

**KNOWLEDGE ABOUT AND ATTITUDES TOWARDS INFANT  
FEEDING OF MOTHERS WITH HIV INFECTION**

by

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## CHAPTER 1

### INTRODUCTION TO STUDY

#### 1. 1 INTRODUCTION

Mother to child transmission of HIV is responsible for over 90% of the more than 600 000 infants who become infected with HIV annually. Since the beginning of the HIV/AIDS epidemic an estimated 5.1 million children have been infected with HIV. Two-thirds of infections are believed to occur during pregnancy and delivery and one-third through breast-feeding (Farley, 2000:1; Latham, 2000:1656; Morrison, 1998:1; Talwat, Dore, Le Goeur & Lallemon, 2002:625; Van Esterik, 2002:271).

Unquestionably, the mother to child transmission of HIV via breast-feeding does not exist if HIV-positive mothers strictly avoid breast-feeding (Miller, Liff, Stoltzfus & Humphrey, 2000:1246). This is an option in developed countries.

In sub-Saharan Africa, most infants are solely dependant on their mother's milk. For various reasons breast milk is their only source of protein-rich diet. Reasons include, high illiteracy levels, lack of information on locally available protein rich sources, but most especially because of economical constrain (Olayinka, Oni & Mbajjorgu, 2000:313). In addition, failure to breast-feed is tantamount to an admission of HIV infection in much of the developing world, becoming an issue of public exposure for the mothers (Kriebs, 2002: 4).

Studies have suggested that mother to child transmission of HIV through breast-feeding depends on the pattern of breast-feeding (exclusive or mixed feeding) and not simply on all breast-feeding, (Miller, et al, 2002:1247). Coutsaudis, Pillay, Sponer, Kuhn and Couvadia (1999:471-476) have shown that the risk of postnatal mother to child transmission of HIV at three months of age for babies who were exclusively breast-fed was 45% lower than those who were fed a combination of breast milk and formula, or breast milk and other foods or liquids (mixed feeding).

The fact that exclusive breast-feeding carries a significantly lower risk (almost half the risk) of mother to child transmission of HIV than mixed feeding is not surprising because the

beneficial immune factors of breast milk are probably counteracted by the damage to the infant's gut wall by contaminants or allergens in mixed feeds. Given that mixed feeding is unlikely to involve hygienic food preparation practices, bacteria and other contaminants may be introduced into gut and result in inflammatory responses and subsequently damage to the mucosa. Once the integrity of mucosal surfaces has been compromised by infection, allergens or trauma, the passage of HIV across membranes into the body tissue is facilitated. Furthermore, it has been shown that introduction of even one bottle of artificial feeding product can decrease the acidity of the stomach (Morrison, 1998:3). HIV is an acid labile virus. A decrease in the acidity of the stomach or intestine might, therefore, enhance the survival of any maternal HIV infected cells found in breast milk. Artificial supplement feeding may thus increase the likelihood of transmission in breast-fed babies as it permits direct contact of the virus with the leukocyte population in the newborn's immature gastro-intestinal tract.

Since 1999, the Department of Health in South Africa has implemented a number of pilot sites for the Mother to Child Transmission (MTCT) Programme. Under the programme all pregnant women presenting at public hospitals and clinics will be entitled to voluntary, confidential counselling and testing. If the mother agrees and tests positive, she will have the option to join the MTCT programme. In addition to getting free anti-retroviral medication, HIV-positive mothers will be offered free milk formula for the first six months of their infants' lives to ensure their infants are not at risk of getting HIV from breast milk.

It has been found in other countries where formula is being supplied free at MCTC pilot sites, that a large percentage of mothers either do not adhere to instructions not to breast-feed, or are do not come back on time to pick up new supplies of infant formula (Department of Health, 2001:7). It is thought that these mothers practice mixed feeding, probably because where breast-feeding is the norm, women who do not breast-feed may be stigmatised, resulting in a range of other problems.

Apart from the increased risk of transmission when mixed feeding, non-breast-fed babies are at greater risk of death from other infections. An analysis by the World Health Organization has shown that infants who receive formula/replacement feeding have a two-fold increased risk of dying in the first six months of life (Black & Victora, 2002:1252; Dobson, 2002:1474; Latham, 2000:1657). In risk of serious mortality is increased by the disadvantages of artificial feeding in poor households with inadequate sanitation, unsafe and scarce water

supplies, no refrigeration, poor health services and little knowledge of hygiene (Latham, 2000:1658; Royal College of Midwives, 2002:11).

The appropriate feeding regime for infants born to HIV-positive mothers appears critical in enhancing a reduction in the spread of postnatal mother to child transmission of HIV and child mortality.

## **1.2 PROBLEM STATEMENT AND RESEARCH QUESTIONS**

### **Problem statement**

South Africa has a population of about 46.6 million people, of who 6.5 million are estimated to be HIV positive. An estimated 3.2 million woman of childbearing age (15-49) were living with HIV/AIDS in July 2002 (Giese, Meintjes, Croke & Chamberlain, 2003:1). The unborn child of a HIV infected mother has a 25-45% risk of becoming infected through mother to child transmission (Dabis & Ekounoum, 2002:1). Two-thirds of infections are believed to occur during pregnancy and delivery and one-third through breast-feeding (Farley, 2000:1; Latham, 2000:1656; Morrison, 1998:1; Talwat, Dore, Le Goeur & Lallemon, 2002:625; Van Esterik, 2002:271). According to Coutsaudis, et al (1999:471-476), mother to child transmission of HIV through breast-feeding depends on the pattern of breast-feeding (exclusive or mixed feeding) and not simply on all breast-feeding. The appropriate feeding regime for infants born to HIV-positive mothers appears to be critical in enhancing a reduction in the spread of postnatal mother to child transmission of HIV.

In South Africa, a comprehensive package for PMTCT (prevention of mother to child transmission) is available at eighteen PMTCT pilot sites. The Protocol for follow-up of mothers and infants is as follows; women who have chosen to formula feed after extensive counselling will be provided with free commercial formula for at least two weeks on discharge. Thereafter formula milk will be dispensed at the local clinic for the period of six months. A woman who chooses to exclusively breast-feed, will be reminded to wean the baby off the breast abruptly at four months, after which she will be provided with infant formula for two months (Department of Health, 2001:6).

Inadequate or insufficient knowledge might lead to unsustainable choices regarding an appropriate feeding regime, which is a choice that appears critical in enhancing a reduction in the spread of postnatal mother to child transmission of HIV. In addition, infants who receive formula/replacement feeding have a two-fold increase risk of dying in the first six months of life (Black & Victora, 2002:1252; Dobson, 2002:1474; Latham, 2000:1657). The risk is increased in poor households with inadequate sanitation, unsafe and scarce water supplies, no refrigeration, poor health services and little knowledge of hygiene (Latham, 2000:1658; Royal College of Midwives, 2002:11).

Coutsaudis, et al (1999:473) urges regimes that support formula feeding as a way to reduce mother to child transmission of HIV, to consider the risk of non-compliance. Community, family or spousal pressure to breast-feed and the concern about maintaining confidentiality of HIV status, may cause mothers to practice mixed feeding practices with the alarming risk of HIV transmission in the postnatal period.

There is, however, very limited literature on the knowledge of and attitudes towards infant feeding among women with HIV infection (Talwat, Dore, Le Goeur & Lallemon, 2002:625; Van Esterik, 2002:271).

It is imperative to determine the knowledge of and attitudes of the HIV-positive mothers towards infant feeding as it will determine compliance with the chosen infant feeding practice. Furthermore, determining the knowledge of and attitudes of HIV-positive mothers towards infant feeding, can help counsellors and midwives to improve the education given to HIV-positive mothers, empowering them to make an informed choice they can comply with. It is vital to minimize postnatal mother to child transmission of HIV and child mortality

The following questions arise;

### **Research questions**

1. What is the knowledge of infant feeding among women with HIV infection?
2. What is the attitude towards infant feeding among women with HIV infection?

### 1.3 RESEARCH OBJECTIVES

- 1.3.1 To describe the knowledge of infant feeding among women with HIV infection.
- 1.3.2 To describe the attitude towards infant feeding among women with HIV infection.
- 1.3.3 To recommend guidelines on maternal education.

### 1.4 DEFINITION OF KEY PRINCIPLES

**Anti-retroviral medication (or drug)** refers to medication that can reduce the amount of HIV in the body and, thereby, slow the progression to, or improve the clinical signs of AIDS.

**Artificial feeding** refers to feeding an infant during the first six months of life on breast milk substitutes only, that is no breast milk or breast-feeding (Department of Health, 2001:4). The main source of nutrition is milk other than breast milk. Different types of milk are used; processed milk, modified/humanized milks (Nan, S26) or milk substitutes like Soya milk (Harrison, 2002: 55). The never-breast-fed baby (Newell, 1999:1).

**Breast milk substitutes** refers to any food being marketed or otherwise represented as a total replacement for breast milk, particularly products designed for feeding an infant during the first six months of life (Department of Health, 2001:4).

**Commercial infant formula** refers to a breast milk substitute formulated industrially in accordance with applicable Codex Alimentarius standards to satisfy the nutritional requirements of infants up to six months of age. Thereafter it is continued beyond the age of six months, with addition of solid foods (Department of Health, 2001:4).

**Complementary food** refers to any food, whether manufactured or locally prepared, and fed in addition to breast milk (including expressed and expressed heat-treated breast milk) when breast milk becomes insufficient to satisfy the nutritional requirements of the infant. Complimentary food should be introduced around six months of age (Department of Health, 2001:4).

**Exclusive artificial feeding** refers to feeding an infant during its first six months of life on breast milk substitutes only i.e. no breast-feeding or breast milk (Department of Health, 2001:4).

**Exclusive breast-feeding** refers to giving an infant no other food or drink (not even water), apart from breast milk (including expressed breast milk fed with a cup), with the exception of drops or syrup consisting of vitamins, mineral supplements or medicines when medically prescribed (Department of Health, 2001:4).

**Human immunodeficiency virus (HIV)** refers to the virus that attacks the immune system (Department of Health, 2001:5). HIV is the virus that causes Acquired Immune Deficiency Syndrome (AIDS). The virus rapidly multiplies in the blood, stimulating the development of antibodies. A person is then being said HIV (antibody) positive. Although the person may have no signs of disease, he/she can infect others (Jackson, Kerkhoven, Lindsey, Mutangadura & Nhara, 1999:7).

**HIV positive** refers to an individual who has taken an HIV test and whose results have been confirmed as positive and have been made known to the individual that they are positive (Department of Health, 2001:5). The person is infected with the Human Immunodeficiency Virus (Jackson, Kerkhoven, Lindsey, Mutangadura & Nhara, 1999:7).

**HIV counselling and testing** refers to voluntary HIV testing, with full informed consent, and confidential pre- and post-test counselling. It has the same meaning as the term voluntary counselling and testing (VCT) and voluntary and confidential counselling and testing (VCCT) (Department of Health, 2001:5).

**Infant** refers to a child between birth and 12 months (Department of Health, 2001:5).

**Mixed feeding** refers to the practice of breast-feeding plus the inclusion of other liquids and foods in the diet of infants less than six months old (Department of Health, 2001:5). The baby receives breast milk and another substitute, regardless whether breast milk is the main source of nutrition or not.

**Mother to child transmission (MTCT)** refers to the transmission of HIV to an infant born to an HIV positive woman during pregnancy, delivery or breast-feeding. Also known as vertical transmission (Department of Health, 2001:5).

## **1.5 RESEARCH DESIGN**

(Research methodology will be discussed in-depth in Chapter 3).

### **1.5.1 Research design**

A quantitative descriptive design (simple survey) was used to merely describe the knowledge and attitude towards infant feeding among women with HIV infection (Brink, 1996:108 -109).

### **1.5.2 Population and sampling**

The population was the HIV-positive mothers who are followed up at the dietary clinic at the Dr Yusuf Dadoo hospital. HIV-positive mothers who have chosen to formula feed will be provided with free commercial formula for at least two weeks on discharge. Thereafter, the dietician dispenses formula milk at the hospital on a special clinic day for the period of six months. A woman who chooses to exclusively breast-feed will be reminded to wean the baby off the breast abruptly at four months, after which she will be provided with infant formula for two months. Both groups of babies are weighed at the clinic and nutritional advice is available.

Non-probability samples are particularly useful with patients when the total population is unknown or is not available. Purposive sampling is used as only the mothers who attend this clinic, with their babies, will be used. Data will be collected from mothers who attend the once-a-week dietary clinic.

### **1.5.3 Data collection**

Data can be collected by self-reporting. Semi-structured interviews were chosen, as the majority of respondents are illiterate. They are also useful in the study of sensitive topics and to increase response rates (Parahoo, 1997:293). A trained fieldworker was used since



very few of the respondents were able to give accurate answers in English. The fieldworker is a HIV peer educator in Zandspruit (a nearby squatter camp). She is of the same background as the respondents, was less threatening to the respondents than the researcher and was able to interpret aspects of the interview to respondents in their own language. The researcher was, however, available to answer questions the fieldworker may have had.

An interview schedule was drawn up based on a questionnaire published by the World Health Organization. Questions from the World Health Organization's questionnaire were integrated into an interview schedule according to the specific design of the study. The interview schedule was refined by administering it to a small group of people with similar characteristics to the intended respondents (Parahoo, 1997:275), which is called the pilot study. The pilot study was done at an antenatal clinic in Zandspruit.

#### **1.5.4 Data analysis**

Information was obtained from the completed interview schedules. Information was coded and analysis was done by STATCON of the Rand Afrikaans University. Descriptive statistics was used; frequency distributions and frequency count, simple descriptive statistics, measurement of central tendency and measurement of description of variability (Brink, 1996:178-180).

#### **1.5.5 Validity and Reliability**

Validity according to Babbie and Mouton (2002:648) is a term describing a measure that accurately reflects the concept it is intended to measure.

Reliability is that quality of measurement method which suggests that the same data would have been collected each time in repeated observations of the same phenomena (Babbie & Mouton, 2002:646).

### **1.6 ETHICAL ASPECTS OF THE RESEARCH**

There was focused on;

- a) protecting the respondents' human rights,
- b) balancing benefits and risks of study,
- c) obtaining informed consent, and
- d) obtaining permission from ethical committees.

### **a) Protection of the respondents' human rights**

*Right to self-determination:* based on the ethical principle of the respect for the person (Burns & Grove, 1997:200). The right to self-determination was insured by;

- informing respondents about the proposed study,
- allowing the voluntarily choice to participate or not to participate, and
- respondents having the right to withdraw from the study at any time without penalty.

*The right to privacy;* is the right an individual has to determine the time, extent and general circumstances under which private information is shared with or withheld from others (Burns & Grove, 1997:203). The right to privacy was insured in that;

- respondents were informed,
- consented to participate in the study, and
- voluntarily shared private information.

*The right to anonymity and confidentiality:* is based on the right to anonymity and the right to assume that data collected will be kept confidential (Burns & Grove, 1997:205).

The right to anonymity and confidentiality was insured in that;

- question lists were not numbered and cannot be traced back to respondents, and
- information obtained will not be used for any other purpose than this study.

*The right to fair treatment:* is based on the ethical principle of justice (Burns & Grove, 1997:205). The right to fair treatment was insured in that;

- there was no discrimination between race, culture or social class, and
- respondents were treated fairly.

*The right to protection from discomfort and harm:* is based on the ethical principle of beneficence that states that one should do good and above all, do no harm (Burns & Grove, 1997:206). This study only caused temporary discomfort. The discomfort encountered was similar to what the respondent would experience in her life and ceased with termination of the study.

#### **b) Balancing benefits and risks of study**

The benefit of this study is, that the knowledge and attitude towards infant feeding among women with HIV infection will be described to assist the midwife in educating and supporting HIV positive pregnant woman more effectively.

The only risk was that the study caused temporary discomfort. The discomfort was similar to what the respondent would experience in her life and ceased with termination of the study.

#### **c) Obtaining of informed consent**

Informed consent was obtained from respondents and they had the right to self-determination without penalty.



#### **d) Permission obtained from ethical committees**

The design and methodology of the study were submitted to the faculty committee for Academic Ethics for evaluation and approval. Permission to conduct research was obtained from the Dr Yusuf Dadoo Hospital and the Department of Health.

## CHAPTER 2

### KNOWLEDGE OF AND ATTITUDES TOWARDS INFANT FEEDING OF HIV-POSITIVE MOTHERS

#### 2.1 THE HUMAN IMMUNODEFICIENCY VIRUS

The human immunodeficiency virus (HIV) is the cause of the acquired immune deficiency syndrome (AIDS) (Cherepanov, 2000:4,5; Van Niekerk, 1991:7,23; Miller, 1988:1). The virus was first discovered, in 1983, by researchers in Paris, France. It was originally, known as lymphadenopathy-associated virus “LAV” and AIDS retrovirus (ARV), but the term HIV is now universally applied.

