast-feeding rate was 31.2% and the continued breastfeeding rates at 12-15 months and 20-23 months were 76.6% and 24.8% respectively (Multiple indicator survey 2000, sourced from MOHSW 2002). The fact that 87% of women in Swaziland access antenatal services made integration of PMTCT interventions in maternal and child services a feasible option. With PMTCT interventions in place, it was estimated that up to 2,736 babies could be saved from HIV infection each year (MOHSW 2002).

The PMTCT program in the Kingdom began in 2002. It involved the four-prong activities of standard PMTCT programmes recommended by WHO which are (MOHSW 2002):

1. Primary prevention of HIV infection among uninfected mothers of child bearing age and their partners
2. Prevention of unwanted pregnancies among HIV infected mothers by promoting the use of family planning methods
3. Prevention of mother-to-child transmission of HIV among HIV infected pregnant mothers using an anti-retroviral regimen of proven efficacy, safe obstetric practices and infant feeding counseling and support including replacement feeding where feasible, acceptable, safe, affordable and sustainable.
4. HIV care and support of infected mothers, partners and children.

According to the Swaziland Ministry of Health and Social Welfare guidelines, obstetric interventions should include reinforcement of pain relief in labor; avoidance of rupture of membranes beyond 4 hours; avoidance of unnecessary artificial rupture of membranes; supporting the perineum during delivery; avoidance of unnecessary trauma to the mother or the infant (e.g. episiotomies and vigorous suctioning of the airways respectively). The two antiretroviral drugs recommended were zidovudine and nevirapine to be used as single agents depending on the clinical and socioeconomic situation of the patient. Infant feeding options recommended include exclusive and sustained breastfeeding; modified breastfeeding; heat treated expressed milk; replacement feeding; commercial infant feeding; modified goat's milk and modified cow's milk (MOHSW 2002).

1.1.5. Study setting

The Raleigh Fitkin Memorial (RFM) Hospital, Manzini, Swaziland is the oldest hospital in the entire Kingdom of Swaziland. Established in 1926 by the Church of the Nazarene as an emergency intervention for the health problems that were encountered at that time, it has expanded over the years to a 340 bed capacity and serves as a referral centre for 110 regional clinics. RFM hospital serves as the delivery centre for all the women who have had antenatal care in any of these regional clinics. There is a doctor and a nurse in charge of the clinics who are primarily based in RFM hospital but conduct visits to the main clinics every week. The number of medical staff at the hospital has been documented to be insufficient and the HIV/AIDS pandemic in general has had a negative impact on its capacity and resources (MOHSW 2001).

The PMTCT programme in the Kingdom began in November 2002 and many VCT and PMTCT services were started in other facilities including the Government hospital in Mbabane. RFM hospital was not included in the first phase of the national programme but some of the nurses and doctors from the hospital were included in the initial PMTCT training.

The PMTCT programme in RFM was commenced unofficially in September 2003 with counseling and administration of nevirapine to mothers who were HIV positive during labor, even though at this time, there was no formal voluntary counseling and testing services going on within the hospital. The inclusion of RFM hospital became necessary because it was observed that a large number of mothers who had gone through VCT

services in other facilities came for delivery at RFM. A new labor ward register which was to collect routine data on the PMTCT activities that the women delivering at RFM had gone through was put in place in September 2003.

PMTCT counseling began officially in June/July 2004 when the Hospital went into agreement with the Elizabeth Glaser Paediatric AIDS Foundation (EGPAF) to step up and support the services that were going on at that time (EGPAF 2005). In house VCT services began and many more health workers were trained. The PMTCT programme became incorporated into the existing maternal and child health services which had been going on in the hospital.

The PMTCT programme at RFM involves general health talks to women during their antenatal visits. At these sessions, they are encouraged to have one-to-one counseling sessions about the importance of knowing their HIV status and preventing transmission of the virus to their babies, should they turn out to be HIV positive. The consenting women are tested for HIV and they undergo post-test counseling. The HIV positive women are given 200mg of nevirapine at 28weeks gestational age to take home and instructed to swallow it when in labor. Infant feeding options are also discussed with the HIV positive women during post-test counseling. Formula feeds are discussed as an option for HIV positive mothers but these are not distributed freely by the health services.

All these activities are entered in codes on the women's antenatal card which is standard for all ANC attendees in the country. These cards are held by the women and presented at

the labor ward on admission. The coded information is entered into the labor ward register by the midwives in the labor ward after they have validated the information on the ANC cards. The HIV positive women are asked to swallow the nevirapine tablets under direct observation if they report not to have done so before presentation to the labor ward. The labor ward register is kept within the labor ward while being filled and the full registers are kept in the office of the matron in charge of the maternity section. The ANC cards are returned to the women.

Modified obstetric practices (avoidance of routine artificial rupture of membranes, episiotomy and other invasive procedures) are observed for all women. Elective caesarean section is not routinely performed for the known HIV positive women unless there are other obstetric indications. The infants born to HIV positive women are given nevirapine syrup at the post natal ward. zidovudine is not routinely used except in a situation where a woman has been on it before labor and presented with her own medications on admission.

1.2 LITERATURE REVIEW

In developed countries, MTCT rates have fallen to as low as two percent of births among HIV-infected mothers with the introduction of HIV counseling and testing, short course antiretroviral prophylaxis, elective caesarean delivery and the safe use of infant formula instead of breastfeeding (Bulterys et al 2002). In Africa, however, these interventions have generally not been available and prolonged breastfeeding is the norm leading to a situation where about 25-35 percent of HIV-infected mothers transmit HIV to their

infants (Preble & Piwoz 2001). Alternative, cheaper means of reducing transmission such as vitamin A supplementation and chlorhexidine cleansing of the birth canal have not produced encouraging results, therefore for poor countries, the two most effective interventions remain short course antiretroviral prophylaxis and modification of infant feeding practices (McIntyre & Gray 2002).

Though PMTCT interventions have been shown to be effective in preventing transmission of HIV from mother to child, many resource constrained settings lack such interventions on a large scale and where they are being implemented, the preliminary results are not as good as expected. In 2002, it was reported that less than 3% of HIV-1 infected African pregnant women are reached by the PMTCT programmes in 13 countries (Dabis & Ekpini, 2002).

In Eastern and Southern Africa, infant mortality is one to two-thirds higher than would have been expected in the absence of HIV/AIDS and this problem is worsening, leading to a dramatic reduction in life expectancy at birth (Bulterys et al, 2002). The disease is having disastrous impact at both family and community levels in many affected countries and it is undermining socio-economic progress in these countries (WHO 2004). Achieving low vertical transmission remains a challenge for most developing countries because of many barriers. Many low resource settings have not implemented the PMTCT programmes on a large scale and where they have been implemented, there are documented barriers.

According to Moore (2003), the barriers to PMTCT include:

- Missed opportunities to offer, or low uptake of VCT during routine ANC
- Low levels of acceptance of HIV testing where it is available, by both pregnant women and partners
- Failure to return for HIV test results where rapid testing is not available
- Inadequate acceptance of ART offered to HIV positive women at ANC
- Insufficient use of facility-based delivery where improved obstetric practices can be used and ART for mother and newborn can be supervised
- Poor adherence to “take-home” ART for mother and newborn when given to HIV positive women at ANC
- Low coverage of newborns with ART even when delivered in facility
- Low uptake of recommended infant feeding behavior to minimize MTCT

On a global scale, PMTCT programme results have been variable, and are difficult to compare due to differences in drug regimens employed and reporting formats (Moore 2003). Nevertheless, the level of uptake of the programmes and specific interventions can be compared. Acceptance of VCT during the pre-natal period varies across countries. For example, in a Kenyan programme 89% of women attending ANC who were offered VCT accepted it while in Botswana only 56% accepted. In South Africa, even though acceptance varied widely from one province to another, the average was 56%. In the same reports, 64% of women who tested positive accepted treatment in Kenya, 52% in Botswana and 55% in South Africa (Hankins 2002; Nganshi et al, 2002 sourced from Moore, 2003; Doherty et al, 2003).

HIV prevention efforts overall now reach fewer than one in five people at risk (De Zoysa, 2002: sourced from Moore, 2003). The challenges involved in PMTCT are even greater and more complex particularly in the postnatal period when safe infant feeding is of great concern. In most resource poor settings, the conditions for safe replacement infant feeding are rarely met and a lot of women practice mixed feeding rather than exclusive breastfeeding. The stigma associated with not breastfeeding has compounded the problem even further in many African countries (Preble & Piwoz, 2001).