Cherepanov (2000:4) explains that the CD4 lymphocytes are the major reservoir for HIV replication *in vivo*. The major pathological effect of HIV is depletion of CD4-positive T-lymphocytes and progressive destruction of lymph nodes leading to AIDS. Moreover, HIV is able to cross the blood-brain barrier as free viral particles, as well as hidden in infected monocytes/macrophages. The viral replication within the brain is supported by microglia and astrocytes and leads to progressive and irreversible destruction of the CNS, dendritic and synaptic damage, neuronal loss, inflammations and dementia at the late stages of AIDS.

HIV belongs to the lentivirus subfamily of retroviruses and possesses genetical and morphological similarities to other animal lentiviruses such as the simian immunodeficiency virus (SIV), feline immunodeficiency virus (FIV), bovine immunodeficiency virus (BIV), equine infectious anaemia virus (EIAV), etc. HIV and other lentiviruses primarily infect cells of the immune system including lymphocytes and macrophages, often causing immunodeficiency (a total breakdown of the natural immune system) in their host.

Retroviruses have the unique ability to make DNA out of RNA (Van Niekerk, 1991:7; Miller, 1988:1). The retrovirus does not directly insert itself into the host cell's DNA, like other viruses. Instead, after entering a cell through the membrane, it makes a special DNA copy of itself and this copy is inserted into the host's DNA. As with other viruses, extra copies are then made which spread round the body.

Two divergent types of HIV, HIV-1 and HIV-2, are known. The former is responsible for the worldwide pandemic, while the latter is more restricted to West Africa.

During the course of infection with the virus, a number of stages can be documented and these are accompanied by changes in various markers of the virus infection, which are detectable in the person's serum (Bennett & Enn, 2001:21).

*Primary infection:* following exposure and infection there is an initial period during which specific antibodies to the various virus antigens (proteins) have not yet been produced. This is known as the window period and may last 8 to 10 weeks.

*Asymptomatic period:* a range of antiviral antibodies generally appear as the infected person seroconverts (a full serological response). These antibodies will then persist for long periods (months to years). The person will continue to release P24 antigen into the bloodstream as the virus replicates and the quantities will vary with time. Asymptomatic but HIV seropositive persons are the largest group of individuals affected by AIDS. They are living with the virus without developing physical symptoms but remain capable of transmitting the virus (Kelly & Lawrence, 1988: 93).

*HIV disease (AIDS):* eventually the immune capabilities begin to decline and some of the circulating antibodies to HIV are no longer detectable in the serum (anti-P24 antibodies). This is accompanied by the reappearance of high levels of P24 antigen, coinciding with massive viral replication and the death of large numbers of white blood cells (T4 lymphocytes) whose function is central to the maintenance of an effective immune response.

### **2.1.1 Testing for HIV**

HIV infection is established by detecting antibodies to the virus, through viral antigens, viral RNA/DNA, or by culture. The standard test for antibody detection is serology. There are two HIV types: HIV-1 and HIV-2, which show 40% to 60% amino homology. HIV-1 accounts for nearly all cases except a minority of strains that originate in West Africa. HIV-1 is divided into subtypes designated A to K (collectively referred to as "M subtypes") and O. Subtype O shows 55% to 70% homology with the M subtypes. A new group of viruses labelled "N" (for new) was reported in 1998. In South Africa, the predominant subtype is, subtype C (Bartlett & Gallant, 2003:7).

Two broad classes of tests may be distinguished, HIV antibody tests, which react to antibodies which have formed in reaction to the virus, and tests that test for the actual virus (Van Dyk, 2001:57).

### **2.1.1.1 HIV antibody tests**

The two best-known HIV antibody tests are the ELISA (enzyme-linked immuno-sorbent assay) and the Western Blot test (Van Dyk, 2001:58). As these tests react to the antibodies formed by the immune system, in an actual unsuccessful attempt to protect the body against the virus, the test will only become positive after the window period. The window period is the period between the onset of HIV infection and the appearance of detectable antibodies to the virus. In the case of the most sensitive HIV antibody tests, the window period is about 3 to 4 weeks.

Rapid HIV antibody tests are also available, can be performed outside a laboratory and the results are usually available within 10 to 30 minutes. Both a positive ELISA and a positive Rapid test should be confirmed with another test, preferably by a test from another batch.

### **2.1.1.2 HI-virus test**

HIV-P24 antigen and HIV-PCR (Polymerase Chain Reaction technique) do not rely on antibody development as it detects the actual HI-virus (or HIV antigens). The HIV-P24 antigen test detects the predominant HIV antigen P24, which can be detected shortly after initial HIV infection and again in the late stages of the infection (Van Dyk, 2001:60). The PCR (Polymerase Chain Reaction technique) can be used for diagnostic purposes as well as post-diagnostic purposes (Van Dyk, 2001:60). The qualitative PCR test can be used when essential early diagnosis is required e.g. for babies born to HIV-positive mothers that are given up for adoption and for post-rape tests before beginning anti-retroviral therapy. A quantitative PCR test is mainly used post-diagnostically for treatment purposes. This is also called the *HIV viral load test*.

### **2.1.1.3 HIV testing for a baby born to a HIV positive mother**

HIV antibody tests cannot be used in the first 12 to 18 months after birth as maternal antibodies can persist in the baby for as long as 18 months (Van Dyk, 2001:61). It is however possible to establish the HIV status of the baby within approximately 30 days after birth with the HIV-P24 antigen and the HIV-PCR tests. These tests are too expensive and

sophisticated for general use, but can be used for abandoned children who are up for adoption, or if the child requires major surgery.

#### **2.1.1.4 HIV testing for pregnant women**

Bartlett and Gallant (2003:96) recommend a standard serologic test with counselling for all pregnant women.

Most data on HIV/AIDS in South Africa is obtained from the national sentinel surveillance surveys of antenatal state clinic attendees that have been conducted since 1990. The survey is a means of tracing the epidemic, but it is limited to pregnant women attending state antenatal clinics. On the question as to whether data gathered in this way is representative of the broader situation in South Africa, Van Rensburg et al (2002:22) and Bennett and Enn (2001:233) conclude that based on population-based studies in several countries it was concluded that antenatal data, if anything, tends to underestimate the prevalence of HIV among sexually active women.

Justification for routinely testing pregnant women for HIV;

- To allow women to make fully informed decisions about their futures.
- To give health care professionals the information they need to protect themselves from possible infection.
- To produce epidemiological data.
- To allow women to protect their own health.
- To protect the resulting child (Bennett & Enn, 2001:231-235).

#### **2.1.2 Counselling**

It is essential to ensure that persons who seek testing understand the meaning of an HIV test and receive counselling to help cope with the test results (Kelly & Lawrence, 1988:93). According to law, healthcare professionals may not do as HIV test on a person unless he or she clearly understands what the purpose of the test is, what advantages or disadvantages

testing may hold for him or her as client, why the healthcare professional wants this information, what influence the result of such a test will have on his or her treatment, and how his or her medical protocol will be altered by this information. The psychosocial impact of a positive test result should also be discussed with the client (Fine, Heywood & Strode, 1997).

#### **2.1.2.1 Pre- and Post-HIV test Counselling**

The HIV test is different from all other tests. It has phenomenal emotional, psychological, practical and social implications for the client. HIV testing should therefore never be done without thorough pre-test counselling. Pre-test counselling that is done in a proper and comprehensive way prepares the patient and counsellor for more effective post-test counselling. Because the client are often too relieved or shocked to take in much information during post-test counselling, the healthcare professional should make use of educational opportunities offered by pre-test counselling. Pre- and post-HIV test counselling are specific counselling contexts where the basic principles, values and communication skills used for other counselling should be applied. Allowance must be made for age, intelligence capacity, cultural factors and communication problems.

The need for adequate pre- and post-test counselling is not limited to HIV seropositive persons alone, those receiving a negative result should also be counselled. A negative antibody result can be detrimental if the person feels false security based on the results. Sero-negativity after a single test cannot be interpreted as clear evidence that the person is free of HIV infection. Detectable antibodies may not appear for months following viral exposure (Kelly & Lawrence, 1988:95).

#### **2.1.2.2 Coming to terms with diagnosis and being seropositive**

AIDS is no ordinary epidemic. More than a devastating disease, it is freighted with social and cultural meaning. More than a passing tragedy, it will have long-term broad-ranging effects on personal relationships, social institutions and cultural configurations. The newly diagnosed mother does not only have to come to terms with being pregnant, but also that she is HIV positive, with the added fear that she will transmit the virus to her unborn child (Nelkin, Willis & Parris, 1991:1).



In interviews conducted by Miller (1988:23) all the patients mention that hearing the news of being seropositive cause a considerable shock. People in a state of shock typically report feeling confused and bewildered. The mind seems to be in constant turmoil, perhaps flitting from one thing to another, without reference to what is happening outside. In this state, it is almost impossible to assemble a list of priorities, to concentrate, or remember things clearly. Common shock reactions vary from numbness, confusion, denial, fear, guilt and emotional lability to relief. Behavioural reactions include; crying, anger, withdrawal, self-denigration, impulsiveness and questioning. It is often in this state that the women have to make decisions about infant feeding.

### **2.1.2.3 Families in crisis**

AIDS throws families into crisis (Landau-Stanton & Clements, 1993:48). Crises in family relationships are often the occasions that should be responded to with services and assistance. Cultural or religious differences may affect family views. In black families, a tradition that reverses the mother/child bond may transcend negative attitudes toward these behaviours. Abandonment by families of their sick or disgraced members is a familiar scenario. While many families have not abandoned a relative with AIDS, irrational fear of transmission, added to religious or cultural stigma, has led to rejection. In families like these the fear of stigma might force the women not to disclose her status. She will thus handle this death sentence on her own, worried about her unborn child.

Even though it is critical not to ignore the individual needs of the HIV-positive women, it is also important to remember that the other parts of her life are just as critical. When one individual is afflicted with AIDS, many others are impacted by it. The emotional stress and pain, the reorganization of lives, the financial stress and eventual loss of loved ones always affects the larger system. This system includes not only the women's biological or non-traditional family, but also her work colleagues, neighbours, friends and church community.

### **2.1.3 HIV/AIDS epidemic in South Africa**

The HIV/AIDS epidemic poses a severe threat to sub-Saharan Africa. Among the countries in this region, South Africa ranks first in terms of the largest number of HIV/AIDS infections. At the end of 2000, the South African infection figure stood at an estimated 4.7 million. HIV

is not a health-related concern only, African socio-economic and socio-cultural dynamics hasten infection and largely impede intervention initiatives. Among the specific reasons for the high prevalence rate are unsafe sexual practices, a secretive approach to sexual dialogue, migration labour, high prevalence of STD's, high teenage pregnancy rates, commercial sex practices, inequitable health care provision and a mismatch between knowledge of the disease and safe sexual practices (Van Rensburg, Friedman, Ngwena, Pelser, Steyn, Booysen & Adendorff, 2002:xvi).

## **2.2 MOTHER TO CHILD TRANSMISSION OF HIV (MTCT)**

More than one and a half million HIV infected women become pregnant each year and over 600 000 of their children will become infected (McIntyre & Gray, 2000:277). The risk of intra-uterine transmission is 5-10% and intrapartum transmission 10-20%. High maternal plasma viral load is a key determinant of transmission during these two periods, irrespective of the population. Estimations of the absolute risk of transmission through breast-feeding vary from 10 to 20% percent dependant on the conditions of exposure (Dabis & Ekpinini, 2002:2097-2104).

In the absence of any treatment interventions, estimates of the rate of MTCT of HIV-1 vary from 14-48% in different regions. Transmission rates in Africa are higher than those in Europe and the USA. This difference probably reflects the higher contribution of postpartum transmission through breast-feeding, but may also reflect strain differences and obstetric factors. It has been suggested that some clades, or viral subtypes, may be more likely to be transmitted than others. In this particular, clade C, the commonest subtype in Southern Africa, may have a higher rate of transmission (McIntyre & Gray, 2000:277). The survival with AIDS also tends to be short in Africa. The poor background health status and precarious environment of most African populations contribute to the rapid development of AIDS (Dabis & Ekpinini, 2002:2097).

### **2.2.1 Prevention of Mother to Child Transmission (PMTCT)**

The 25-45% risk of MTCT can be reduced in several ways: prevention of sexual transmission for women of child-bearing age, access to HIV-1 testing, reduction of unwanted pregnancies by education of HIV-1 infected women and anti-retroviral-based prevention. All anti-retroviral

regimens of proven efficacy can be used in a minimum package of care for HIV-1 infected women (Dabis & Ekpini, 2002:2097-2104). There is also vigorous controversy around whether HIV infected women in developing countries should choose formula or breast-feeding for their infants. Formula eliminates HIV transmission but incurs the risk of increased mortality, whereas breast-feeding has multiple benefits but entails the risk of HIV transmission.

### **2.2.1.1 Antenatal and intrapartum PMTCT**

Interventions aimed at reducing this risk are a priority if childhood mortality for this group is to be reduced. The greatest burden of disease due to HIV infection in pregnancy is in those parts of the world that are least able to afford expensive and complex interventions and, therefore, simple and affordable interventions are essential if a global impact is to be made on childhood HIV disease.

Mother to child transmission during labour can be reduced by:

- Preventing increase in viral load such as maternal exhaustion or acute infections (Sexually transmitted- or new HIV infections). As the risk of mother-to-child transmission of HIV infection is associated with high maternal viral load. Any intervention which substantially reduces viral load may be associated with benefit.
- Using antiretroviral therapy for mother and baby,
  - AZT: this drug should be included where possible to prevent perinatal transmission because it has the largest experience for safety and efficacy.
  - This includes significant reduction in perinatal transmission that is independent of viral load and independent of AZT-resistance, although the latter point is controversial. Bartlett and Gallant (2003: 96), reports that AZT significantly reduces perinatal transmission even when the baseline viral load is <1000 c/ml. This provides the rationale for AZT-monotherapy in untreated pregnant women with a baseline viral load <1000 c/ml.
  - NVP: NVP is the most studied and best tolerated “third drug”. It has established merit in preventing perinatal transmission in multiple studies, most of which were performed in resource-limited areas with a single maternal dose and one infant dose. Nevirapine is a potent inhibitor of HIV-1 reverse transcriptase and has several properties that make it a valuable option for use during labour and in the early intrapartum period. These

include the rapid absorption of Nevirapine, good crossing of the placenta and a long half-life.

- Avoiding premature birth (which place an infant at higher risk for MCTC).
- Avoiding unnecessary rupture of membranes (which might cause chorio-amnionitis) or prolonged ruptured membranes (ruptured membranes for longer than 4 hours prior to delivery is associated with an increased transmission from mother to child) (Landesman; Kalish & Burns 1996: 1618s).
- Vaginal cleansing.
- Minimising trauma to the foetus (e.g. by avoiding procedures such as foetal scalp monitoring, forceps delivery, vacuum extraction and over-vigorous suctioning of the infant – each of which may cause skin lacerations).
- Avoiding an episiotomy when it is not absolutely necessary (indicated only for prolonged second stage, foetal distress or medical indications to shorten second stage).
- Carrying out a Caesarean section. However it is not routinely indicated in HIV-positive mothers because of the cost and other potential risks e.g. operative morbidity (as HIV infected women is immunocompromised).
- Helping mothers to choose a safe infant feeding practice they can comply with (Van Dyk, 2001:29).



### **2.2.1.2 Postnatal PMTCT**

Postnatal transmission occurs through breast-feeding. Dabis and Ekpini (2002:2097-2104) report that 40% of all infant HIV-1 infections can be attributed to breast-feeding. Among the factors of increased risk for transmission in the postnatal period are:

- The patterns of breast-feeding have an effect on postnatal transmission. Coutsaudis, et al (1999:471-476) have shown that the risk of postnatal mother to child transmission of HIV at three months of age for babies who were exclusively breast-fed, was 45% lower than those who were fed a combination of breast milk and formula, or breast milk and other foods or liquids (mixed feeding). The fact that exclusive breast-feeding carries a significantly lower risk (almost half the risk) of mother to child transmission of HIV than mixed feeding is not surprising because the beneficial immune factors of breast milk are probably counteracted by the damage to the infant's gut wall by contaminants or allergens in mixed feeds. Given that mixed

feeding is unlikely to involve hygienic food preparation practices, bacteria and other contaminants may be introduced into gut and result in inflammatory responses and subsequently damage to the mucosa. Once the integrity of mucosal surfaces has been compromised by infection, allergens or trauma the passage of HIV across membranes into the body tissue is facilitated. Furthermore, it has been shown that introduction of even one bottle of artificial feeding product can decrease the acidity of the stomach (Morrison, 1998:3). HIV is an acid labile virus. Therefore a decrease in the acidity of the stomach or intestine might enhance survival of any maternal HIV infected cells found in breast milk. Artificial supplement feeding may thus increase the likelihood of transmission in breast-fed babies as it permits contact of virus directly with the leukocyte population in the newborn's immature gastro-intestinal tract.

- High maternal viral load. A mother who is seroconverting (primary HIV infection during pregnancy/lactation) or has an acute infection (breast infection, especially mastitis), cracked nipples or infant with thrush, while breast-feeding, is at a higher risk for transmission. The relation between HIV-1 viral load in plasma and breast milk is not completely understood, but a positive association between high rates of HIV-1 replication and postnatal transmission is likely.
- Duration of breast-feeding. In order to avoid mixed feeding infants should be abruptly weaned off the breast at four months.
- Breast-feeding: the risk of HIV transmission is 16%. Risk factors include mastitis and prolonged breast-feeding. Breast-feeding is consequently discouraged in the developed world, but the issue is more complex in the developing world.

One solution is to replace breast-feeding with formula feeding (Gaillard, Piwoz & Farley, 2001:3525). However, in the setting where many HIV infected women live, formula feeding is not a safe alternative and the risk of HIV transmission is exchanged for the risk of mortality from diarrhoea and pneumonia with the consequent increase in morbidity and mortality. It is estimated, for example, that 1.7 million babies develop HIV each year due to breast-feeding but that 1.5 million babies would die if not breast-fed due to other causes like malnutrition and increased risk of infection (Bartlett and Gallant, 2003:96). Counsellors need to advise mothers to understand the risk and benefits of breast-feeding and formula feeding so that they can make an informed decision. Women who choose to breast-feed can be assisted to make breast-feeding safer (Abdool, Abdool, Adhikari, Cassol, Cherisch, Cooper, Coovadia, Coovadia, Cotton, Coutsooudis, Hide, Hussey, Maartens, Madhis, Martin, Pettifor, Rollins, Sherman & Stanley, 2002:992).

## **2.3 INFANT FEEDING**

At no time in life is nutrition more important than in infancy (Garrow & James, 1993:387). During the first few months after birth, tissue and organ synthesis rates are higher, while the processes of maturation continue rapidly. These changes require a balanced and relatively large intake of specific nutrients and energy, but the infant's tolerance to 'food' is limited by the immaturity of the gastro-intestinal tract, liver and kidneys. Unlike adults, young infants cannot consume solids and do not tolerate foods that contain large amounts of fibre, toxins or foods that provide a high renal solute load. They instead rely, for at least the first few months, on only milk for all their nutritional needs. It is vital that the composition and supply of milk is as near optimal as possible.

Milk is a solution of protein, sugar and salts, in which fat is suspended. It supplies (except for some vitamins) all the food needed by a young infant. Babies have fewer teeth and less versatile digestive systems than adults, but they grow faster and to permit this they need relatively more food. This rapid growth requires more energy, protein and other essential nutrients per unit body weight than any other time in infancy or childhood. These needs can be met completely with human milk, formula or both in the first four months of life (Frankle & Owen, 1993:135; Walker-Smith, 1981:4).



### **2.3.1 The nutritional needs of an infant**

The nutritional needs of an infant may be expressed in various ways; in calories (which denote the value of food as fuel), in fluid measures (which strictly indicates demand for water), as amounts of foodstuffs, protein, fat, carbohydrate, minerals and vitamins or, more practically, as amount of milk. The main reason for mentioning any but the latter is that different milks vary in their constitution and that cow's milk is commonly deliberately modified.

#### **2.3.1.1 Energy requirement**

The daily energy requirement of infants in early life is in the region of 420 kJ per kg bodyweight. During the first few days, the supply of breast milk (or the quantity of artificial milk the newborn can take) does not provide as much energy as this and the infant lives on

glycogen stores for a few hours and then mainly on fat. As the child's age increase, the energy requirements relative to bodyweight decline still further (Walker-Smith, 1981:38).

### **2.3.1.2 Fluid measures required**

After the first few days of life the infant's requirement of water is usually well satisfied by a fluid intake of 150 ml/kg body weight. The fluid needs of the infant are affected by the amount of salt consumed. For the first three months after birth, the ability of the infant's kidneys to concentrate urine is limited. If the intake of salt is higher than is needed, the excess has to be excreted in urine and a good intake of water is necessary. Breast milk has a low salt content and there is no danger of accumulation of salt in the tissues. Cow's milk has a considerably higher salt content, i.e. nearly four times that of human milk. Because he has to get rid of any excess of salt in his urine, the infant needs of water are affected by this intake of salt.

'Maximum urinary concentration will not be exceeded on any milk made up according to the instructions supplied by the manufacturer and given at volumes ranging from 150 ml/kg/day to about 200 ml/kg/day. Feeds are often made up with too little water and retention of salts and water may cause oedema. Reduction in the volume of feeds may result in negative water balance and the development of hyper-natraemic dehydration (Walker-Smith, 1981:42) and tetany as well as obesity. Cases of cerebral damage and gangrene of the extremities have been reported to be the result of hyper-natraemic dehydration and metabolic acidosis.

Other foodstuffs in milk;

- Protein is almost entirely used for growth in infancy (Pipes, 1981:40).
- Carbohydrate is almost the sole source of energy for the healthy baby on a normal diet. Breast-fed babies take in about 12g carbohydrate per kg bodyweight per day; artificial feeding often entails a higher intake (Walker-Smith, 1981:40).
- Babies store fat, which becomes an emergency food-store as well as insulating them from cold, but they normally use little of it as source of energy (Walker-Smith, 1981:41).

### 2.3.1.3 Amount of milk required

Walker-Smith (1981:39) summarised the daily intake of milk (ml/kg) needed by an infant according to its weight in Table 2.1

Table 2.1 Daily intake of milk (ml/kg)

Age	Volume of milk (ml/kg) taken daily				
	Percentiles				
	10 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>
5 to 12 days	105	120	145	180	195
1week to 1mth	172	184	199	220	224
1 to 2 months	164	174	189	205	220
2 to 3 months	145	155	174	190	199
3 to 4 months	134	148	158	170	180
4 to 5 months	132	138	149	158	172

### 2.3.2 Milk substitutes other than breast milk

Breast milk is the optimal choice of food for the infant. There are however other milk substitutes available to feed the infant.

#### 2.3.2.1 Cow's milk

The major difference between cow's milk and human milk is the greater concentration of protein and minerals and lower concentration of lactose in cow's milk. Butterfat in cow's milk is less well digested and absorbed by the infant than human milk fat. Cow's milk or evaporated milk provides in the infants needs in respect of vitamin A, B, and K and is fortified with vitamin D, but it contains inadequate amounts of vitamins C and E, iron and copper to



serve as the only source of nutrition for the infant. In addition to this nutritional inadequacies there are problems related to curd formation, digestibility of fat and potential excess renal solute load because of the relatively high levels of protein (urea) and minerals (sodium, potassium, chlorine, phosphorus) excreted in urine (Frankle & Owen, 1993:143,144).

### **2.3.2.2 Formula milk**

Cow's milk is modified to reduce the solute load by reduction of the protein and mineral content. Homogenisation and heat treatment, to produce an easily digested protein, reduce the curd tension. Manufacturers combine demineralised whey with non-fat milk, to produce a product with a whey:casein ratio similar to that of human milk. Minerals removed from whey by electro dialysis are added in concentrations similar to that of human milk, resulting in simulated human milk.

Soy milk formulas are the most commonly used products for infants who have conditions that contra-indicate the use of cow's milk. These formulas are constructed of protein isolated from soy meal fortified with methionine, corn syrup and/or sucrose, and soy or vegetable oils to which vitamins and minerals are added (Pipes, 1981:143).

Since 1999, the Department of Health in South Africa has implemented a number of pilot sites for the Mother to Child Transmission (MTCT) Programme. Under the programme, all HIV-positive mothers will be offered free milk formula (Nan Pelagron by Nestle) for the first six months of their infants' lives. Although there are numerous types of formula milk available, only the milk provided in the MTCT Programme will be discussed.

#### **2.3.2.2.1 Nan Pelagron**

Pelagron provides an optimal digestibility profile.

- New Pelagron has an enhanced hydrochloric acid sparing effect:
  - The casein:whey ratio of 50:50 is closer to breast milk than the previous formulation.
  - Casein is in acid-coagulated form due to pre-acidification. This renders a sparing effect on gastric HCL, which keeps stomach pH low as shown in premature infants 8-12 days old.

- The HCL sparing effect normalises peristalsis and optimises enzyme action.

Pelagron is adapted to be totally user-friendly.

- Gastric emptying is promoted which indicates use during episodes of colic, constipation and mild gastro-intestinal disturbances.
- Recommended for use where environmental risk is increased.
- The carbohydrate source, supplied mainly in the form of lactose, results in a lower preference for sweetness by infants.
- Reduces the incidence of lactose sensitivity due to the partial fermentation of lactose to form glucose, galactose and lactic acid.
- Suppresses the growth of some pre-existing contaminants in prepared feeds, thus lowering the risk of infection in infants exposed to less than optimal conditions.
- It has a pleasant yoghurt taste (Nestle Pelagron pamphlet).

### **2.3.3 Preparation of the breast milk substitutes**

Scrupulous cleanliness is very important in preparing bottle feeds. Infant feeding should not contain any bacteria. In real life, perfection is rarely attained and without it, the danger remains and is reflected in the higher incidence of gastro-enteritis in poorly run homes (Walker-Smith, 1981:85). It is important that the hands of the person preparing the formula first be carefully washed. All equipment to be used during preparation must be thoroughly washed and rinsed. After the formula has been heated and the infant has been fed, any remaining milk should be discarded as warm milk is an excellent medium for bacterial growth (Pipes, 1981:144).

With all infant formulas, it is essential that they be prepared correctly. Most manufacturers provide instructions and a scoop for measurements of powder (Walker, 1990:71). Incorrect dilution can lead to over-concentrated formulas which can cause obesity or even dehydration (Walker, 1990:71). Over-diluted formula in turn can lead to malnutrition.

### **2.3.4 Child mortality and infant feeding**

The impact of the HIV epidemic on child health globally is beginning to be appreciated. With the burden of new infections falling on young women, there are a skyrocketing number of

AIDS-orphans and a rapidly increasing number of children infected via MTCT. An estimated 600 000 new paediatric infections occur each year, of which some 1500/day (>90%) occur in sub-Saharan Africa. But whereas children account for only 4% of those currently living with HIV infection, 20% of AIDS deaths have been in children. This reflects the rapid progression to disease in paediatric HIV infection.

Whereas a dramatic reduction in viraemia follows acute adult infection, corresponding to the appearance of a vigorous anti-HIV cytotoxic T-lymphocyte response, virtually no impact of the immune response is observed in acute paediatric infection following MTCT. Two specific challenges for the paediatric immune response are: 1) infection occurs before the immune system itself is fully developed and 2) the viruses transmitted by MTCT have already evaded an immune system sharing close genetic relatedness to that child. Accumulating evidence indicates that the immune system is potentially capable of effective control of HIV infection and that events occurring in acute infection critically determine the ultimate outcome (Goulder, Jeena, Tudor-Williams & Burchett, 2001:89-108).

Walley, Witter and Nicoll (2001:1051) found that in low-income settings, the use of anti-retrovirals alone result in an estimated increase in child survival of around 0.36%. Adding artificial feeding could reduce the increase to 0.03%. In middle-income settings the increase from anti-retrovirals alone would be 0.26% but as 'spill-over' of artificial feeding to uninfected women was more likely, this could result in a net increase of child deaths of up to 1.08%

### **2.3.5 Policies regarding infant feeding**

Since HIV is particularly prevalent in sub-Saharan Africa, the ministries of health in those countries are under pressure to provide free, or subsidized infant formula to mothers infected with HIV. The conditions necessary for adequate and safe formula feeding unfortunately exist for only a tiny minority of HIV infected women in Africa. Mothers live in poverty and have little access to decent health care, safe water, good hygiene, fuel and secure supplies of breast milk substitutes. In the end decisions need to be made based on risk assessment. International guidelines are available but need to be strengthened. The case against providing free or subsidized formula to HIV infected mothers is based on the following: it exacerbates disadvantages of formula feeding; compromises breast-feeding; results in disclosure of HIV status; ignores hidden cost of preparation of formula; increased mixed breast-feeding, which is an unsatisfactory method for all women; requires organisation and

management of programmes that are complicated and costly; and finally increased the 'spill-over' effect into the normal breast-feeding population. Recommendations to minimize these drawbacks include use of affordable anti-retrovirals to reduce MTCT, investments in high quality, widely available HIV counselling, support for choice of feeding and exclusive breast-feeding for those who choose to breast-feed (Coutsoudis, Goga, Rollins & Coovadia, 2002:154-160).

The WHO, the United Nations AIDS Agency and UNICEF have stated that the "most effective method of preventing breast milk transmission of HIV is breast milk avoidance". They have, nevertheless, recognized that when mothers do not have assured, uninterrupted access to breast milk substitutes that can be safely prepared and fed, and where infectious diseases and malnutrition are the primary cause of death during infancy, that artificial feeding then substantially increases children's risk of illness and death.

It is also concerning that years of successful work to protect, support and promote breast-feeding and stem the spreading use of commercial breast milk substitutes in developing countries is now threatened because of concern about HIV transmission in breast milk. However, the biggest risk is that there will be an inappropriate rush to replace breast-feeding with formula feeding by women who have HIV, or think they might have HIV, in high prevalence areas in developing countries. There may also be a large spillover of formula feeding to mothers that do not carry the virus.

Supplying all HIV-positive mothers with free formula milk does not seem to be the answer as, it has been found in other countries (where formula is being supplied free at MCTC pilot sites), a large percentage of mothers are either not adhering to instructions not to breast-feed, or are not coming back on time to pick up new supplies of infant formula. It is thought that these mothers are practicing mixed feeding, probably because where breast-feeding is the norm, women who do not breast-feed may be stigmatised, resulting in a range of other problems (Department of Health, 2001:7).

The very successful 1974-1984 Nestle boycott revolved specifically around the issue of the high rates of infant mortality from bottle-feeding in cultures where sterilizing water is difficult and funds to purchase sufficient quantities of formula milk are inadequate (Rosenfield & Figdor, 2001:703). This advocacy campaign resulted in a United Nations Children's Fund/World Health Organization (UNICEF/WHO) code on the marketing of formula milk in developing countries. If it is recommended that women in poor countries forego breast-

feeding, then programmes must be implemented to make certain that bottle-feeding does not increase the infant's risk of death.

### **2.3.5.1 The benefits of breast-feeding**

Good nutrition is important at any time of development, but is especially crucial in infancy because the baby's brain and body are growing so rapidly. Twenty-five percent of the infant's total caloric intake is devoted to growth and babies need extra calories to keep the rapidly developing organs of the body functioning properly. Babies not only need enough food. They need the right kind of food. If a baby's diet is deficient in either quantity or quality, growth can be permanently stunted (Berk, 2002:181). Because of the unique benefits of breast-feeding, breast-fed babies in poverty-stricken regions of the world are much less likely to be malnourished and 6-14 times more likely to survive the first year of life. In developing countries and war-torn areas where food resources are limited, malnutrition is widespread. Studies have shown that 40-60 percent of the children in the world do not get enough food (Berk, 2002:183).

Exclusive breast-feeding for six months provides the newborn with all the essential nutrients for health and growth and anti-infective properties not present in breast milk substitutes. For several decades we have known that artificially fed infants have much higher rates of morbidity and mortality than those who are breast-fed. Breast milk contains immunoglobulins, phagocytes, T-lymphocytes, enzymes such as lysozymes, and many other factors, which help protect the infant against infections, including cells, antibodies, hormones and other important constituents not present in infant formula (Latham, 1999:1303).

The literature suggests that exclusive breast-feeding provides greater reduction in morbidity than partial breast-feeding. Breast-fed infants have a six-fold reduction in death due to infectious diseases in the first few months of life compared to children who were not breast-fed. It was found that breast-fed children had a lower mortality throughout the second year of life. However, protection diminished with the children's advancing age.

### 2.3.5.2. Dangers regarding breast milk substitutes

Non-breast-fed babies are at greater risk of death from other infections. An analysis by the World Health Organization has shown that infants who receive formula/replacement feeding have a two-fold increased risk of dying in the first six months of life (Black & Victora, 2002:1252; Dobson, 2002:1474; Latham, 2000:1657). Estimates of mortality rates in children younger than 5 years in 2000 attribute 13% of deaths to diarrhoea, 19% to pneumonia, 9% to malaria, 5% to measles, 3% to AIDS, 42% to neonatal causes (birth asphyxia, low birth weight and disorders arising in the perinatal period), and 9% to miscellaneous other causes, including non-communicable diseases and injury (Black, Morris & Bryce, 2003:2226). In terms of serious mortality, the disadvantages of artificial feeding increase the risk in poor households with inadequate sanitation, unsafe and scarce water supplies, no refrigeration, poor health services and little knowledge of hygiene (Latham, 2000:1658; Royal College of Midwives, 2002:11). Frankle & Owen (1993:136) indicate some health problems and related nutritional risk factors of infant feeding in Table 2.2

Table 2.2 Health problems and related nutritional risk factors of infant feeding

Health problem	Related nutritional risk factors
Growth retardation, underweight	Dietary inadequacies
Dental caries	Baby bottle tooth decay
Iron deficiency anaemia	Malnutrition, inadequate dietary iron intake
Infection	Malnutrition
Obesity	Caloric consumption exceeds caloric need
Constipation	Low fibre intake

The WHO did a pooled analysis and six studies regarding the risk of infant and childhood mortality according to feeding practices. They found that acute respiratory infection or diarrhoea was the leading cause of death from infectious diseases (Victora & Barros, 2000:451). The protection against mortality provided by breast milk tended to decline with age. In the first six months of life, protection against diarrhoea was substantially greater than against acute respiratory infections, but at 6-11 months of age, similar levels of protection were observed against both causes of death, respectively. Whereas protection against diarrhoea declined markedly with age, protection against acute respiratory infections was constant.