Since MTCT is a relatively new area, careful monitoring and evaluation will be necessary to understand the characteristics of various packages and interventions and their relevance to particular settings (Rutenberg et al, 2003; Preble & Piwoz, 2001).

At the international level, four programme indicators have been recommended for use by the National AIDS Control programs to measure MTCT service provision. These include:

1. The percent of pregnant women who were counseled during antenatal care for their most recent pregnancy, accepted VCT, and received test results.
2. The proportion of public antenatal clinics that offer VCT services by trained staff or that refer clients for VCT services.
3. The percent of post-test counseling sessions in the public antenatal clinics that meet international standards for quality counseling.
4. The percent of women testing HIV-positive at selected antenatal clinics in the last year, who are provided with a complete course of ARV therapy to prevent MTCT, according to national/international guidelines.

PMTCT uptake is the entry-point for ensuring prevention of MTCT, and thus control of paediatric HIV/AIDS. The absence of PMTCT uptake amongst pregnant women means that the efficacy of NVP and other prophylactic regimens cannot be translated into effective prevention. It has been suggested that as a starting point, simple reports be produced as both a management and motivational tool in the implementation and monitoring of PMTCT programmes (Rutenberg et al 2003). In Swaziland, a very limited amount of documentation has been done in this regard. The PMTCT programme is a relatively new intervention in the child survival strategy in the country, which needs to be properly monitored and supervised to achieve the desired impact given the magnitude of the HIV/AIDS problem in Swaziland. This study hopes to provide a documentation of the starting point of the PMTCT programme in the hospital with the largest number of deliveries per year in the Kingdom.

1.3 RATIONALE FOR THE STUDY

With the commencement of a new programme and record keeping system in the RFM hospital, there is a need to analyze the routine records collected so far to give insight to how much has been done within the first year of the programme. This will provide useful programme monitoring information for management (i.e. how the programme progressed, how well documented the records are, and whether programme targets were being met). This will also serve as a baseline for comparison in later years in this hospital and encourage research on this and related issues in other PMTCT centers in the country.

Already, there is a pool of routinely collected data that can be used to assess programme performance, but it is yet to be explored and transformed into useful information both for the planners and the implementers of the PMTCT programme in the country. This study hopes to assess the PMTCT programme in RFM hospital by utilizing this existing routine data. It is envisaged that this information will be utilized by relevant management authorities to assess implementation and progress since inception of the programme.

1.4 OVERALL AIM OF THE STUDY

The purpose of this study is to document the achievements of the PMTCT programme in RFM Hospital in the first year of its commencement.

1.5 SPECIFIC OBJECTIVES

The objectives of this study with respect to the RFM Hospital, during the period of 1st January 2004 to 31st December 2004 are:

1. To describe the profile of the women delivering at RFM hospital with regards to: age, parity and area of residence.
2. To determine the proportion of women delivering at RFM hospital who have attended antenatal clinic at least once.
3. To determine which were the most common antenatal clinics attended by women delivering at RFM hospital.
4. To determine the extent of participation of these women in the PMTCT program by finding out

a) the number of women who were counseled for voluntary HIV testing during the antenatal period
b) the uptake of HIV testing amongst counseled women
c) the number of HIV positive women amongst those tested
d) the number of HIV positive women who took nevirapine during labour
e) the number of all women who opted to breastfeed their infants
f) the number of infants born to HIV positive women who were given nevirapine

CHAPTER TWO

MATERIALS AND METHODS

In this chapter, the study methodology is described. It includes some details about the study site, the Raleigh Fitkin Memorial (RFM) Hospital, Manzini and a description of how the PMTCT programme in RFM hospital began and functions. It also highlights the data collection, data analysis, the main limitations of the study and the ethical considerations.

2.1 STUDY DESIGN A descriptive retrospective review of the routinely collected data in the labour ward of the Raleigh Fitkin Memorial hospital, Manzini, Swaziland was done.

2.2 STUDY POPULATION The study population comprised the entries into the labour ward register of all women who delivered at the RFM hospital, Swaziland within the period of 1st January 2004 to 31st December 2004. All data was obtained from the labour ward register only. All entries for 2004 were used and there was no sampling done.

2.3 DESCRIPTION OF THE STUDY SITE The RFM hospital was chosen deliberately because it is the hospital in Swaziland with the largest number of deliveries per year. It is situated in Manzini city within the Manzini region which is the most central, populous, industrialized and urbanized region in Swaziland. Manzini region also

has the highest HIV prevalence rates compared to the other regions. RFM hospital is the second largest hospital in the country with a catchment population of 56,574 and is the referral hospital for 110 regional clinics. However, many patients outside the region are also treated in this hospital (MOHSW 2001).

2.4 MEASUREMENT

Data was extracted from the labour ward register by the researcher during June to September 2005 and this was entered into data extraction forms (see Appendix A). Socio-demographic, ante-natal and PMTCT details of woman delivering in RFM are entered in the labour ward register, each against a new serial number. The relevant information was obtained directly from the labor ward register and transferred into the data forms by the researcher. All entries were extracted, even though there was some incomplete data (described later). The data extraction form shows details of the variables that were collected in this study. The areas of residence were copied into the forms exactly the way they were written in the register. These were then grouped into the four political regions of the Kingdom during data analysis. The ages of the women were also grouped after data extraction.

2.5 DATA PROCESSING AND ANALYSIS

Data was entered from the data extraction forms by the researcher with the assistance of trained data capturers into a computer using the Epi Info 2002 statistical software. The data coding and cleaning were done by the researcher. All the labor ward entries were included even when some of the variables for a particular entry were missing. This

explains why some of the variables did not add up to the total number of entries. Incorrectly filled data were left out. Quantitative analysis was done using descriptive statistics. The distribution of data was symmetrical. Means and standard deviations were used to summarize continuous numerical data while categorical data was described and presented as proportions.

The following indicators as outlined by the Ministry of Health and Social Welfare, Swaziland and as described in the objectives were worked out from the collected data:

1. The proportion of women who attended antenatal clinic at least once
2. The proportion of women who were counseled for voluntary HIV testing during the antenatal period
3. The proportion of counseled women who accepted HIV testing
4. The prevalence of HIV amongst tested women
5. The proportion of HIV positive women who took nevirapine during labour
6. The proportion of women who opted to breastfeed their infants
7. The proportion of infants born to HIV positive women who were given nevirapine.

The results are presented in tables, bar charts and pie charts in Chapter 3. The findings are discussed in chapter 4, and the relevance for management and monitoring of the PMTCT programme outlined.

2.6 ETHICAL CONSIDERATIONS

Ethical approval for the study was obtained from the Committee for Research on Human Subjects (Medical) of the University of the Witwatersrand (see appendix) and the Research Committee (Executive Management Team) of the Raleigh Fitkin Memorial Hospital, Swaziland. Confidentiality in handling information was maintained during the study. The data extraction forms were completed and coded by the researcher only. The names and hospital numbers of the patients were excluded from the data sheets. The data capturers had access to the data extraction forms, but these did not have names or any other identifiers on them.

2.7 STUDY LIMITATIONS

There were problems of incomplete entries. Although 7,963 women were recorded to have given birth at the Hospital within the study period, only 7,950 deliveries were entered in the register. This was due to a mistake in the serial numbering in the month of September, 2004, and not due to missing entries. Another limitation is that the researcher was using an existing health facility register and so could only utilize the data that were available (filled in by staff). Where variables required for analysis in this study were not captured in the register by staff; it was recorded as missing data.

CHAPTER THREE

RESULTS

In this chapter, the findings from the study are presented. The results are presented in two sections. The first section gives the number and profile of the women who delivered at RFM Hospital during the first of January 2004 to the thirty first of December 2004. It also gives a brief description of how many women had antenatal care at least once, the facilities the women attended for ANC and which facility counseled the largest proportion of their ANC attendees for HIV testing. The second section presents the extent of participation by these women in the PMTCT programme.

3.1. AN OVERVIEW OF THE PRESENTATION OF DATA

A Total of 7,950 deliveries were entered into the delivery/labour ward register for the period 1st of January 2004 to 31st of December, 2004 at the RFM Hospital, Swaziland. Not all of these 7,950 deliveries had complete data for the variables of interest in this study, so the denominators for the various measures are not the same in the report. Table 3.1 shows the measures of interest; the denominators that were used for calculating these; and the tables and graphs that depict the results in this chapter.