### **2.3.6. Acute respiratory infection**

Respiratory infections can be of the upper or lower respiratory tract. Upper respiratory tract infections include the common cold, laryngitis, pharyngitis, rhinitis, sinusitis and tonsillitis. Lower respiratory tract infections include bronchitis, bronchiolitis, pneumonia and tracheitis (Anderson; Anderson & Glaze 1998:1410).

#### **2.3.6.1. The common cold**

The common cold is an acute self-limited catarrhal syndrome limited to the mucosal membranes of the upper respiratory tract. The common cold accounts for up to three fourths of all illnesses in young infants and up to one half of illnesses in adults. After an incubation period of 24 to 72 hours, usually a sore or scratchy throat develops, which is followed by nasal obstruction, rhinorrhea, and sneezing. A green or yellow nasal discharge can be caused by neutrophils discoloration because of their natural myeloperoxidase activity. By the second and third days of the illness, rhinitis with nasal congestion replaces sore throat as major complaint. By the fourth and fifth day, nasal symptoms have usually decreased but in 30% of cases are replaced by cough or 'chest cold'. Risk factors for more severe disease include prematurity, infancy, crowded living conditions, malnutrition and the presence of chronic disease, including immunodeficiency disorders (Bryan, 2002:213).

#### **2.3.6.2 Laryngitis**

Acute laryngitis is manifested as hoarseness (Bryan, 2002:240). Speech and swallowing might be painful. Median duration of hoarseness is about three days, but can last eight days or longer in 25% of cases.

#### **2.3.6.3 Pharyngitis**

Viruses mostly cause acute pharyngitis (sore throat) as part of the common cold (Bryan, 2002:234). Up to 50% of cases in children are caused by group A  $\beta$ -hemolytic streptococci. Although usually self-limited, streptococcal pharyngitis demand respect as a cause of acute rheumatic fever and less common supportive complications.

#### **2.3.6.4 Rhinitis**

Allergic rhinitis can resemble the common cold with distinguishing points that include seasonal occurrence, a personal or family history of asthma, itchy eyes or palate, a watery nasal discharge (rather than the thick discharge of infection), and sneezing (Bryan, 2002:213).

#### **2.3.6.5 Sinusitis**

Sinusitis is usually caused by obstruction of the ostia, as from oedema, damage to ciliated epithelial cells and increased volume or viscosity of the mucus secretions (Bryan, 2002:224). Children with sinusitis can have either of two presentations. The most common presentation consists of persistent cold symptoms – that is, symptoms lasting more than ten days. Children with persistent sinusitis seldom complain of headache or facial pain. The less common presentation consists of severe cold symptoms – that is, cold symptoms accompanied by high fever ( $\geq 39$  °C) and purulent nasal discharge.

#### **2.3.6.6 Acute Bronchitis**

Acute Bronchitis (chest cold) is an infection of the tracheobronchial mucosa causes local inflammation, increased secretion of mucus and damage to ciliary cells (Bryan, 2002:245). Symptoms result both from the inflammatory response and from the interruption of mucociliary blanket, which normally cleanses the lower respiratory tract. The incidence of acute bronchitis is highest in children under five years. The onset is typically preceded by a prodrome of at least 24 hours with symptoms of coryza and pharyngitis. A dry cough, signifying early inflammation of the upper airway, often evolves into a cough productive of moderate amounts of mucopurulent sputum. Fever, headache, myalgias and retrosternal chest pain or discomfort may be present. Viral etiology resolves within two weeks in 75% of cases. There is some evidence that recurrent attacks of acute bronchitis contribute to the pathogenesis of chronic obstructive pulmonary disease.



### **2.3.6.7 Bronchiolitis**

Bronchiolitis (wheezy bronchitis/asthmatic bronchitis), a common disease of early childhood, is characterized by wheezing (Bryan, 2002:250). The diagnosis is usually based on clinical findings and observations of the self-limited course, with improvement beginning between the third and seventh days of illness.

### **2.3.6.8 Pneumonia**

Pneumonia is an acute infection of the lung parenchyma confirmed by the presence of an infiltrate, detected on a chest radiograph or by physical examination (Bryan, 2002:252). It is the sixth most common cause of death and the most common infectious cause of death. Attack rates are highest at the extremes of life: under 5 years or over 65 years of age. Classic bacterial pneumonia begins with sudden onset of fever, chills, pleuritic chest pain and productive cough. The respiratory rate is usually increased. Physical examination often reveals signs of consolidation such as dullness to percussion, pectoriloquy and egophony. Atypical pneumonia, in contrast, usually begins gradually. Constitutional symptoms are usually more prominent than pulmonary symptoms. Chest pain is experienced as substernal discomfort. Cough is non-productive or produces only scanty amounts of sputum. Relative bradycardia is frequently present. The trachea may be tender, but lung fields are essentially clear on auscultation.

### **2.3.7 Diarrhoea**

Infectious diarrhoea is the second most common cause of death worldwide and the leading cause of death in early childhood (Bryan, 2002:282).

Diarrhoea is assessed, not so much by the number of stools passed, as by their character and volume. The normal stools of the infant may be firm and formed, or it may be thin. A change from his customary type to a liquid stool indicates diarrhoea (Pipes, 1981:221). The stool may be entirely fluid or it may consist of a semi-solid part and a liquid part, which has soaked into the nappy. The colour of the stool is unimportant (Walker-Smith, 1981:222).

Bryan (2002:284) warrants that diarrhoea of medical importance is with;

- high fever (38.5 °C),
- profuse watery diarrhoea with severe volume depletion,
- bloody diarrhoea,
- dysentery syndrome (small-volume stools with blood and mucus),
- duration more than three days, and
- immuno-compromised state.

Acute gastroenteritis is the clinical syndrome of diarrhoea and/or vomiting of acute onset. It is often accompanied by fever and constitutional disturbances, which is of infective origin and is not secondary to some primary disease process outside the alimentary tract.

Dehydration follows bouts of diarrhoea. It is essential that the mother, of a young infant, should be taught to recognize the signs of dehydration. Walker-Smith (1981:223) summarised the signs of dehydration in Table 2.3

Table 2.3 Signs of dehydration (Walker-Smith, 1981:223)

2-3% dehydration	Thirst, mild oliguria
5% dehydration	Discernible alteration in skin tone, slightly sunken eyes, some loss of intra-ocular tension, thirst, oliguria and sunken fontanel.
7-8% dehydration	Very obvious loss of skin tone and tissue turgor, sunken eyes, loss of intra-ocular tension, marked thirst and oliguria. Often some restlessness or apathy.
10% dehydration (and over)	All the foregoing, plus peripheral vaso-constriction, hypotension, cyanosis, and sometimes hyperpyrexia. Thirst may be lost at this stage.

### **2.3.8 Weaning**

To wean is to cease to suckle or to detach from some accustomed pursuit or enjoyment (Walker-Smith, 1981:167). In infant feeding, the verb is used as weaning from the breast, whether to bottle-feed or as weaning from the bottle to the cup or to accustom to taking sieved foods as addition to milk, whether coming from the bottle or the breast.

Weaning can be gradual or rapid. Gradual weaning means the process is spread over time, it is started about a month before weaning is planned to be completed. Rapid weaning in turn is the rapid weaning of breast-feeding.

Weaning can also be the introduction of solids. It normally coincides with cutting of teeth and the child sitting up. Solids are firstly introduced as a sloppy gruel along with milk and then progressively given to the child in a more solid consistency as it gets older, finally replacing milk altogether, when weaning is complete. There can be adverse effects from the introduction of solids into the diet at too early an age. Apart from risks of development of allergy in the newly born, early weaning can lead to the intake of too much energy and therefore result in obesity, or the semi-solid food prepared from starchy staples is so low in energy density that it may fill up the baby, reducing demand for milk and leading to protein-energy malnutrition. Traditionally weaning foods may be only one third of the energy density of human milk (Walker, 1990:71).

Weaning is a very vulnerable time in human life. It is known in the Third World that the incidence of diarrhoea in infants is low while the child is being breast-fed, but during weaning it is common. There is high infant mortality due to this. Infantile diarrhoea is due to the use of non-potable water being used to prepare the starchy gruel for the child. The combination of the low energy density of the traditional starchy weaning food and diarrhoea can easily precipitate malnutrition.

## **2.4 KNOWLEDGE, ATTITUDE AND BEHAVIOUR**

### **2.4.1 Decision-making**

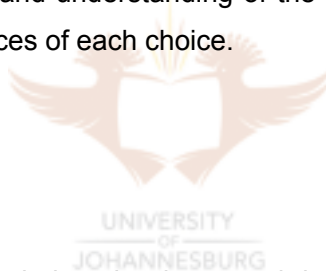
Decision-making is traditionally presented as a rational, linear process. Egan (1990:261) summarized Gelatt's three parts of decision-making as information gathering, analysis and choice.

### **2.4.1.1 Information gathering**

The first part is getting information that relates to the particular issue or concern. A mother who must decide on infant feeding options needs essential information. Which options are available? What is best for my baby? And so forth. There is a whole range of ways in which she can gather this information like talking to counsellors, clinic staff, reading and talking to her friends.

### **2.4.1.2 Analysis**

The next step is processing the information, or, in Gelatt's terms, "arranging and rearranging." This includes analysing, thinking about, working with, discussing, meditating on, and immersing oneself in the information. Just as there are different ways of gathering information, so there are many different ways of processing it. Effective information processing leads to clarification and understanding of the range of possible choices and an understanding of the consequences of each choice.



### **2.4.1.3 Making a choice**

The mother must finally make a choice, that is, commit herself to some internal or external action that is based on her analysis ("After thinking about it, I have decided to bottlefeed my baby"). Egan (1990:262) talks about March's "decision rules" – decision makers have rules by which to select a single alternative of action on the basis of its consequences. In rational decision-making, the choice is often described in terms of a scale or balance. If the evidence points towards a particular option, that is the option to be chosen. According to Gelatt's "process, part of arranging and rearranging, which takes place in the mother's mind, is ... the crucial part for counsellors/sisters", as they can also help the mothers to get the right information (knowledge) as effectively as possible. The mother, however, can also be helped to get the right information, to make her own choice based on analysis and move into action.

## 2.4.2 Attitude and behaviour

An important aspect of attitude is its link to decision-making and behaviour. Attitudes make it possible to access relevant information and related attitudes quickly, because they provide important links between information held in the memory. Attitudes enable people to make decisions very quickly, because they provide information to make choices. The links to behaviour are somewhat more tenuous.

Taylor, Peplau and Sears (2000:133) give a very simple definition of attitude which is often used by psychologists. They say, "attitudes involve the categorization of a stimulus along an evaluative dimension, based on affective, behavioral, and cognitive information". The affective component consists of all the person's emotions and affects towards the object, especially positive or negative evaluations. The behavioural component consists of how the person tends to act regarding the object. The cognitive component consists of the thought that the person has about that particular object, including facts, knowledge and beliefs. These three components of attitude are not always closely related to each other and so it is important to consider all three aspects.

It was originally simply assumed that people's attitudes determine their behaviour. Yet in many instances behaviour does not follow from attitudes. There is, however, variation across situations in precisely how consistent the relation between attitude and behaviour is.

The conditions that yield greater or lesser degrees of consistency between attitudes and behaviour appears to be:

- Strength of the attitude. Anything that contributes to a strong attitude also tends to increase attitude-behaviour consistency. One contributing factor is the amount of information we have about the attitude object. Another factor that strengthens attitudes is rehearsing and practicing them. Attitude-behaviour consistency is greater when people think about and express their attitudes, presumably because this helps to strengthen the attitude. Having direct personal experience with an issue encourages us to think and talk about it more than if the issue is remote to us. It follows that attitude-behaviour consistency is greater when we have direct experience with the attitude object rather than when we only hear about it from someone or read about it. Another source of attitude strength comes from having some vested or selfish interest in the issue. A concept closely related to attitude-strength is importance. Important attitudes are ones that reflect fundamental values,

self-interest, and/or identification with individuals or groups that the individual values. Such attitudes are highly resistant to persuasions and also show a strong relationship to behaviour.

- **Stability of the attitude.** Stable attitudes that are easily remembered are more likely to predict behaviour than attitudes that are less stable and not accessible in the memory. When people's attitudes are unstable, their current attitudes predict behaviour more than the attitudes they held some time ago. Therefore, consistency between attitudes and behaviour is at a maximum when they are measured at about the same time. Longer time intervals diminish the attitude-behaviour correlation because attitudes change.
- **Accessibility of the attitude.** Attitudes that are more accessible in memory influence behaviour more strongly. A primary factor that determines whether an attitude is accessible in memory is how frequently it is expressed. Attitudes also become more extreme when they are expressed more frequently. Easily accessible attitudes also come to be viewed as important.
- **Relevance of attitudes to behaviour.** When attitudes are relevant to behaviour, the two are more closely related. In general, behaviour tends to be more consistent with attitudes that are specifically relevant to it than with general attitudes that apply to a much larger class of potential behaviours.
- **Salience of the attitude.** In most situations, several different attitudes may be relevant to behaviour. An important determinant of consistency of behaviour with a particular attitude is the salience of the attitude in question. Salience is particularly crucial when the attitude is not a very strong one. When an attitude is strongly held, it presumably, does not have to be brought forcefully to the person's attention to be strongly related to behaviour. Making the affective component of the attitude (i.e. the feelings the attitude issue prompts) more salient increases the influence of the affective component over behaviour, whereas making the cognitive component (i.e. the beliefs one holds about the attitude object) more salient makes the cognitive component the stronger determinant of behaviour. However, when the cognitive and affective components of an attitude are consistent with each other, it does not matter which is made salient. Both will be highly correlated with the behaviour when either is made salient.

- Situational pressure. When situational pressures are strong, attitudes do not determine behaviour as strongly as when such pressures are relatively weak (Taylor, Peplau & Sears, 2000:162-166).

### 2.4.3 The reasoned action model

Perhaps the most influential effort to generate and test a general theory of attitude-behaviour links, is Fishbein and Ajzen's theory of reasoned action (Taylor, Peplau & Sears, 2000:166; Burns and Grove, 1997:170). This theory is an attempt to specify the factors that determine attitude-behaviour consistency. It begins with the assumption that we behave in accordance with our conscious intentions, which are based in turn on our rational calculations about the potential effects of our behaviour and how other people will feel about it.

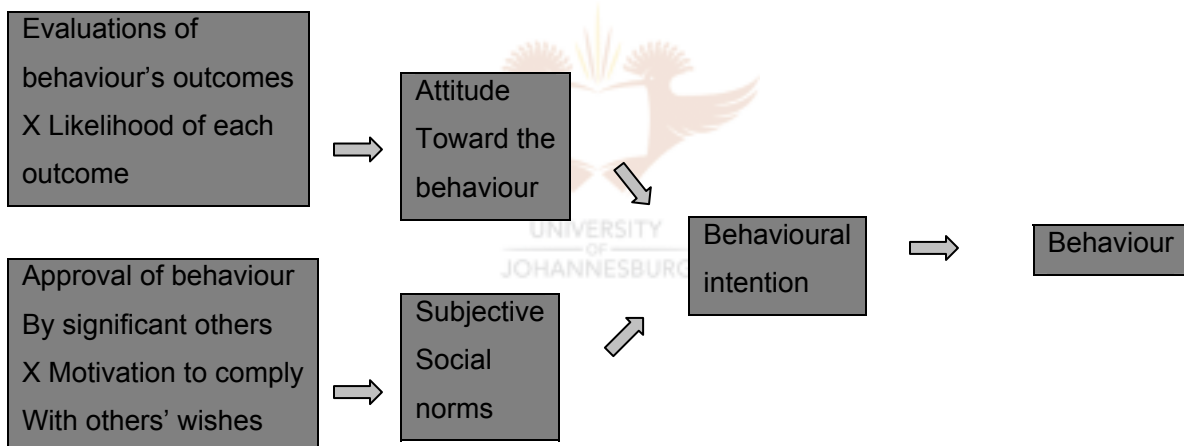


Figure 2.1 The Reasoned Action Model of factors that determine a person's behaviour

The central point of the theory of reasoned action is that a person's behaviour can be predicted from behavioural intentions. Behavioural intentions can themselves be predicted from two main variables: the person's attitude towards the behaviour (informed practice decided on) and subjective social norms (her perception of what others think she should do: Does her partner want her to? What about the clinic sister? Her mother?).

A person's attitude towards his or her own behaviour is predicted using the expectancy-value framework. The desirability of each possible outcome is weighed by likelihood of that

outcome (for example, avoiding transmission of HIV to her child is extremely important to the women and bottle-feeding/exclusive breast-feeding is an effective way to minimize MTCT, although she stands the chance of revealing her HIV status, etc.).