Table 3.1: Denominators used to calculate the measures of interest in the study

Figure/Table	Measure	Denominator / value
Figure 3.1	The proportion of women delivering at RFM in 2004 who lived in each of the four regions of Swaziland	The total number of women who delivered at RFM in 2004. 7950
Table 3.2	The age distribution of the women who delivered at RFM in 2004	The total number of women who delivered at RFM in 2004. 7950
Table 3.3	The parity distribution of women who delivered at RFM in 2004	The total number of women who delivered at RFM in 2004. 7950
Table 3.4	The antenatal care facilities attended by women who delivered at RFM in 2004	The total number of women who had antenatal care 7,017
Figure 3.2	The proportion of women who delivered at RFM in 2004 who were counseled for HIV testing in the seven most utilized ANC facilities	The total number of women who attended each of these seven facilities, respectively
Figure 3.3	The proportion of women who were counseled for HIV testing amongst all the women who delivered at RFM in 2004.	The total number of women who delivered at RFM in 2004. 7950

Figure 3.4	The number of women delivering at RFM in 2004 who participated in the key events of the PMTCT programme	No Denominator.
Figure 3.5	The proportion of women who had known HIV status at the time of delivery	The total number of women who delivered at RFM in 2004. 7950
Figure 3.6	The age distribution of the women with known HIV status at delivery	The total number of women with known HIV status at delivery 687
Figure 3.7	The parity distribution of the women with known HIV status at delivery	The total number of women with known HIV status at delivery 687

3.2 THE PROFILE OF WOMEN DELIVERING AT RFM

3.2.1. Residence

The women delivering at RFM during the period of interest were from the four regions of Swaziland. Four thousand four hundred and fifty women (56%) came from 160 different suburbs in the Manzini region, 970 (12.2%) from 117 suburbs in Hhohho, 646 (8.1%) from 84 suburbs in Shiselweni and 1055 (13.3%) mothers from 69 suburbs in the Lubombo region. The regional distribution of women is shown in Figure 3.1. One hundred and eighteen women came from Mozambique and South Africa (1.5%) and for 684 (8.6%), the addresses were not clear. The address variable was missing for 27 (0.3%) women.

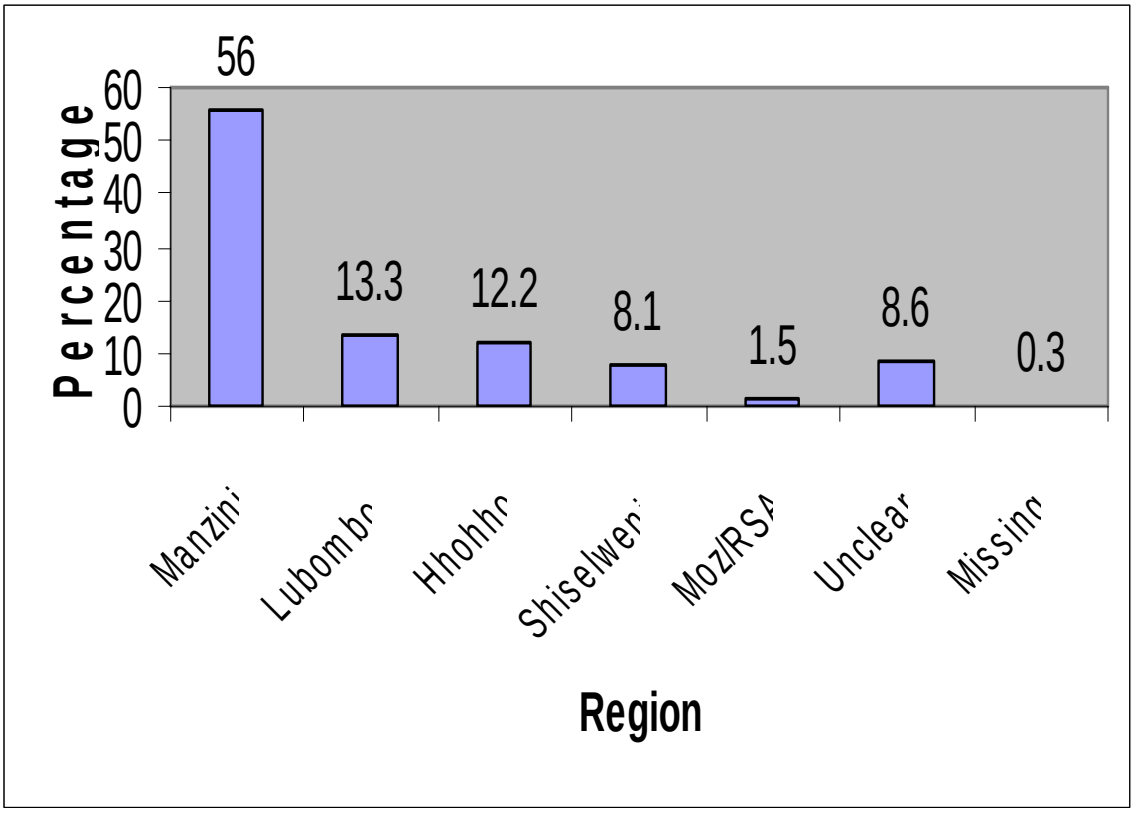


Figure 3.1 Distribution of areas of residence (n=7950)

3.2.2. Age

The age variable was available for 7,888 (98.2%) of the women and missing for only 62 (0.8%). The age range was 14 to 50 years; and the mean age was 24years (SD, 5.86 years). About a quarter of the mothers were teenagers and well over half of them were below 25years of age. The age distribution is shown in Table 3.2.

Table 3.2: The age distribution of the women who delivered in RFMH, 2004

Age	Frequency	%
14 – 19	1768	22.2
20 – 24	2986	37.6
25 – 29	1639	20.6
30 – 34	925	11.6
35 – 39	455	5.7
40 – 44	108	1.4
45 – 50	7	0.1
Unrecorded	62	0.8
Total	7950	100

3.2.3. Parity

Table 3.2 shows the parity of the women. This ranged from 0-12, the mean was 1.4 (SD 1.72). The data highlights the fact that majority of the women were nulliparous, followed closely by those who were having their second babies. The parity variable was missing for 29 (0.4%) women.

Table 3.3: The parity of women who delivered in RFMH, 2004

Parity	Frequency	%
0	2889	36.3
1	2309	29.0
2	1279	16.1
3	629	7.9
4	379	4.8
5	209	2.6
6 and above	227	2.9
Unrecorded	29	0.4
Total	7950	100

3.3 THE ANTENATAL HISTORY OF THE WOMEN

3.3.1. Antenatal clinic attendance

Out of all the women delivering at RFM during 2004, 7017 (88.3%) had attended antenatal care facilities during this pregnancy, while 508 (6.4%) did not attend. This

variable was missing for 425 (5.3%) women. The 7017 women who attended ANC during this pregnancy attended 106 different antenatal care facilities. Table 3.4 shows the distribution of ANC attendees amongst the seven most utilized ANC facilities (those that each contributed more than 3% to the total number of ANC attendees).

Women who delivered at RFM attended a wide range of ANC facilities. The largest proportion (24.5%) attended King Sobuza II Clinic followed by those who attended RFM antenatal clinic (13.7%). Two thousand four hundred and seventy seven women (35.3%) collectively attended ninety nine different facilities (categorized as "others"), 23 of which were private Doctor's clinics. Only 48 women (0.7%) were recorded to have attended these private Doctors' clinics.

Table 3.4: Antenatal care facilities attended by women who delivered in RFM, 2004

Facility	Frequency	Percentage
King Sobuza II Clinic	1720	24.5
RFM Hospital	960	13.7
St Theresa's Clinic	625	8.9
Family life Association	506	7.2
Mbabane*	230	3.3
Lobamba	229	3.3
Luyengo	222	3.2
Private clinics	48	0.7
Others (99 facilities)	2477	35.3
Total	7017	100

*All the government facilities in Mbabane city, that is, the government hospital and the primary health care units were grouped together as "Mbabane" since the records were not clear.

3.3.2 Counseling for HIV testing at ANC facilities

An analysis of the proportion of women who had been counseled at their different facilities during the antenatal period was made. Figure 3.2 presents data on the proportion of women counseled by the seven ANC facilities most utilized by women who delivered at RFM hospital. Only RFM hospital had over 50% of her ANC attendees counseled for HIV testing. About a quarter of women delivering at RFM attended King Sobuza II Clinic and less than 20% of them were counseled for HIV testing (Figure 3.2).