Subjective social norms are predicted by the perceived expectations of significant others weighed by the motivation to conform to those expectations (for example, her husband may strongly want her to breast-feed and she wants to please him, the personnel at the hospital/clinic advise her to bottle-feed, but they do not provide her with shelter or safety so she cannot go against her husband's wishes).





## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 INTRODUCTION

In the previous chapter, an in-depth literature study was done on mother to child transmission, infant feeding and decision-making, behaviour and attitudes. In this chapter the research methodology that was used will be discussed, including the research design, population and sampling, data analysis, data collection, validity and reliability. Ethical aspects of the research will follow.

#### 3.2 RESEARCH DESIGN

A quantitative descriptive design (simple survey) was used to describe the knowledge and attitude towards infant feeding of women with HIV infection that was observed at a dietary clinic for follow-up (Brink, 1996:108 -109).

A descriptive study was chosen as it is designed to gain more information about characteristics within a particular field of study (Burns & Grove, 1993:292), with the purpose to provide a picture of situations as they naturally happen. The research problem, in this study, does not lend itself to an experimental or quasi-experimental design, that is, human characteristics and attitudes are inherently not subject to experimental manipulation, it would also not be ethical to manipulate the respondent's knowledge (Pilot & Hungler, 1995:175) by providing one group of pregnant women with more knowledge than another.

Survey designs are concerned with gathering information from a segment of the population. Simple descriptive survey design involves describing the world as it currently exists, in order to provide as complete a description as possible. The researcher identifies the variables of interest and ascertains the frequency of occurrence but this cannot be used to infer causality or the extent of the relationship between variables (Talbot, 1995:229, 230).

### **3.3 POPULATION AND SAMPLING**

The population (target population) is the entire set of individuals who meet the sampling criteria. The accessible population is the portion of the target population that conforms to the designated criteria to which the researcher has reasonable access (Polit & Hungler, 1995:229,230; Burns & Grove, 1995:224; Burns & Grove, 1993:776).

Sampling criteria are the characteristics essential for inclusion in the target population (Burns & Grove, 1995:225). The sampling criteria for this study are; the HIV-positive mothers who had their babies at a provincial hospital (Dr Yusuf Dadoo hospital) that operates a PMTC program and that provides these mothers with free commercial formula. The accessible population is the HIV-positive mothers who are being followed up and provided with free commercial formula at the Dr Yusuf Dadoo hospital's dietary clinic during the study.

Non-probability samples are particularly useful with patients when the total population is unknown or is not available or there are ethical constraints (Brink & Wood, 1994:135; Talbot, 1995:258). Convenience sampling will be used as it entails the use of the most conveniently available people for use as subjects in a study (Polit & Hungler, 1995:232). Data will be collected for four weeks from mothers who attend the once a week dietary clinic. The mothers attend once every four weeks. All the mothers attending the clinic during that time at that interval will thus be seen without duplication. Convenience sampling is the weakest form of sampling as the risk of bias is greater than any other sampling and it makes generalization difficult (Wood & Harber, 1994:373). In cases like this, where the phenomena under investigation are fairly homogeneous within the population, the risk of bias is minimal (Polit & Hungler, 1995:232).

### **3.4 DATA COLLECTION**

Data can be collected by self-reporting. Semi-structured interviews were chosen, as the majority of respondents were perceived illiterate. They are also useful in the study of sensitive topics and to increase response rates (Parahoo, 1997:293). A trained fieldworker was used since few of the respondents are able to give accurate answers in English.

In semi-structured (also called semi-standardised) interviews, respondents are all asked the same questions, but there is flexibility in the phrasing and order of the questions (Parahoo,

1997:293). The researcher is in control of the content and the purpose of the interview, with the opportunity to change the words but not the meaning of questions. It acknowledges that not every word has the same meaning to every respondent and not every respondent uses the same vocabulary.

The tool of data collection in semi-structured interviews is called an interview schedule. It is in fact a questionnaire that consists of a list of pre-formulated questions, which can be neither omitted nor added to.

An interview schedule was drawn up based on a questionnaire published by the World Health Organization ([www.who.int/reproductive health/publications/RHR\\_01\\_12/RHR\\_01\\_12-chap6.en.html](http://www.who.int/reproductive_health/publications/RHR_01_12/RHR_01_12-chap6.en.html)). The World Health Organization developed a tool to standardise the core information that needs to be collected and ensure comparability between studies. Questions from the World Health Organization's questionnaire were integrated into an interview schedule according to the specific design of the study. The interview schedule consist of questions regarding demographic data, housing, finances, obstetrical history, the baby, preparation of milk and the health of the baby. The number and types of questions are the same for all respondents, although the actual wording may be varied to ensure that the respondent understands the question (Parahoo, 1997:293-295). The semi-structured interviews will have a mixture of closed and open-ended questions. The use of closed questions ensures a high degree of standardisation since all the responses fall within the categories offered by the researcher.

A fieldworker was trained to collect data to enhance reliability and validity. The fieldworker is a HIV peer educator in Zandspruit (a nearby squatter camp). She is of the same background as the respondents and would be less threatening to respondents than the researcher and would be able to interpret aspects of the interview to respondents in their own language. The researcher was, however, available to answer questions the fieldworker might have had. The respondent had to give informed consent and data is viewed as confidential.

The interview schedule was refined by administering it to a small group of people with characteristics similar to those of the intended respondents. The pilot site was the antenatal clinic in Zandspruit. The interview schedule was 'piloted' to ensure that the respondents understood the questions, that the format of the questions were suitable for the population and that the questions were relevant. It also revealed that the length of the questionnaire

and its structure did not affect responses and procedure for recording responses (Parahoo, 1997:275; Burns & Grove, 1993:366).

Interviews were held in an office of the dietician clinic at Dr Yusuf Dado. The venue were private, comfortable chairs were available, the room was warm and the respondent was alone with the fieldworker.

### 3.5 DATA ANALYSIS

Information obtained by the completed questionnaires was coded and analysed by STATCON of the Rand Afrikaans University. Descriptive statistics were used which include the frequency distributions and frequency count, simple descriptive statistics, measurement of central tendency and measurement of description of variability (Brink, 1996:178-180).

### 3.6 VALIDITY AND RELIABILITY

**Validity** according to Babbie and Mouton (2002:648) is a term that describes a measure that accurately reflects the concept it is intended to measure. There are different types of validity.

Design validity according to Burns & Grove (1993:782) is the strength of a design to produce accurate results which is determined by examining statistical conclusion validity, internal validity, construct validity and external validity.

*Statistical conclusion validity* is concerned with whether the conclusions about relationships or differences drawn from statistical analyses are an accurate reflection of the real world (Burns & Grove, 1995:169). In this study it was enhanced by:

- basing the interview schedule on a questionnaire published by the World Health Organization,
- using the same list of questions for all the respondents, and
- using closed questions to ensure a high degree of standardisation since all the responses fall within the categories offered by the researcher.

*Internal validity* is the extent to which the effects detected in the study are a true reflection of reality rather than the result of the effects of extraneous variables (Burns & Grove, 1995:169). In this study, it was ensured in:

- that maturation will not take place as the data collection will only stretch over four weeks, and
- through not using pre-testing on the same group.

*Construct validity* examines the fit between the conceptual definitions and operational definitions of variables (Burns & Grove, 1995:173). In this study, it was enhanced in that:

- a fieldworker was trained to collect data,
- a pilot study was done,
- the researcher was in control of the content and the purpose of the interview (Parahoo, 1997:297), and
- claims were based on a literature review of recent literature.

*External validity* is concerned with the extent to which study findings can be generalized beyond the sample used in the study (Burns & Grove, 1995:173). In this study, it was enhanced by:

- choosing semi-structured interviews as it increases response rates (Parahoo, 1997:293), and
- the phenomena under investigation are fairly homogeneous within the population.

Instrumental validity according to Burns & Grove (1993:782) determines the extent to which the instrument actually reflects the abstract construct being examined. This was achieved in that:

- the interview schedule was based on a questionnaire published by the World Health Organization,
- experts in the field of midwifery and HIV/AIDS were consulted,
- a pilot study was done to refine the interview schedule,
- a fieldworker was trained to collect data,
- respondents was assisted to understand the questions and interviewers could ask for clarifications and probe for further responses, if necessary (Parahoo, 1997:293), and
- the fieldworker could clarify the questions and seek clarification from respondents (Parahoo, 1997:296).

**Reliability** is that quality of measurement method that suggests that the same data would have been collected each time in repeated observations of the same phenomena (Babbie & Mouton, 2002:646).

Reliability demands consistency over time. In a sense, reliability refers to the fact that different research participants being tested by the same instrument at different times should respond identically to the instrument (Mouton, 1996:144).

The researcher's responsibility is to attempt to control random variables, which may influence the characteristic being measured, and the measurement process as much as possible (Uys & Basson, 2000:76).

The process must be consistent, reasonably stable over time and across researchers (Brink, 2001:124). Reliability of research workers can be secured through the use of clarity, specificity, training and practice (Babbie & Mouton, 2002:122).

Reliability was assured by:

- The interview schedule:
  - The same list of questions was used for all the respondents.
  - Respondents were all asked the same questions, but there was flexibility in the phrasing and order of the questions.
  - Attempts were made to maintain the same degree of objectivity.
- Use of a fieldworker:
  - Fieldworker is non-medical staff and will not be biased in making assumptions about the respondents' replies.
  - Fieldworker was properly trained with regards to the concepts used in the research.
  - Fieldworker share many characteristics of the sample, such as gender, socio-economic background and language.
  - Researcher was available for questions from field worker during interviews.
- Attempt to control random variables:
  - Interview was short and to the point.
  - Well-lit room with comfortable furniture was used.
  - Respondents were questioned while waiting for the dietician.

### 3.7 ETHICAL ASPECTS OF THE RESEARCH

Focus was on;

- a) protecting the respondents' human rights,
- b) balancing benefits and risks of study,
- c) obtaining of informed consent, and
- d) obtaining permission from ethical committees.



## CHAPTER 4

### DATA ANALYSIS

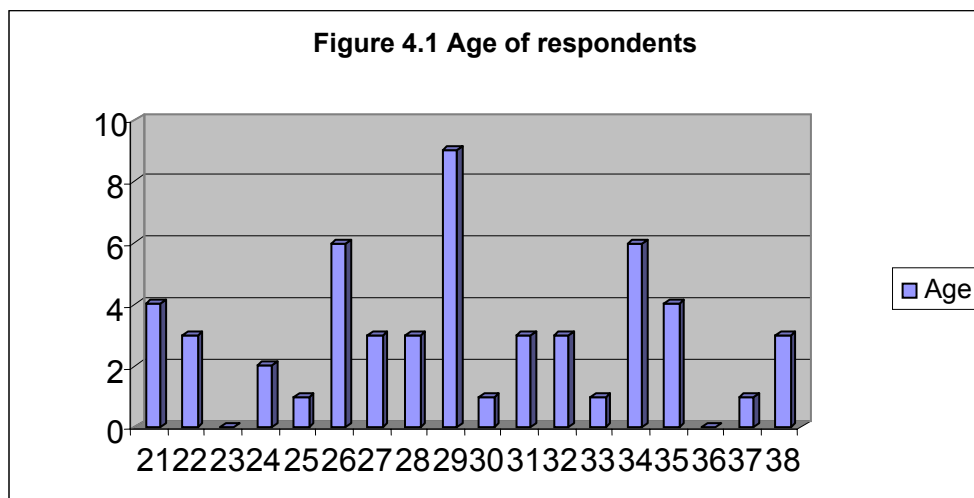
#### 4.1 INTRODUCTION

The results of the data obtained will be presented in this chapter. The aim of this analysis was to determine the knowledge of and attitudes of HIV-positive women regarding infant feeding practices. Data was obtained through an interview schedule. Fifty-three HIV-positive mothers gave consent and participated in the study. Analysis was done by STATCON of the Rand Afrikaans University. Descriptive statistics was used. This includes frequency distributions and frequency count, simple descriptive statistics, measurement of central tendency and measurement of description of variability

#### 4.2 PROFILE OF RESPONDENTS

##### 4.2.1 The age of the respondents

The respondents' age varied from 21 to 38, with the mean of 29.283 (Figure 4.1). This is a relatively older group than might be expected as the childbearing age starts at 15. A criterion of the study was that the respondents had to be older than 18, but no mothers younger than 21 visited the clinic during the study.





#### 4.2.2 Respondents' current marital status

Forty (75.5%) of the respondents indicated that they were single, two (3.8%) engaged, five (9.4%) married (traditional) and six (11.3%) married by law (Figure 4.2).

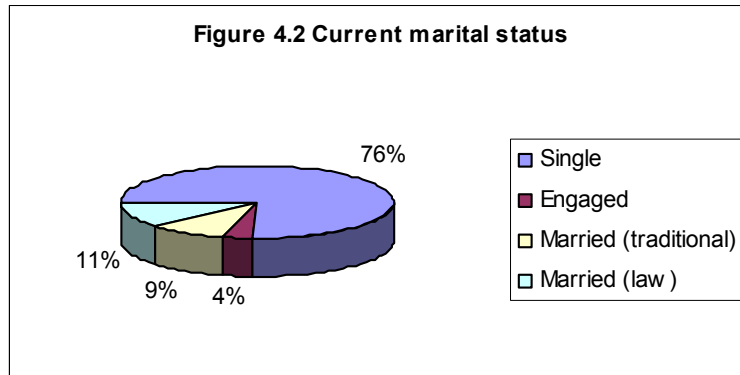
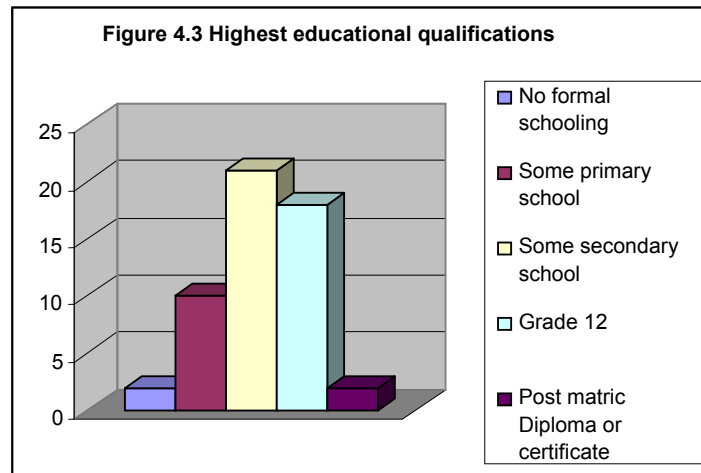


Figure 4.14, however, reflects that 60.4% of the respondents indicated that they lived with their husband/partner/boyfriend. The majority of respondents therefore have support from the baby's 'father'.

#### 4.2.3 Highest educational qualification

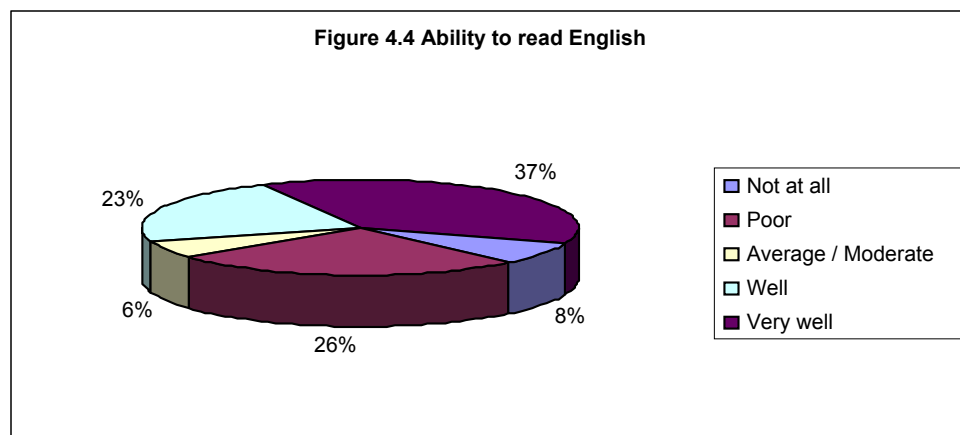
Although the researcher perceived the population as illiterate only two (3.8%) of the respondents had no formal schooling and were able to write their names. Ten (18.9%) of the respondents had some primary schooling, twenty-one (39.6%) had some secondary schooling, eighteen (34%) obtained grade 12 and only two (3.8%) had tertiary education (Figure 4.3). The mother's educational level plays a role in education regarding infant feeding, as she will be able to read the instructions on the container.



22.6% of the respondents had no/only some primary schooling and may need help reading instructions on infant feeding/care. They will have to be reached by other educational options rather than pamphlets/posters.