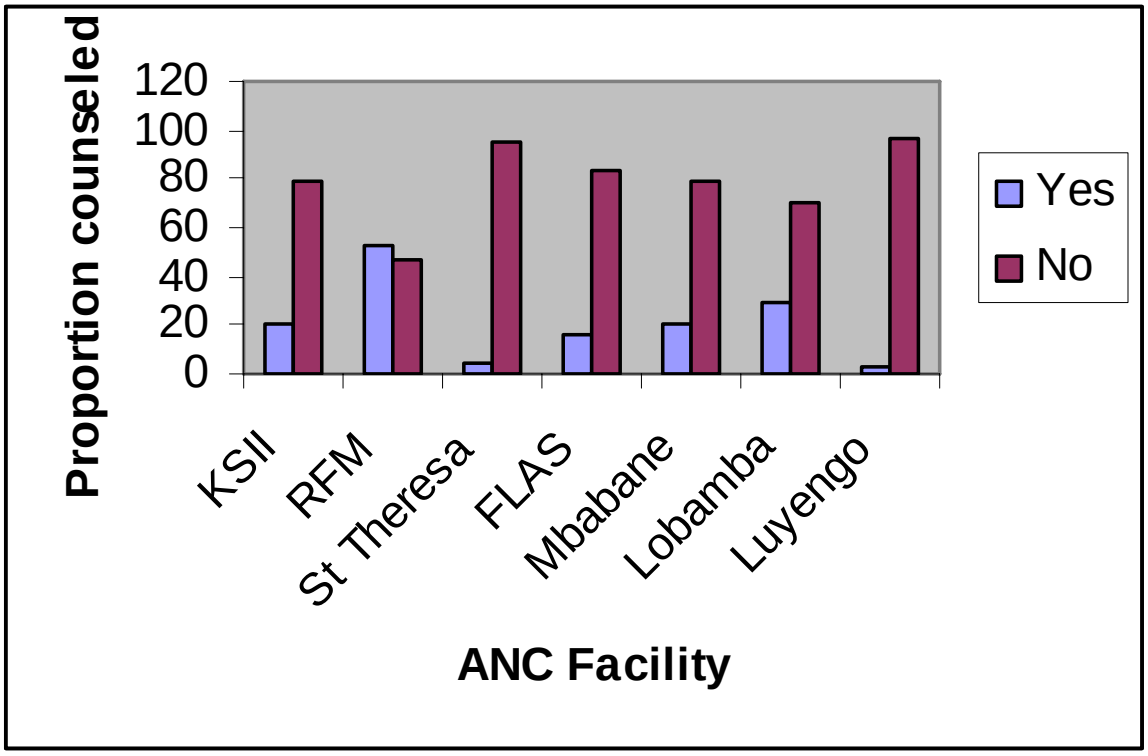


Figure 3.2 The proportion of women counseled for HIV testing by the 7 most utilized ANC facilities

3.4 PARTICIPATION IN THE PMTCT PROGRAMME

3.4.1 Voluntary counseling for HIV testing

A total of 1,506 women (18.9%) who delivered at RFM during 2004 had undergone voluntary counseling for HIV testing during the antenatal period. This is illustrated in Figure 3.3. The majority of women, 6301 (79.3%) did not receive counseling. A hundred and forty-three (1.8%) women had no records to show whether they were counseled.

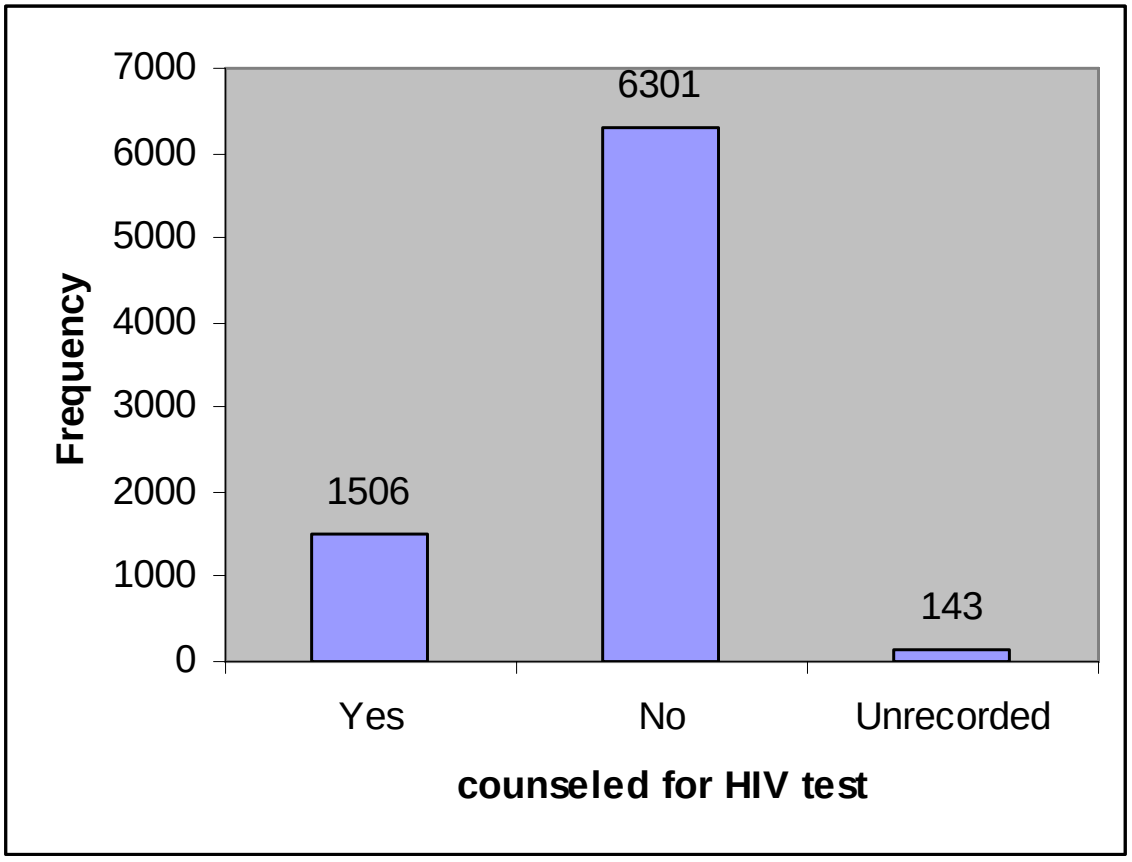


Figure 3.3 Women delivering at RFM who were counseled for HIV testing during antenatal period (n=7950)

3.4.2 HIV testing

Out of the 1506 women who were counseled, 852 (56.5%) agreed to have an HIV test. Of the 852 women who were tested, 682 (80.6%) collected their results and of those who collected their test results, 318 (46.6%) were HIV positive. Only 682 women had their HIV status entered in the register, 5 less than the actual figure of those who were recorded to have collected their results, 687.

3.4.3 Nevirapine uptake

Of the 318 women who were known to be HIV positive at the time of delivery, 312 (98.2%) took nevirapine during labour. One woman was reported to be on antiretrovirals during pregnancy and so was not given nevirapine in labour. The other five had delivered their babies before arrival at the hospital. According to the entries in the labour ward register, 228 babies born to HIV positive women were initiated on nevirapine soon after birth, while four of the babies were not. One of these was a stillborn while 2 had been delivered before arrival at the hospital. There were no records about the fourth baby. Eighty-six babies had no records to show whether or not they were given nevirapine.

Figure 3.4 summarizes the extent of participation of women and babies in the key events in the PMTCT programme.

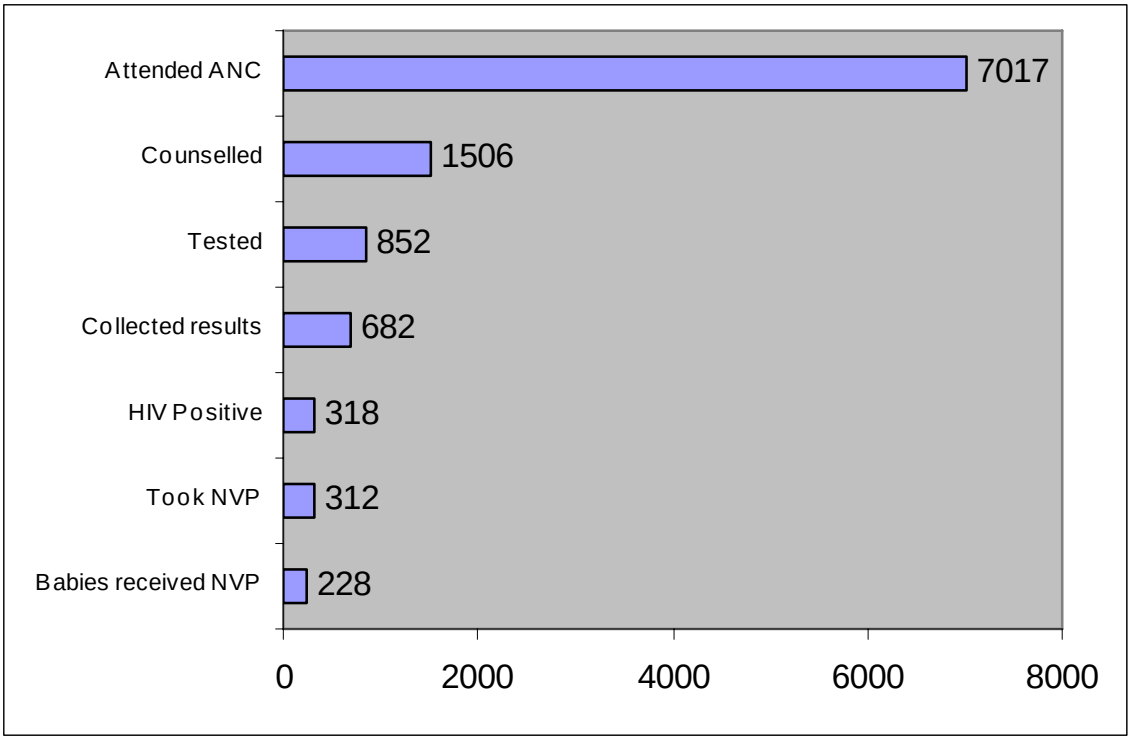


Figure 3.4: The number of women delivering at RFM during 2004 who participated in the key events of the PMTCT programme (n = 7950)

3.5. THE HIV STATUS OF THE WOMEN

3.5.1. Knowledge of HIV status

The HIV status were known and recorded in the labor ward register at the time of delivery for 687 women, only 9% of all women who delivered in RFM during 2004 (Figure 3.5). The HIV status was unknown for 7,263 (91%) women. Out of these 7,263 women, 143 were not recorded.

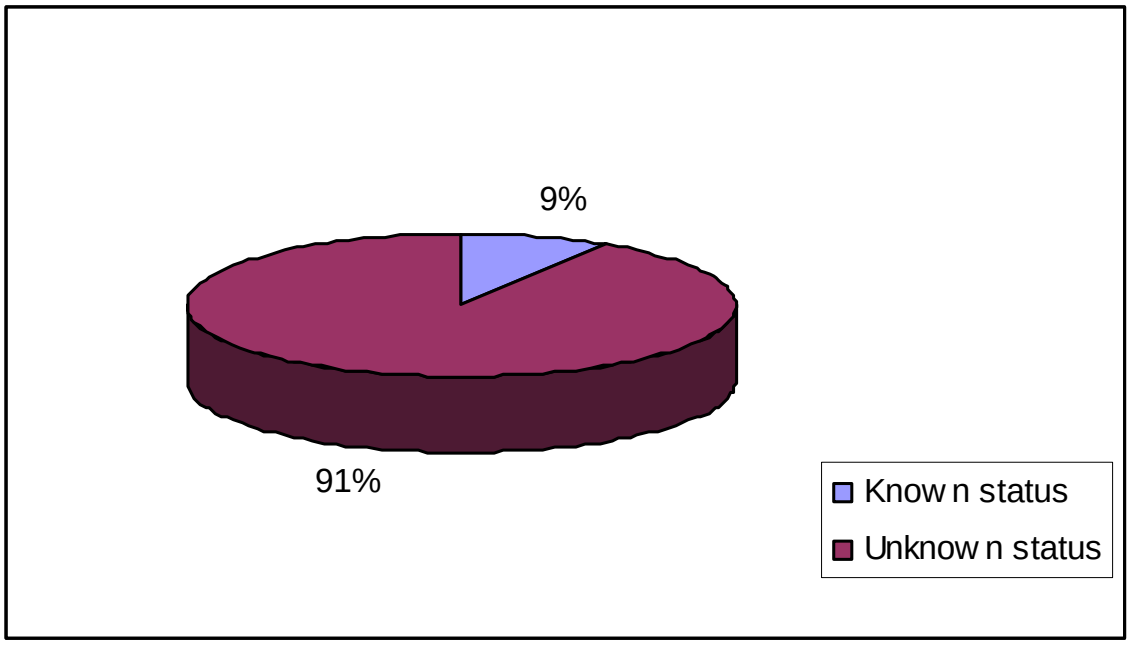


Figure 3.5 The proportion of all women delivering at RFM with known HIV status at delivery (n=7,950)

3.5.2 The age distribution of women with known HIV status

Though numbers are small and records incomplete, an attempt was made to describe the demographic profile of women with known HIV status at the time of delivery. Figure 3.6 shows the age distribution of the women whose HIV status was known. Of 1768 teenagers who delivered at RFM in 2004, only 102 (5.8%) knew their status at delivery and 28.4% of these were HIV positive. The highest frequency of HIV positive status was seen in the age group 25-29. Of the 192 (11.7%) women aged 25-29 with known HIV status, 55.7% were positive.

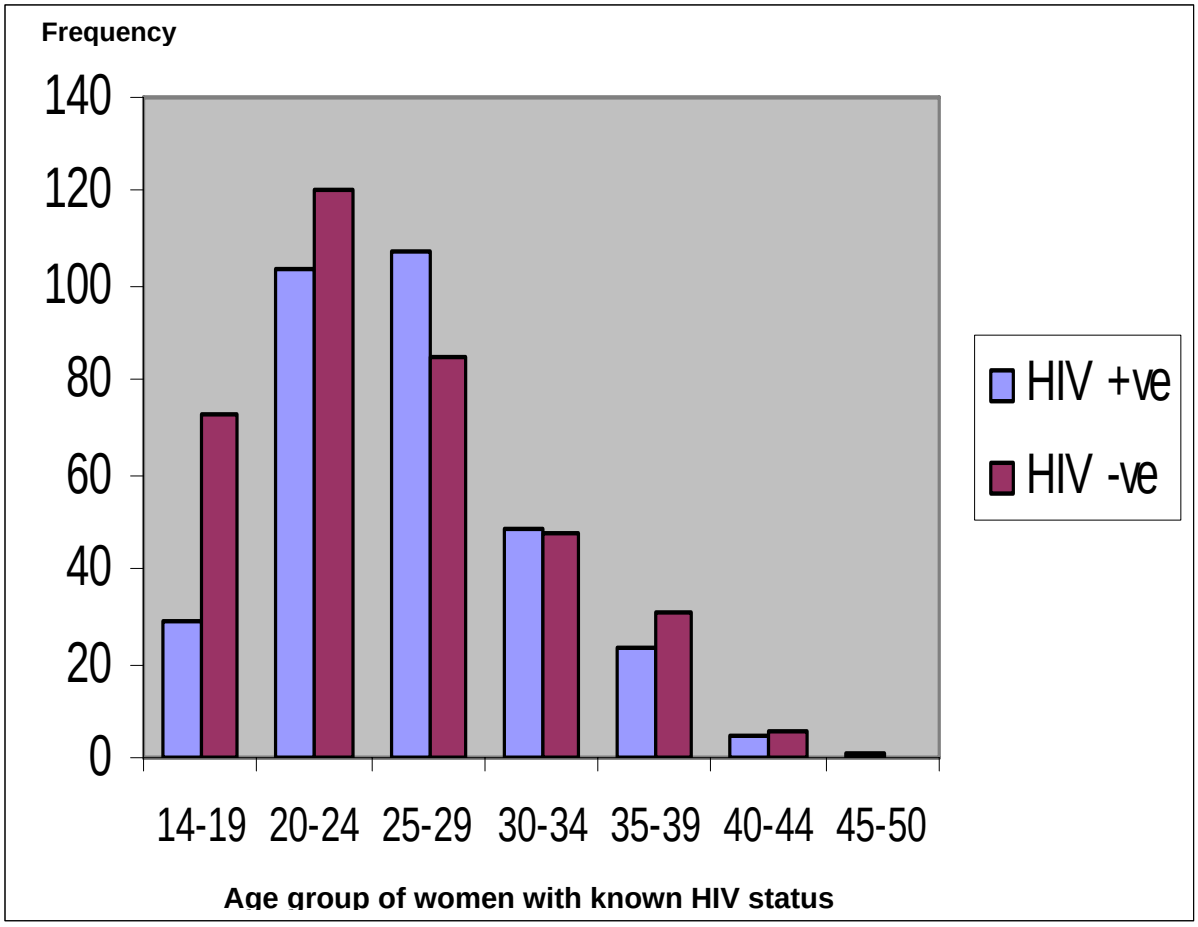


Fig 3.6 The age distribution of the women with known HIV status (n=687)

3.5.3. The parity distribution of women with known HIV status at delivery

Figure 3.7 shows the parity distribution of the women with known HIV status. Sixty-four (34.8%) of the nulliparas were HIV positive while 109 (52.9%) of the primiparas were also HIV positive. About two-thirds of women who were having their third babies (57.7% of 130) were HIV positive. This group had the largest proportion of HIV positive women.