#### 4.2.4 Respondents' self-reported ability to read English.

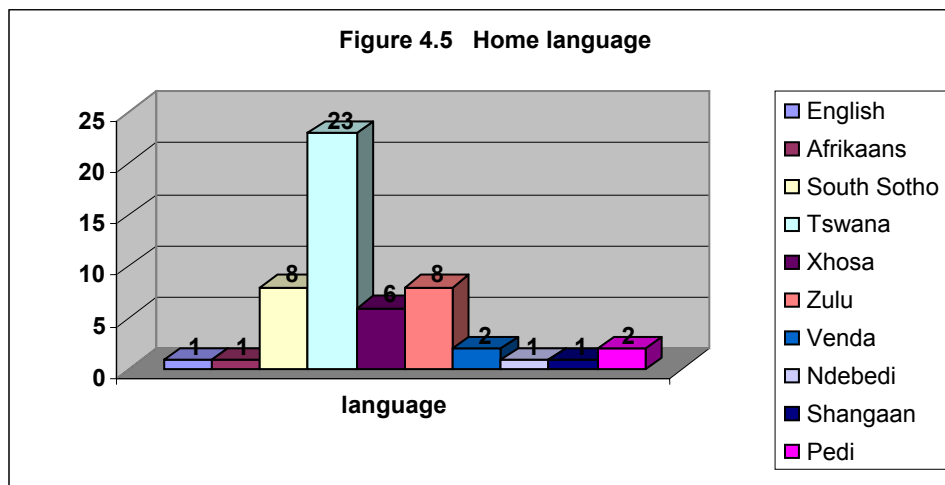
Eighteen (26.4%) of the respondents reported they could not read English at all or read it poorly. Three (5.7%) read English moderately, twelve (22.6%) well and twenty (37.7%) very well (Figure 4.4).



There should, therefore, be provided for other languages as well. NAN Pelagron container has instructions in English, Afrikaans and Zulu.

#### 4.2.5 Respondents' home language

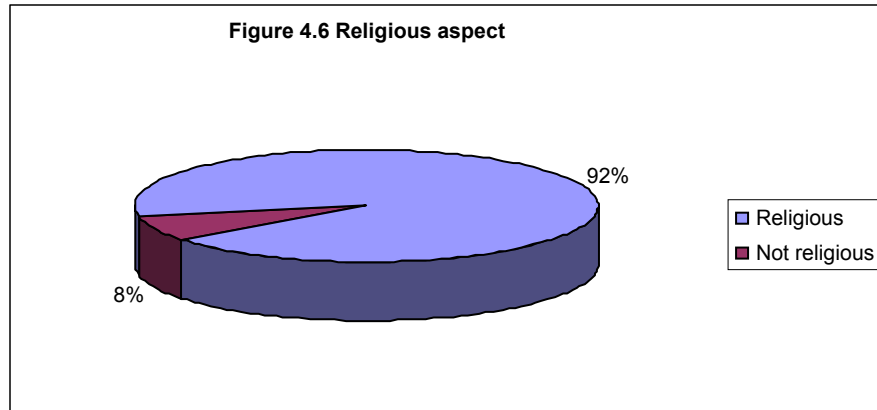
The respondents were asked which of the official languages they speak at home. The majority (n= 23; 43.4%) of respondents reported that they speak Tswana (Figure 4.5). Both Zulu and South Sotho languages had eight (15.1%) respondents. The home languages of the other respondents were Xhosa (n=6; 11.3%), Pedi (n=2; 3.8%), Venda (n=2; 3.8%), English (n=1; 1.9%), Afrikaans (n=1; 1.9%), Ndebedi (n=1; 1.9%) and Shangaan (n=1; 1.9%). This will be important in compiling a profile for culturally sensitive education.



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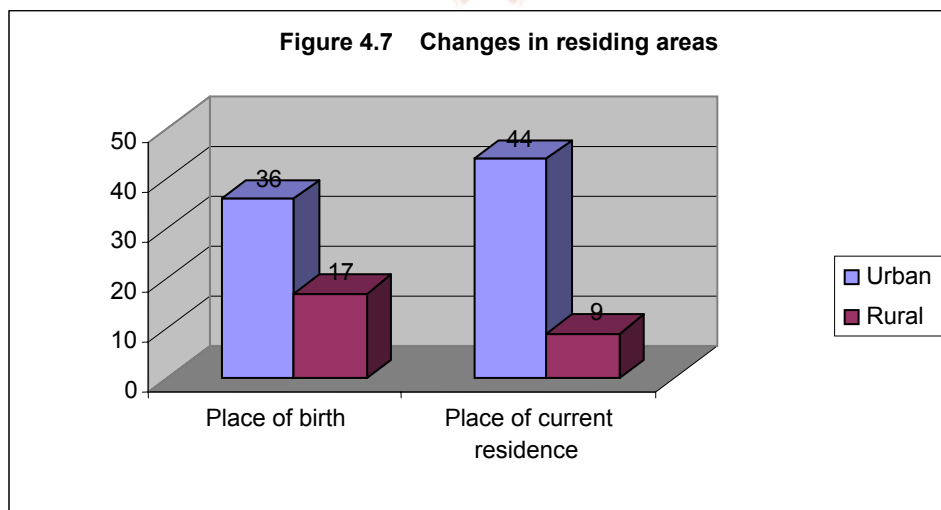
#### 4.2.6 Whether the respondents are religious or not.

Forty-nine (92.5%) of the respondents said they are religious (Figure 4.6). Religion plays a role in attitude, the way the mother sees the world and may influence her decision-making.



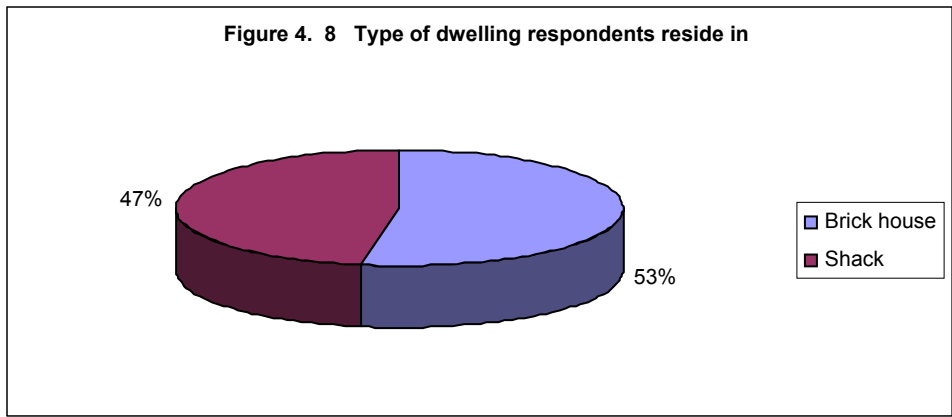
#### 4.2.7 Migration patterns

Thirty-six (67.9%) of the respondents were born in an urban area and seventeen (32.1%) in a rural area. Forty-four (83%) currently reside in an urban area and only nine (17%) in a rural area (Figure 4.7). There is thus a movement towards the urban areas where mothers will be confronted with new customs and probably have less support.



#### 4.2.8 Type of dwelling the respondent resides in.

Twenty-eight (52.8%) reside in a brick house and twenty-five (47.2%) in a shack (Figure 4.8). At least half of the respondents live in poor households.

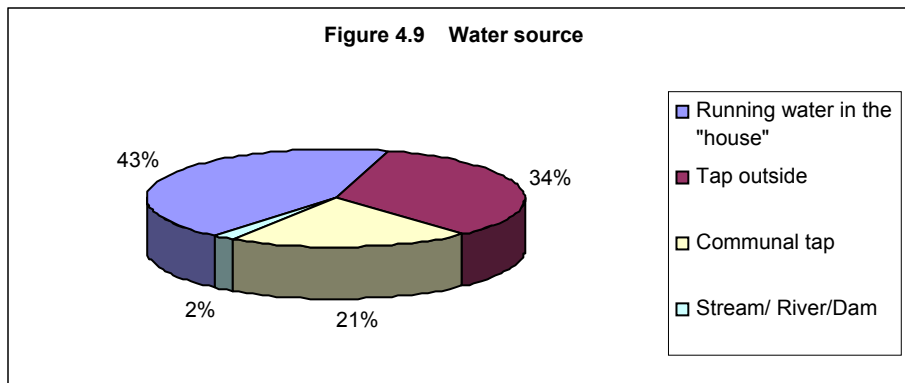


The risk of serious mortality and the disadvantages of artificial feeding are increased in poor households with inadequate sanitation, unsafe and scarce water supplies, no refrigeration, poor health services and little knowledge of hygiene (Latham, 2000:1658; Royal College of Midwives, 2002:11).



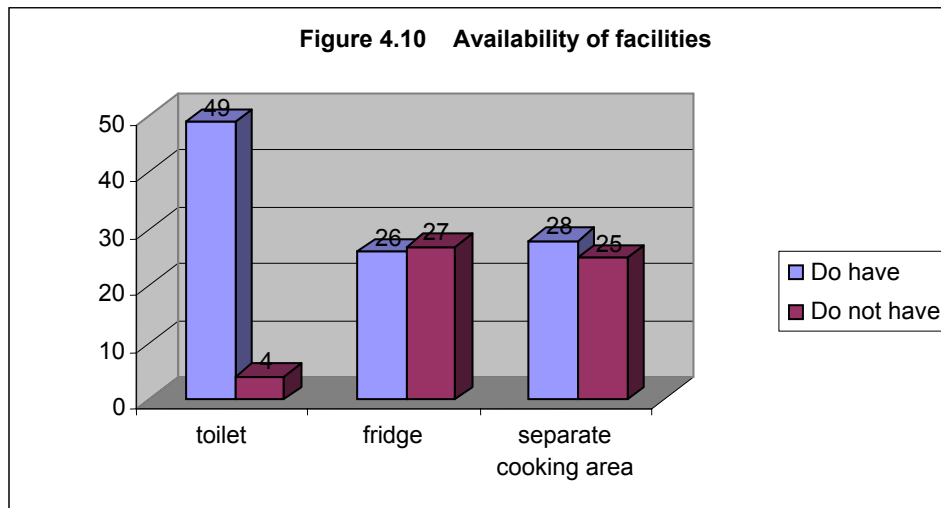
**4.2.9 Water supply**

A safe water supply is essential if artificial infant feeding is given to a baby. Twenty-three (43.4%) of the respondents have running water in their dwelling. Eighteen (34%) get water from a tap outside and eleven (20.8%) use a communal tap. Only one (1.9%) respondent uses water from a stream/river/dam (Figure 4.9).



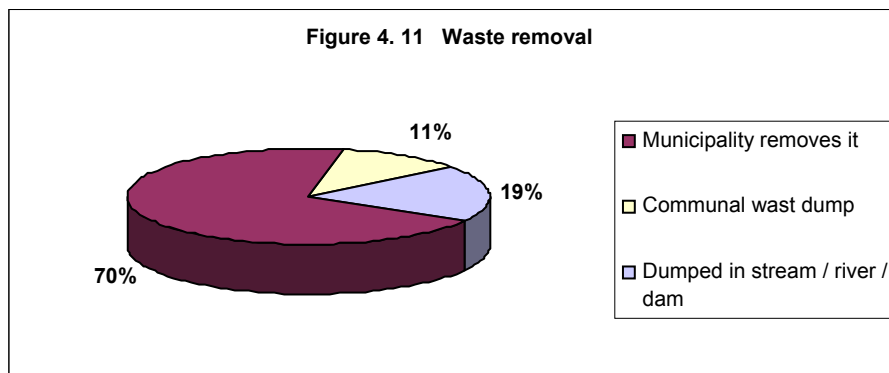
#### 4.2.10 Availability of facilities

Forty-nine (92.5%) of respondents have an available toilet, twenty-six (49.1%) have a fridge and twenty-eight (52.8%) have a separate cooking area (Figure 4.10). Most of the respondents have available sanitation, although the adequacy of this sanitation is unknown. Almost half of the respondents do not have access to refrigeration.



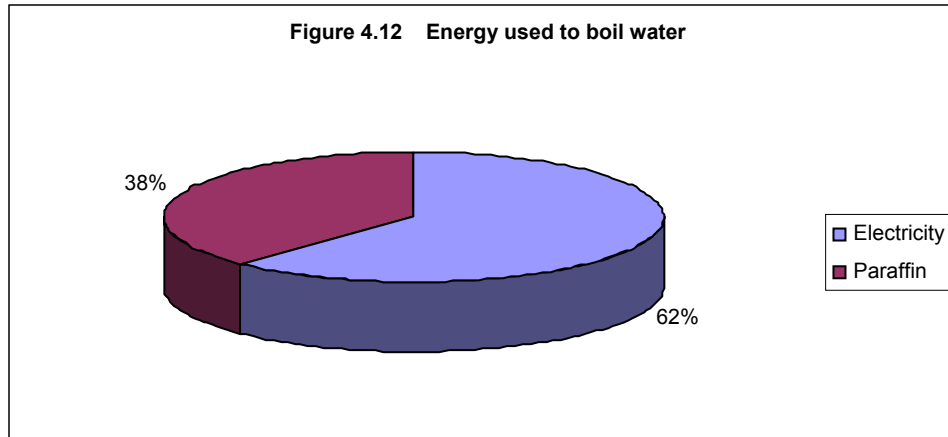
#### 4.2.11 Waste disposal

Thirty-three (69.8%) respondents reported that the municipality removes their waste, six (11.3%) reported that their waste goes to a communal waste dump. Ten (18.9%) of the respondents reported that their household waste is dumped in a stream/river/dam (Figure 4.11). Thirty percent of the respondents' waste disposal can lead to environmental pollution.



#### 4.2.12 Energy used to boil water

Thirty-three (62.3%) of the respondents use electricity to boil water while the other twenty (37.7%) still use paraffin to boil water (Figure 4.12).



#### 4.2.13 People living with the respondent in the same dwelling

Thirty-two (60.4%) of the respondents live in a household with 2-4 people, which include herself and the infant. Eighteen (34.0%) has 5-7 people in the dwelling, two (3.8%) has 8-10 and one (1.9%) reported that 11 or more people resided in their dwelling (Figure 4.13).

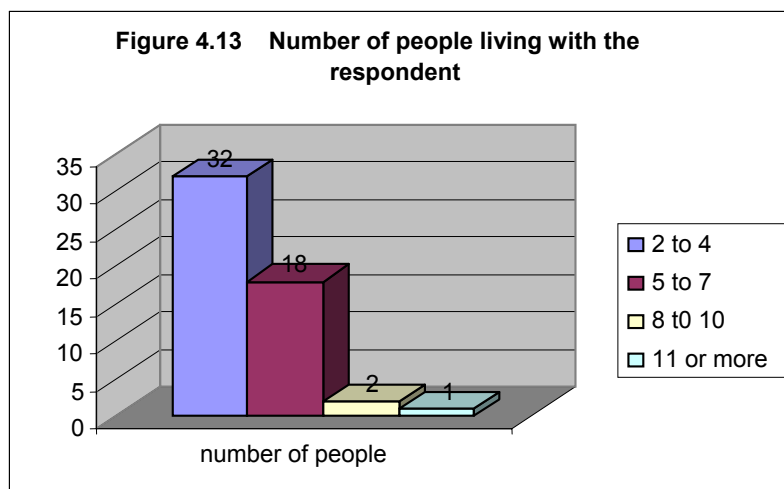
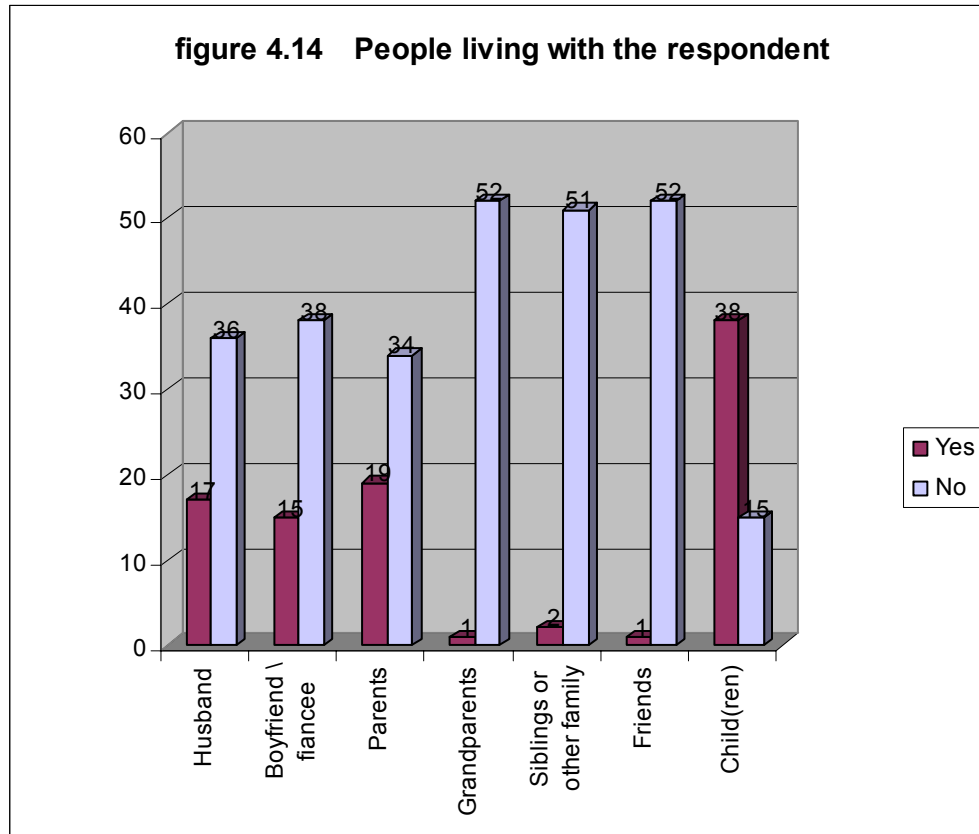


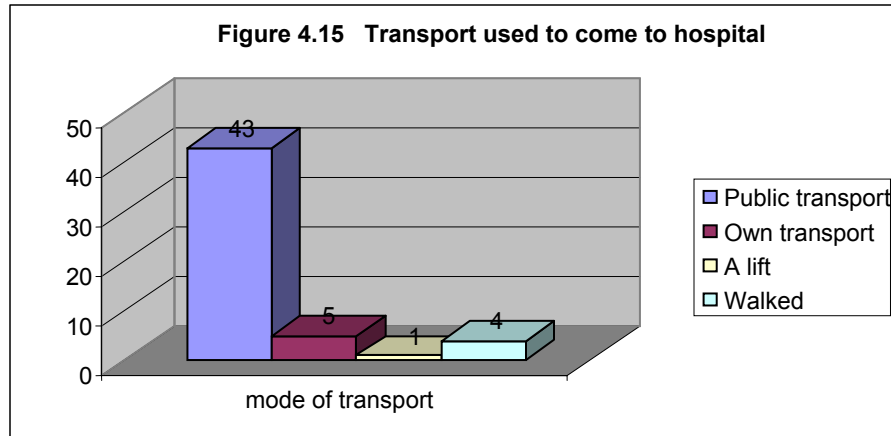
Figure 4.14 clarifies who the people living with the respondent are. It includes her husband (n=17; 32.1%), or her boyfriend/fiancé (n=15; 28.3%), her parents (n=19; 35.8%), her grandparents (n=1; 1.9%), siblings or other family (n=2; 3.8%), friends (n=1; 1.9%) and other children (n=38; 71.7%). 60.4% of the respondents live in a household with 2-4 people, this may indicate a more hygienic situation, in the absence of overcrowding. It may, however, indicate a loss of the traditional extended family structure in rural areas.