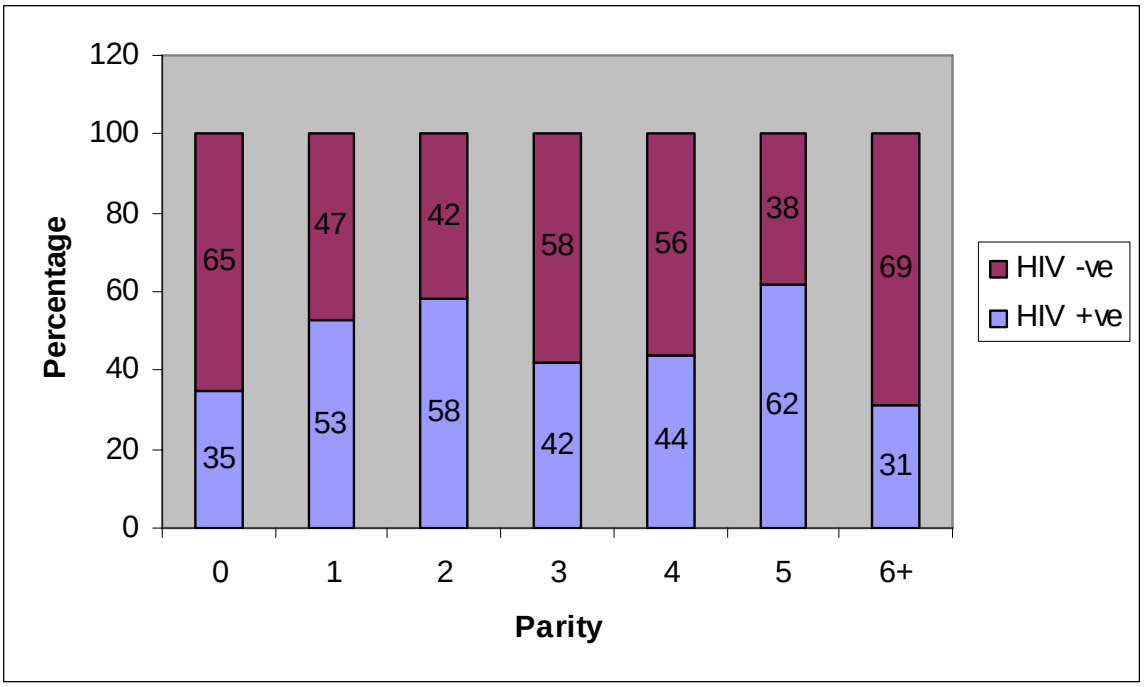


Figure 3.7 The parity distribution of the women with known HIV status (n=687)

3.6 THE INFANT FEEDING CHOICES

On admission to the labour ward, all women regardless of their status were asked which infant feeding option they would adopt after delivery. Almost half (49.4%) had no records to show the feeding option they chose (Fig 3.8). Amongst the 4024 with entries for the infant feeding option, 3,941 women (97.9%) chose to breastfeed while only 83 (2.1%) chose artificial feeding.

An attempt was made to determine the infant feeding options that women who turned out to be HIV positive had selected during ANC. Unfortunately, infant feeding options were recorded for only 116 of the 318 HIV positive women. Amongst these, 91 (78.5%) had selected to breastfeed while only 25 (21.5%) had chosen to feed their infants with artificial milk.

CHAPTER FOUR

DISCUSSION

The purpose of this study was to document the implementation of the PMTCT programme in RFM Hospital, Manzini, Swaziland in the year 2004. From the study, insight has been gained into what happened in 2004 and how much was achieved within a period of one year. Useful programme monitoring information with respect to specific programme outputs has been obtained which will serve as a baseline for comparison in later years.

This chapter deals with issues around the demographic pattern of the study population and the antenatal care facilities they attended and how these two factors affected the PMTCT programme in the Hospital. It also deals with core issues about the performance of the PMTCT programme in RFM hospital and to some extent, in the entire country. The issue of proper documentation of programme activities is discussed as well. Like most routinely collected data, there were missing information and some improper documentation but on a general note there are a large number of records to draw conclusions from. The large number of deliveries and the wide area of coverage give credence to the study and a good representation of what is happening in the entire Kingdom which according to the latest reports has the largest HIV prevalence rates in the world (RHAP, 2005).

The PMTCT programme had a very low uptake generally in 2004. Out of 7950 women delivering at RFM, only 687 women had known HIV status at the time of delivery. However, it is important to note that the outcome of RFM hospital's PMTCT programme is largely dependent on other facilities that many women delivering at RFM attended for ANC. Most 86.3% of the women who delivered at RFM hospital had antenatal care at other facilities, which means that there are factors outside the control of the hospital affecting the performance of its PMTCT programme. For example, whether a woman gets counseled or not during her antenatal period is out of the sole control of RFM hospital PMTCT programme.

RFM Hospital serves virtually the entire country as noted both in the extent of coverage by the areas of residence of the women delivering there, and the variety of the antenatal clinics they attended. Though the recording of the areas of residence was not quite satisfactory and became problematic when coding into the four political regions, it is evident that RFM receives patients from the entire expanse of the kingdom even from areas where there are large government hospitals like Mbabane. Even though Manzini township is centrally placed geographically, one would wonder why RFM has to receive maternity patients from every part the nation and as far as the border towns of Swaziland.

Serving as a major referral centre for not just its own satellite clinics but for hospitals and clinics outside its own delineated area of coverage raises the issue of too much demand on too little resources and poses a problem of coordination and monitoring of specific programmes like the PMTCT programme. This raises the question of how easy it will be

to monitor the PMTCT activities within RFM since only 13.7% of the women who delivered within the hospital actually had antenatal care there. Though it is not expected that all 7950 women who deliver at RFM should attend antenatal care there, it is clear that the PMTCT programme at the hospital should encompass the catchment facilities and cannot be implemented in isolation.

The variety of areas of residence and antenatal care facilities highlights the unique situation of Swaziland where many women do not deliver at the same facility where they attended antenatal care. These are factors that may have affected the performance of the PMTCT programme at RFM and they will affect monitoring and evaluation subsequently. For any meaningful intervention in RFM, every facility in its catchment area should be included in programme planning and implementation from the onset.

The high antenatal clinic attendance amongst women who delivered in RFM hospital (88.3%) is quite close to the current national estimate. The PMTCT programme in the country was planned based on the national estimate of 87% coverage (MOHSW, 2002) with the hope that there will be a very good uptake of the programme. The findings in this study have however shown that despite a good antenatal coverage many women may still not be reached in terms of specific programmes. For example, despite the high ANC coverage, only just under 20% of ANC attendees received VCT for HIV.

The wide disparity between the facilities in terms of the proportion of women that were counseled for HIV testing is another issue to look at closely. RFM hospital had just over

half of her ANC attendees counseled for HIV testing while all the other contributing antenatal clinics did not even do as well. Though there can be no conclusions made about the other ANC facilities because only a part of their own ANC attendees delivered in RFM, this finding might suggest that in these other facilities, only a small proportion of women are undergo counseling for HIV testing. It is beyond the scope of this study to determine why only 50% of women attending RFM hospital ANC, where a PMTCT programme is in place, had counseling, but it is a matter that needs to be investigated.