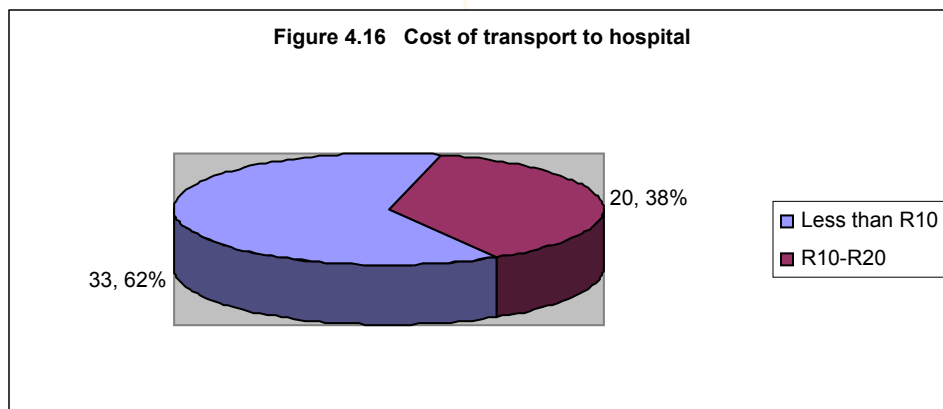
#### 4.2.14 Transport to the hospital

The majority (n=43; 81.1%) of the respondents uses public transport, five (9.4%) use their own transport, one (1.9%) got a lift and four (7.5%) of the respondents walked to the hospital (Figure 4.15).



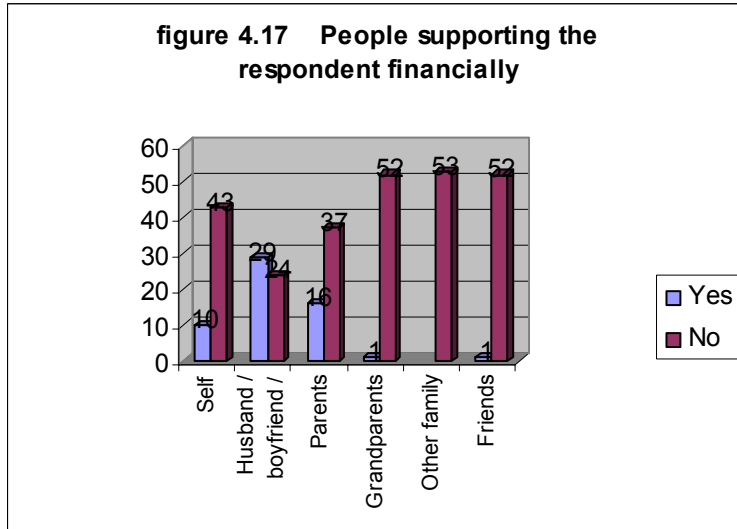


The cost of transport is summarised in Figure 4.16. Thirty-three (62.3%) of the respondents reported that it cost them less than R10 to travel to the hospital and twenty (37.7%) reported it cost them less than R20. Travel cost is an added expense to infant feeding.



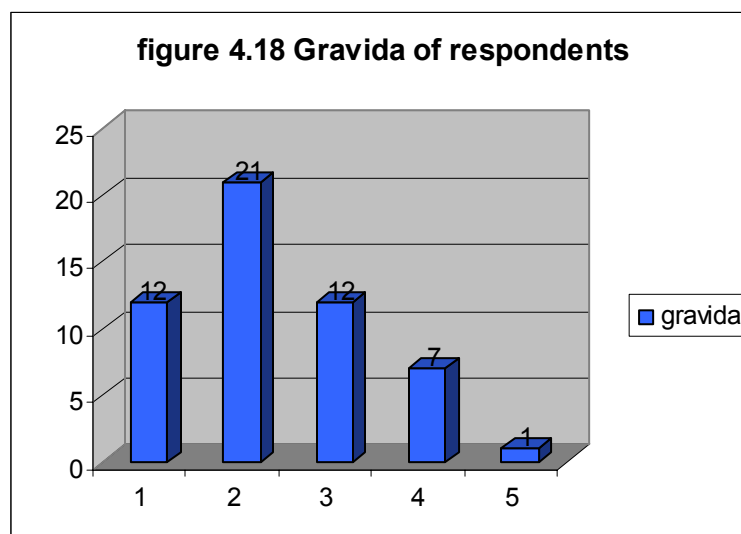
#### 4.2.15. Financial support

Ten (18.9%) of the respondents support themselves financially, twenty-nine (54.7%) are supported by their husband/boyfriend/fiancé, sixteen (30.2%) by their parents, one (1.9%) by her grandparents and one (1.9%) by friends (Figure 4.17). The person who provides for the family has an influence on how the respondent spends finances and so also indirectly on the feeding choice she makes.



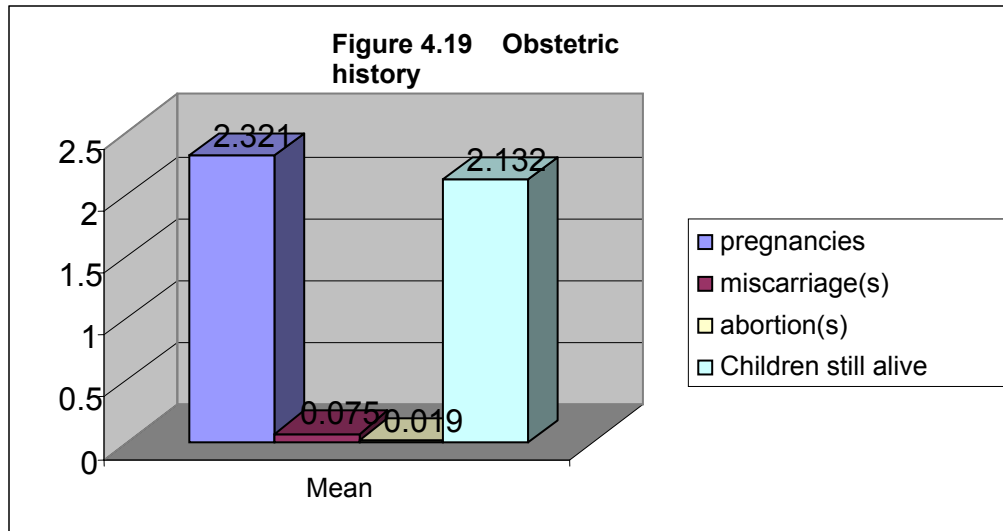
#### 4.2.16 Obstetric history

Twelve (22.6%) of the respondents were gravida 1, twenty-one (39.6%) gravida 2, twelve (22.6%) gravida 3, seven (13.2%) gravida 4 and one (1.9%) was gravida 5. The gravida ranged from one to five, with the mean of 2.321. As most of the respondents were not first-time mothers, previous feeding choices will influence her decisions.



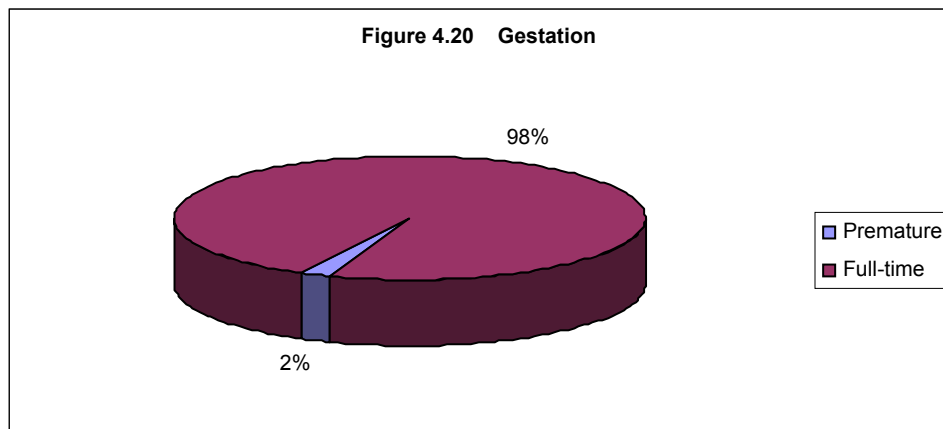
One respondent reported that she had had two miscarriages and two respondents reported having had one miscarriage, there was, therefore, a mean of .075 miscarriages. One

respondent reported to have had an abortion. The mean was .019 for abortions (Figure 4.18). No stillbirths were reported. The mean Para was found to be 2.132.



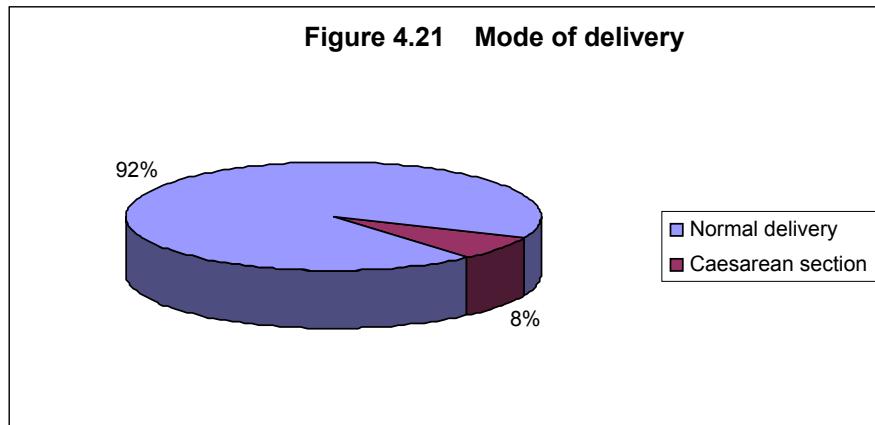
#### 4.2.17 Gestation at birth

The majority (n=52; 98.1%) of respondents gave birth between thirty-eight and forty-two weeks (full term) and only one (1.9%) respondent had a premature birth (Figure 4.20).



#### 4.2.18 Mode of delivery

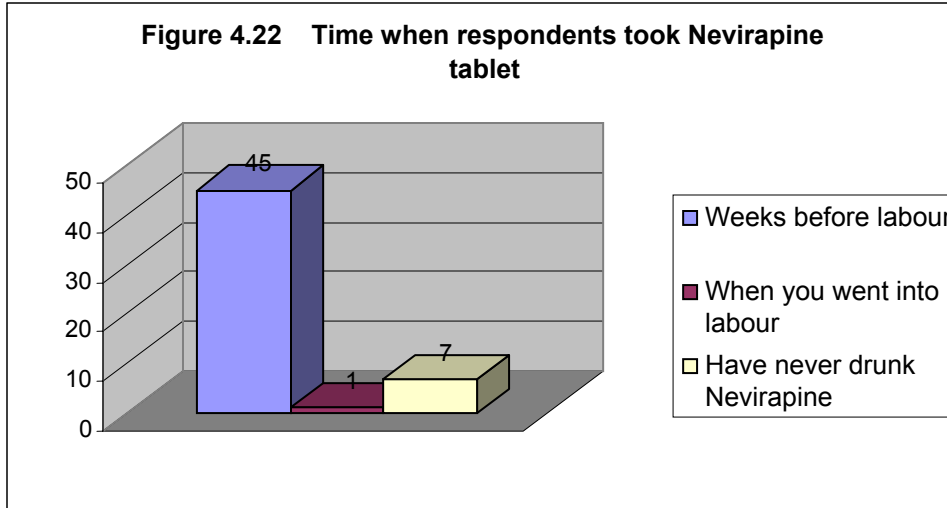
Forty-nine (92.5%) of the respondents had normal vaginal deliveries, none had assisted vaginal deliveries and four (7.5%) had Caesarean sections (Figure 4.21).



The caesarean section rate was 7.5%. HIV-positive patients at the Dr Yusuf Dadoo hospital do not all routinely have caesarean sections.

#### 4.2.19 Time the respondent took the Nevirapine tablet

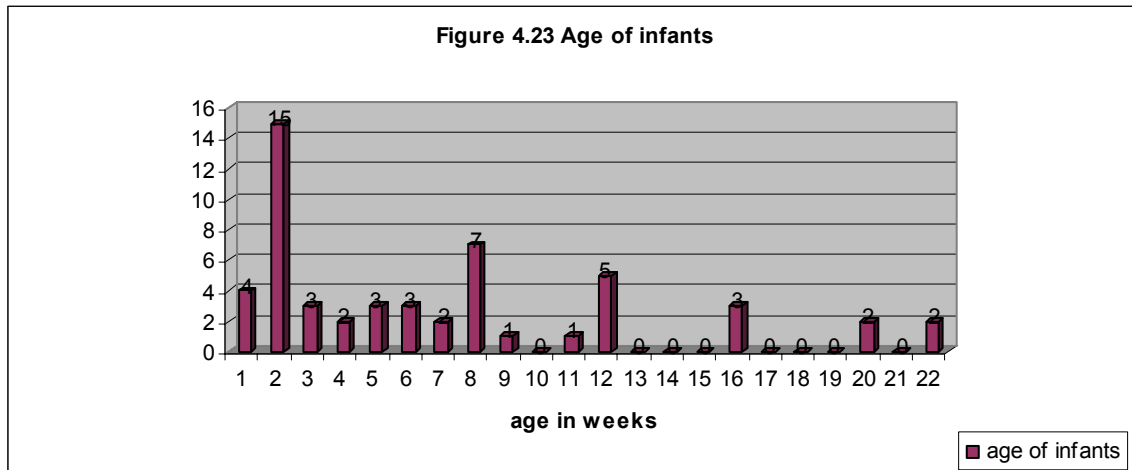
HIV-positive mothers are provided with a 200mg Nevirapine tablet as part of the PTMTC program. The tablet should be drunk as soon as the patient goes into labour. Forty-five (84.9%) of the respondents drank the Nevirapine weeks before the onset of labour when they received the tablet. The Nevirapine could not have had an influence on the MTCT but may have influenced resistance against this ARV.