Just less than a quarter of women who delivered at RFM in 2004 were teenagers, suggesting a very high level of teenage pregnancy taking place within the country. The inference is that many adolescents are having unprotected sex and not only are they getting pregnant, they are adding to their risk of acquiring HIV. Of note, only 102 teenagers (5.8%) of the total number of teenagers knew their HIV status at delivery and out of these, 29 (28.4 %) tested positive. Despite the limitation of incomplete data, this compares well with the 28% HIV prevalence rate found amongst teenagers in the 2004 sentinel survey in the country and indicates that the figures found in this study might be truly representative.

The problem of high teenage pregnancy rates in the context of a high HIV prevalence is not peculiar to Swaziland. It has raised levels of concern in Botswana, Zambia and Zimbabwe where over a quarter of the 14-19 year olds attending antenatal clinics in the capital cities were found to be HIV positive (Singh, 1998; U.S. Census Bureau, 1999; cited from Rutenberg et al, 2003). With such a large number of teenage pregnancies at

RFM, it is not surprising that a high proportion of the total population of women in this study were delivering their first babies. This gives a picture that most of the RFM patients are quite young and are just starting their obstetric careers. This presents a unique situation for specific interventions in the hospital, targeted at women delivering their first babies.

There is generally a poor uptake of the PMTCT programme amongst women delivering in RFM hospital. The picture is tainted by the fact that 80.7% of the women who delivered in the hospital had little or no opportunity to participate in the PMTCT programme of the hospital (that is, they didn't go through counseling during the antenatal period). The proportion of ANC attendees who had been counseled for HIV testing at the time of delivery (19.3%) is very low compared with some other studies in Southern Africa. A study in Botswana reported that 56% of women attending ANC were counseled while another from South Africa also reported an average of 56% even though there was a wide disparity between provinces. In Kenya, another study reported 73% counseling rates (Moore, 2003). However, the counseling rate amongst women attending RFM Hospital itself for ANC (52%) compares well with the reports from the studies from Botswana and South Africa. On a general note, it has been found out from a multinational survey that the median acceptability of voluntary counseling and testing services in developing countries was 69% with a range of 33-95% (Cartoux et al, 1998). The 19.3% rates found in this study is quite low in comparison.

Because of the low uptake of counseling services during the antenatal period in many developing countries and because many women eventually go into labor without knowing their HIV status, it has been suggested that nevirapine should be given to women with unknown HIV status in high prevalence settings (Sint et al, 2005; Stringer et al, 2004). This approach might be appealing in the unique setting of Swaziland and particularly in RFM hospital where the rate of adherence to NVP amongst HIV positive women is exceptionally high. However, this approach still does not address the issue of postnatal transmission of HIV through the breast milk, which needs other strategies.

The issue of low uptake of counseling during the antenatal period is of such concern that some studies are already looking at the possibility of counseling women who did not undergo ante natal VCT during labour. In a study in the United State of America, it was concluded that rapid HIV testing is feasible and delivers accurate and timely results for women in labor and may be particularly applicable to higher-risk populations (Bulterys et al, 2004). Eighty-four percent of the women in their study population agreed to test for HIV in labor. Even though counseling women in labor might raise ethical questions, this may prove effective as a last resort in the specific circumstance of Swaziland where a large proportion of women delivering at RFM did not undergo counseling during the antenatal period, and only 9% had known HIV status at delivery. Counseling and testing during labour could be offered as a last chance for women to enter the PMTCT programme. In such circumstances, the follow up counseling could then take place at the post natal ward, after delivery.

The proportion of women who accepted testing after counseling was also low (56.6%) in this study, compared with 77.2% in a Tanzanian study (Westheimer et al, 2004) and 89% in a Kenyan study (Moore, 2003). The Tanzanian study concluded that the site at which recruitment occurs is a significant factor in determining a woman's odds of accepting HIV testing. Other factors included individual counselor effects, length of waiting time and length of time the site had been operational. The quality of counseling is another issue that is being looked into as a factor that will affect the effectiveness of PMTCT programmes (Chopra et al, 2005) and this will impact directly on the number of women that agree to test and subsequently make an informed choice about infant feeding. A study done in Cote d'Ivoire revealed that women were sensitive to negative experiences they had while interacting with programme staff or to their views about the programme and this affected their uptake (Painter et al, 2004). Whether these were factors at play in this study cannot be determined because this is beyond the scope of the study. Further research is needed to find out why uptake is low in the Swazi context.

The HIV prevalence rate amongst those who tested was very high (46.6%) and this reflects the state of the epidemic in the nation. In comparison, a Kenyan study reported 6% prevalence rate and in a South African study it was 30% (Moore, 2003; Doherty et al, 2003). Even though there is a possibility of self selection bias, the prevalence of 46.6% in this study is not too far from the most recent national prevalence rate of 42.6% obtained during the 2004 antenatal HIV prevalence sentinel survey. The prevalence amongst women aged 25 to 29 years was 56% while it was 28% amongst teenagers (RHAP 2005). The findings in this report showed a similar distribution; 55.7% and 28.4% amongst

women aged 25-29 and teenagers respectively. With the largest proportion of HIV positive formed by women who were having their first and second babies, the picture is dismal.

The most rewarding aspect of the PMTCT programme in this study is that almost all women (98.2%) with HIV positive status were reported to have taken nevirapine. This is the best rate so far compared with studies from neighboring countries. Botswana reported a 52% adherence rate; Kenya reported 64%, while South Africa reported 55% (Moore, 2003; Doherty et al, 2003). This seems to be an area of strength that can be further explored in this PMTCT programme.

Due to poor routine data recording, it was not possible to ascertain from the labor ward register the exact proportion of babies born to HIV positive mothers that received nevirapine soon after birth. However, according to the entries, the number of infants who were recorded to have received nevirapine was much lower than that of the mothers who received it. This could be due to the fact that the nevirapine was being administered at the post natal ward while the records are kept at the labor ward, and so not all NVP administration in babies were recorded in the labor ward register.

Of the 318 babies born to HIV positive mothers, 86 (27%) had no records at all to indicate whether or not they received nevirapine and in all, only 228 babies were initiated on nevirapine out of the thousands who might have had been exposed to the virus. Since the whole PMTCT programme is about getting a high proportion, if not all of the babies

that could possibly be exposed to the HIV to end up taking antiretroviral prophylaxis, this figure falls short of expectations.

The dilemma of infant feeding options in a resource poor setting with high HIV prevalence like Swaziland is very real. In this study the documentation of mothers' choice of infant feeding was very poor. The infant feeding option variable was missing for about half of the total number of women who delivered and 63.5% of the known HIV positive women. Also, the labor ward records did not show if the mothers intended to exclusively breastfeed. These are important issues not only because this variable happens to be one of the minimum indicators stipulated by the Ministry of Health and social welfare to be submitted monthly, but also because it gives an impression that this aspect of the PMTCT programme is not being taken seriously. This picture seems to reflect what is happening in other parts of Southern Africa. In a study that looked at the quality of PMTCT infant feeding counseling in Southern Africa (involving Namibia, Swaziland and South Africa), it was found that mothers and counselors understanding of the counseling encounter differed greatly and there seemed to be a need for improvement (Buskens, 2005). Another study done in three PMTCT sites across South Africa revealed that counseling/knowledge of mothers on the best infant feeding option for HIV-positive mothers was poor across all three sites (Chopra et al, 2005).

There are other reports from Swaziland suggesting that there is a high level of success with PMTCT programmes in some other centres. In a report from Mbabane, the capital city of Swaziland, it was concluded that a holistic approach to patient management can

provide good results, comparable to those obtained in settings with no resource limitations (Mahaliyana-Dissanayake & Hallissey, 2005). They obtained a 7% mother-to-child transmission of HIV rate in a setting where more than 50% exclusively breastfeed and where routine caesarean section is not offered. Though the number of subjects in the study was very small, and as such, made it difficult to make valid conclusions, it is at least encouraging and while we await their subsequent reports, the challenge will be to obtain similar results in a place like RFM which has such a large number of deliveries per year.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

In conclusion, it is clear that despite a high antenatal clinic attendance rate amongst women delivering at the Raleigh Fitkin Memorial Hospital, the PMTCT programme in the Raleigh Fitkin Memorial Hospital achieved a very low uptake in the first year of its commencement. The RFM hospital is delivering a very high number of women, particularly teenagers and primigravidas from the entire Kingdom of Swaziland. However, coverage of the programme is low largely because of low counseling during the antenatal period, and low acceptance of HIV testing amongst counseled women. It is evident that there were missed opportunities to prevent MTCT in RFM. This could however largely be due to factors that are beyond the influence of the hospital, as the majority of women delivering there attended antenatal clinic at other facilities.

Even though there was a large number of data to draw conclusions from, very important variables were not recorded in the labor ward register, particularly with reference to breast feeding options and the administration of Nevirapine to infants born to HIV positive women. Improving the poor documentation of patient data and service provision is under the influence of the hospital, and could help with improvement of the PMTCT programme by providing useful monitoring information.

5.2 RECOMMENDATIONS

Further research should be done to answer the following questions, which focus on improving the HIV counseling uptake, which is the entry point to PMTCT:

- Why are women not undergoing counseling at their ANC facilities?
- Are there enough counselors?
- What is the percentage of women who are actually being counseled in other PMTCT centres in the country?
- Why is it that only 50% of RFM ANC attendees underwent counseling?
- Has there been an improvement in the following year, 2005?
- What is the quality of the counseling being done during the antenatal period?
- What do the mothers actually know about infant feeding options?

Proper documentation should be encouraged as more health workers are being involved in the programme. It should be emphasized that proper documentation of programme activities is the only way monitoring and evaluation can take place. The recommendation for programme and hospital managers is that staff at RFM and the catchment clinics should be trained in proper data recording. Where feasible, computerization of routine records is recommended so that there can be easier analysis and follow up considering the large number of deliveries taking place. Labor ward registers should include proper recording of infant feeding options and of infants born to HIV positive mothers that have been given nevirapine.

There may be a need to have extra staff to manage the data collection aspect. However, data collection must be coupled with use of the information generated. Monthly reports must be ensured, otherwise, it may be difficult to go through the routinely collected data after many months given the large number of deliveries taking place. Programme managers at hospital and regional levels are urged to utilize this collated information for programme management

There should be programmes targeted at specific groups among the women delivering at the hospital. For example, adolescents and primigravidas could be addressed separately. This is because they form the majority of the women delivering at this hospital. This may actually achieve better impact than addressing the whole lot of women in one group. Peculiar needs pertaining to these women may be more thoroughly addressed.

The possibility of counseling women for HIV testing during labor and early in the postpartum period should be explored. To implement such a strategy would require a great deal of advocacy work by programme managers; and training of health workers to provide VCT at this stage in the pregnancy.

REFERENCES

Bulterys M., Fowler MG., Shaffer N. et al (2002). Role of traditional birth attendants in preventing perinatal transmission of HIV. British Medical Journal, 324:222-225.

Bulterys M., Jamieson DJ, OSullivan MJ. et al (2004) Rapid HIV-1 testing during labor – A multicenter study. JAMA 292 (2): 219-223.

Buskens JAJM. (2005) Focusing on counselor to mother communication in order to enhance effectiveness and quality of PMTCT infant feeding counseling in Southern Africa. 3rd IAS conference on HIV pathogenesis and treatment. Rio de Janeiro, July 24-27, 2005. http://www.hiv-knowledge.org/iasmaps/Swaziland.Htm
(Accessed on 08/11/05)

Cartoux M, Meda N, Van de Perre P et al (1998). Acceptability of voluntary HIV testing by pregnant women in developing countries: An international survey. AIDS. 12(18):2489-2493.

Chopra M, Doherty T, Jackson D, Ashworth A. (2005) Preventing HIV transmission to children: Quality of counseling of mothers in South Africa. Acta Paediatrica, 94:357-363.

Dabis F, Ekpini ER. (2002). HIV-1/aids and maternal and child health in Africa. Lancet 359(9323):2097-104

Doherty T., Besser M., Donohue S et al. (2003). Health Systems Trust. An evaluation of the prevention of Mother-to-Child transmission of HIV initiative in South Africa. Lessons and key recommendations. www.hst.org.za/uploads/files/pmtct_national.pdf

Elizabeth Glaser Pediatric AIDS Foundation Fact Sheet (2005). Call to Action Swaziland. www.pedaids.org/documents/cta_swaziland.doc (accessed on 19/03/05)

Mahaliyana-Dissanayake P, Hallissey M. (200) Pilot Operational Research and community based project: PMTCT plus (PORECO):Mbabane, Swaziland. Achieving the gold standard of MTCT Plus in a resource limited setting. http://www.hiv-knowledge.org/iasmaps/Swaziland.Htm (accessed on 08/11/05)

McIntyre J., Gray G. (2002). What can we do to reduce mother to child transmission of HIV? British Medical Journal 324:218-221

Ministry of Health and Social Welfare, Swaziland. (2001). Emergency preparedness and response plan for RFM Hospital, Manzini, Swaziland.

Ministry of Health and Social Welfare, Swaziland. (2002). Guidelines for the prevention of mother to child transmission of HIV.

Moore M. (2003). A behavior change perspective on integrating PMTCT and Safe Motherhood Programs. A discussion paper. www.manoffgroup.com/Documents/PMTCTSM%20final.pdf

Painter TM, Diaby KL, Matia DM et al. (2004) Women's reasons for not participating in follow up visits before starting short course antiretroviral prophylaxis for prevention of mother to child transmission of HIV: qualitative interview study. British Medical Journal 329(7465):543-546.

Preble EA., Piwoz EG. (2001). SARA Project. Prevention of Mother-To-Child Transmission of HIV in Africa: Practical guidelines for Programs. www.aed.org/Toolsandpublications/upload/mtctjuly17.pdf

Regional HIV/AIDS Program (RHAP): Article: Swaziland Activities Profile. http://www.rhap.org.za/article/2005/241 (accessed on 18/10/05)

Rutenberg N., Kalibala S., Baek C., Rosen J. (2003). Programme recommendations for the prevention of Mother to child transmission of HIV: A practical guide for managers. United Nations Children's fund (UNICEF).

Sint TT, Dabis F, Kamenga C et al. (2005). Should nevirapine be used to prevent mother-to-child transmission of HIV among women of unknown serostatus? Bulletin of the World Health Organization 83:224 -229.

Stringer JSA, Sinkala M, Goldenberg RL et al (2004) Universal nevirapine upon presentation in labor to prevent mother-to-child HIV transmission in high prevalence settings. AIDS 18 (6): 939-943.

UNAIDS AND World Health Organization. AIDS epidemic update 2003. http://www.unaids.org. (Assessed on 20/01/06)

UNAIDS AND World Health Organization. AIDS epidemic update 2004. http://www.unaids.org. (Assessed on 20/01/06)

Westheimer EF, Urassa W, Msamanga G et al. (2004) Acceptance of HIV testing among pregnant women in Dar-es-Salaam, Tanzania. Journal of Acquired Immune Deficiency Syndromes 37 (1): 1197-1205.

WHO. (2004) Antiretroviral drugs for treating pregnant women and preventing HIV infections in infants. Guidelines on care treatment and support for women living with HIV/AIDS and their children in resource constrained settings. http://www.who.int/hiv/pub/mtct/en/arvdrugswomenguidelinesfinal.pdf

WHO. (2005) Antiretroviral treatment of HIV infection in infants and children in resource limited settings, towards universal access: recommendations for a public health approach (2005 revision). http://www.who.int/hiv/pub/guidelines/PaedARTguideDRAFT_webreviewNOV05%20_2_.pdf

APPENDIX A: DATA EXTRACTION FORM

1. Serial number…….
2. Address……
3. ANC facility attended……...
4. Age ……
5. Parity…….
6. Counselled Yes(1)……No(2)……
7. Tested Yes(1)……No(2)……
8. Reactive Yes(1)……No(2)……
9. Maternal dose received Yes(1)……No(2)……
10. Infant dose given Yes(1)……No(2)……
11. Date of delivery (DD/MM)
12. Mode of delivery (1)NVD (2)AVD (3)C/S
13. Baby's condition (1)SATIS (2)UNSATIS (3)SB
14. Infant feeding choice (1)BREASTFEEDING (2)ARTIFICIAL

Keys NVD- Normal Vaginal Delivery

AVD-Assisted Vaginal Delivery

C/S - Caesarean Section

SATIS- Satisfactory condition (Apgar score of 8 or more after 5 minutes)

UNSATIS-Unsatisfactory condition (Apgar score of 7 or less after 5 minutes)

SB-Stillborn