### 4.3 INFANT FEEDING

#### 4.3.1 Age of the infant

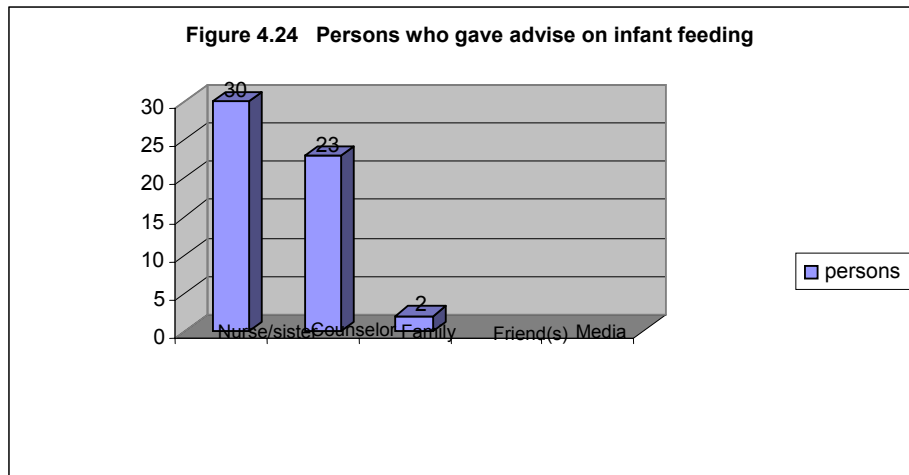
The age of the infants ranged between 1 and 22 weeks. The mean was 6.906 weeks (Figure 4.23). The mode was 2 weeks.



As per protocol all HIV-positive mothers that gave birth at the Dr Yusuf Dadoo are seen at this feeding clinic two weeks after discharge. Thereafter, the mothers can choose to go to their nearest Primary Health Clinic or to come back to the feeding clinic.

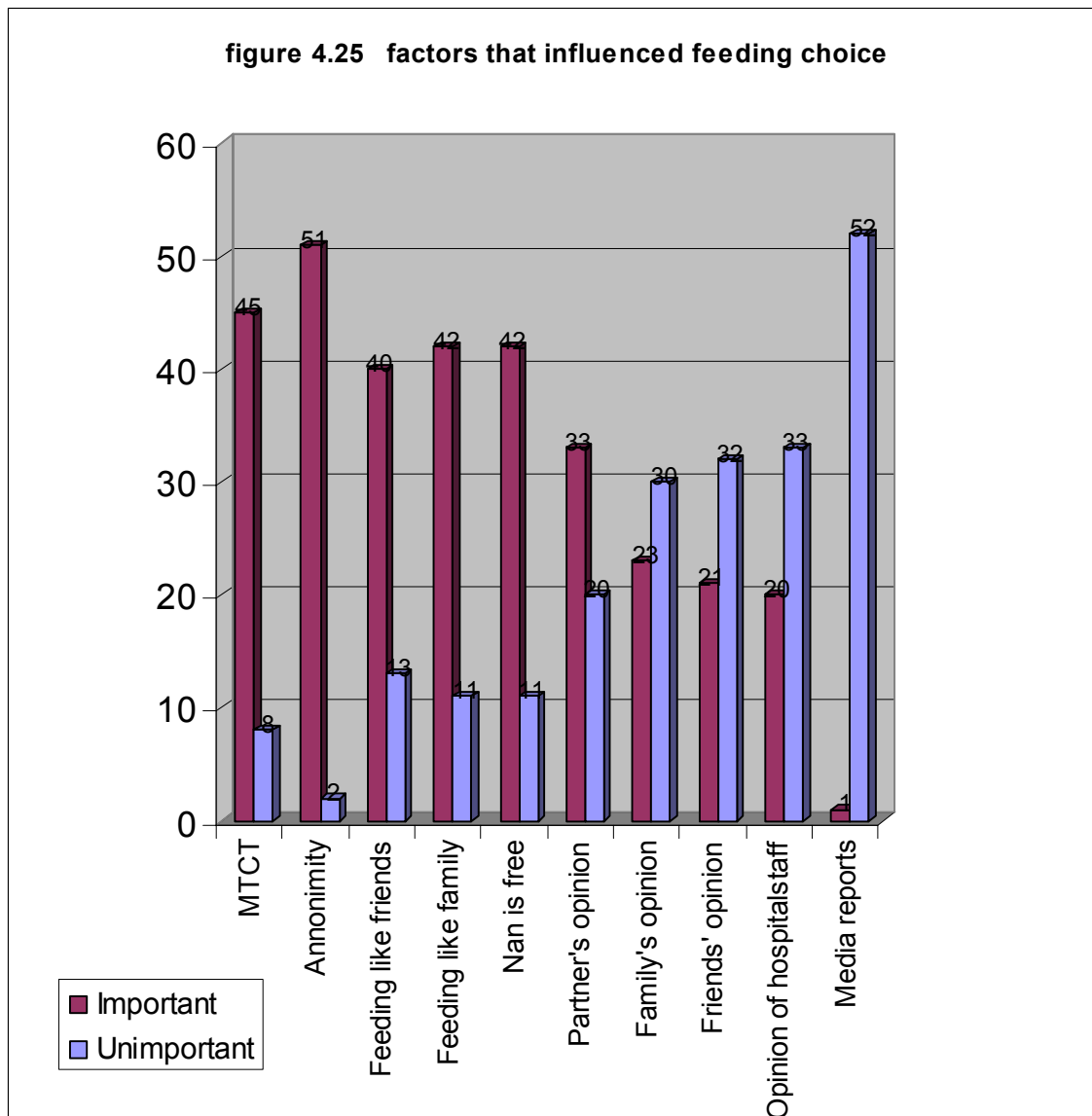
### 4.3.2 Persons who gave the respondent advice on infant feeding

Thirty (56.6 %) of the respondents said that the nurse/sister gave them advice on infant feeding and twenty-three (43.4%) stated that the counsellor gave them advice. Only two (3.8%) of the respondents said that family gave them advice. Friends and the media played no role (Figure 4.24).



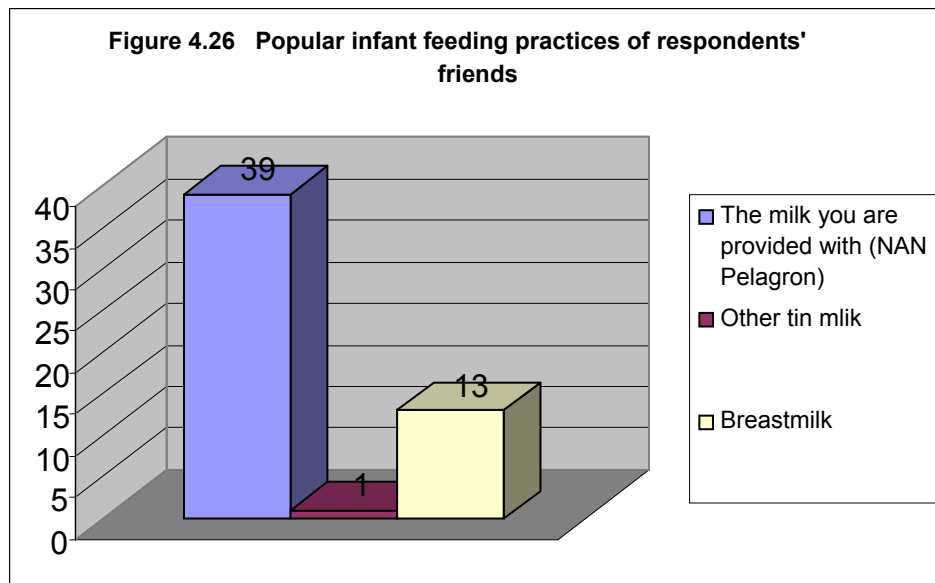
### 4.3.3 Factors that influenced feeding options

The important factors in making a feeding choice are shown in Figure 4.25. Most (anonymity, n=51; 96.2%) of the mothers felt that it was important that nobody found out that they were HIV positive. Thereafter followed, not to transmit the virus to her infant (MTCT, n=45; 84.9%), to feed her baby the way her mother/grandmother did (n=42; 79.2%), to feed her baby the way her friends do (n=40; 75.5%), the opinion of her husband/partner/fiancé (n=33; 62.3%), the opinion of her family (n=23; 43.4%), the opinion of her friends (n=21; 39.6%), the opinion of the hospital staff/counsellors (n=20; 37.7%) and media reports (n=1; 1.9%). These factors should be considered when giving counselling.



#### 4.3.4 Popular infant feeding practices among the respondents' friends

Thirty-nine (73.6%) of the respondents reported that most of their friends feed their babies NAN Pelagron, one (1.9%) respondent reported that her friends feed their babies other artificial infant feeding (Figure 4.26). Thirteen (24.5%) of the respondents said that their friends breast-feed. In paragraph 4.4.3 forty (75.5%) of the respondents said it was important to them, when making a feeding choice, to feed their babies the way their friends do.

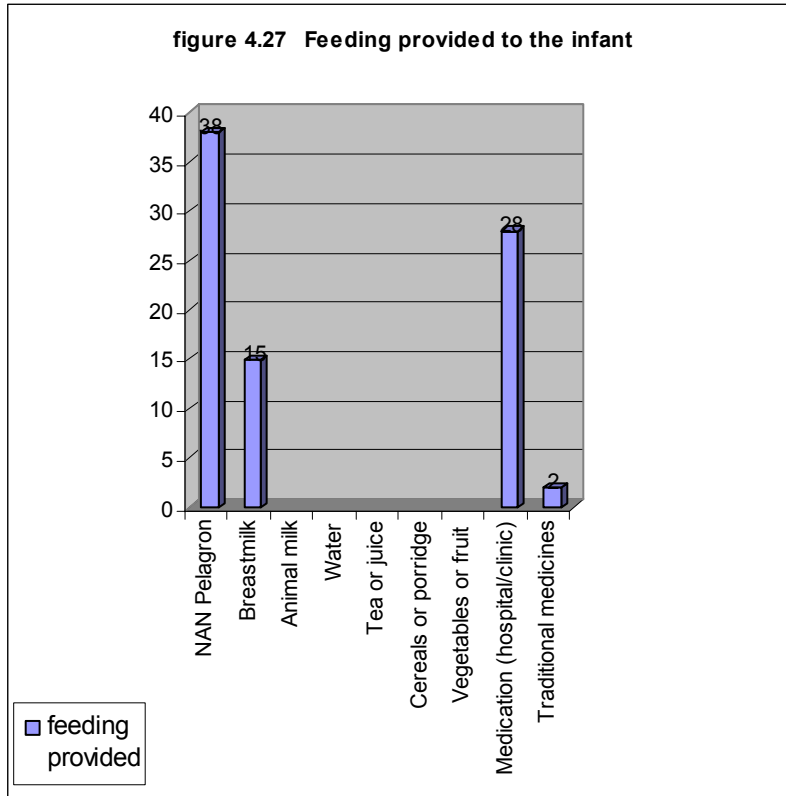


A possible spillover effect is seen as 75.5% of the respondents said it was important to them, to feed their babies the way their friends do, when making a feeding choice.

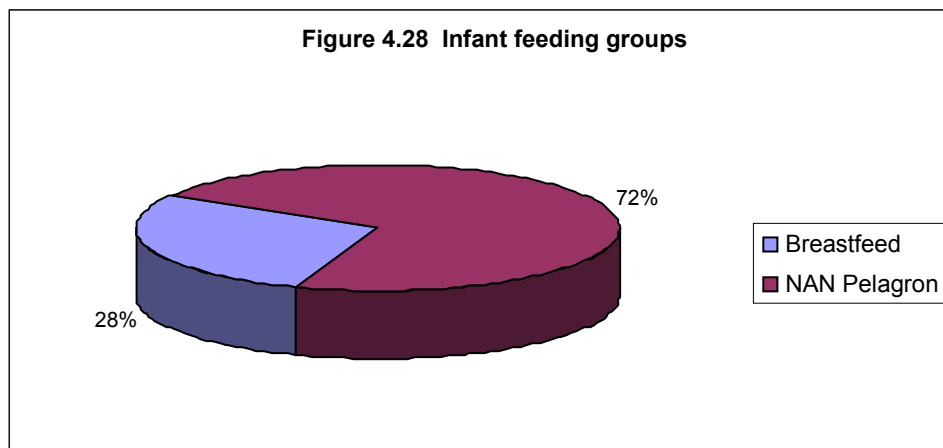
#### 4.3.5 Feeding provided to the infant

Thirty-eight (71.7%) of the respondents reported that they feed their babies NAN Pelagron (the milk that is provided at the clinic as part of the PMTCT program), fifteen (23.3%) feed their babies breast milk. Twenty-eight (52.8%) also give their babies medication provided at the hospital/clinic and two (3.8%) give their infants traditional medication (Figure 4.26). Mothers denied giving their infants tea, juice, water, porridge or vegetables. This shows that the mothers know that they should not mix feed.





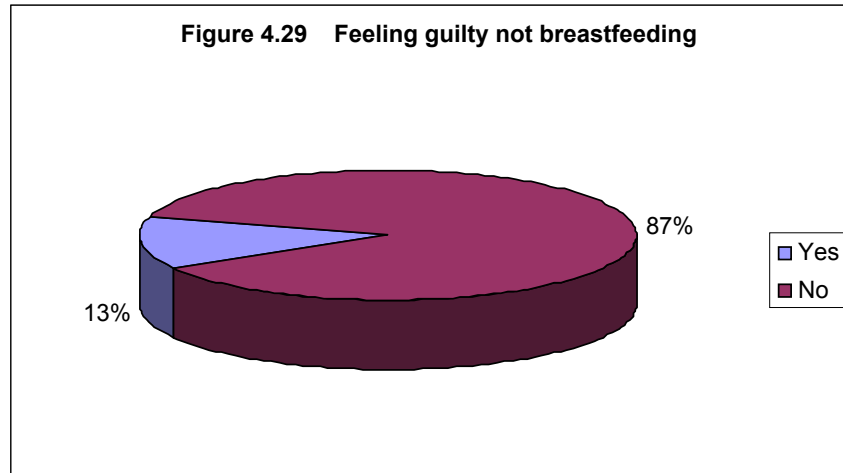
There are thus two infant feeding groups. Thirty-eight (72.0%) feed their infants artificial infant feeding (NAN Pelagron) and fifteen (28.0%) breast-feed.



## 4.4 THE NAN PELAGRON GROUP

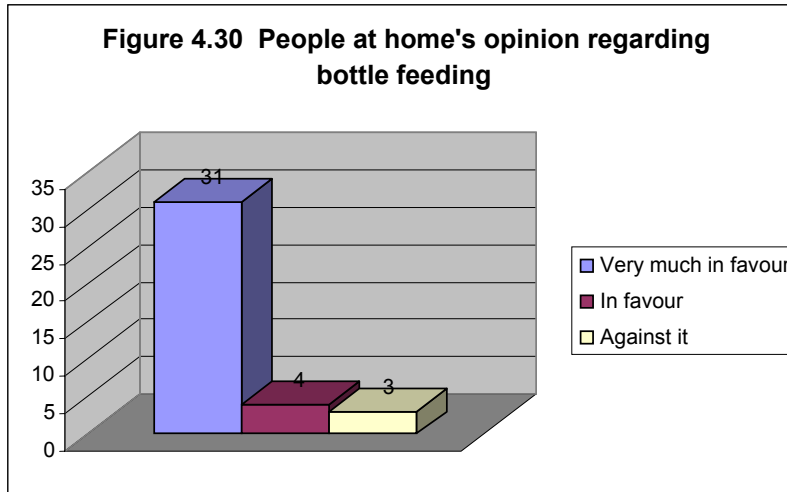
### 4.4.1 Feelings of guilt not breast-feeding

Five (13.1%) of the respondents feel guilty that they do not breast-feed. The majority (n=33; 86.8%) do not feel guilty that they do not breast-feed (Figure 4.28).



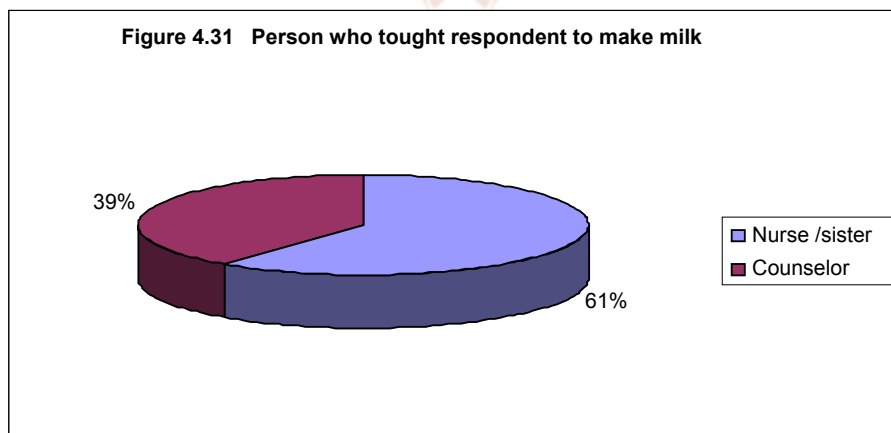
### 4.4.2 Opinion of the people “at home” regarding artificial feeding

The majority (n=33; 86.8%) of the respondents family/friends were very much in favour of them ‘bottle feeding’, five (13.1%) of the respondents family/friends were in favour of ‘bottle feeding’, while three (7.8%) of the respondents family/friends were against ‘bottle feeding’ (Figure 4.29). In paragraph 4.4.3, thirty-three (62.3%) respondents said that the opinion of their husband/partner/fiancé was important to them, in making a feeding choice and twenty-three (43.4%) said that the opinion of her family was important.



#### 4.4.3 Who taught the respondent to prepare the NAN Pelagron

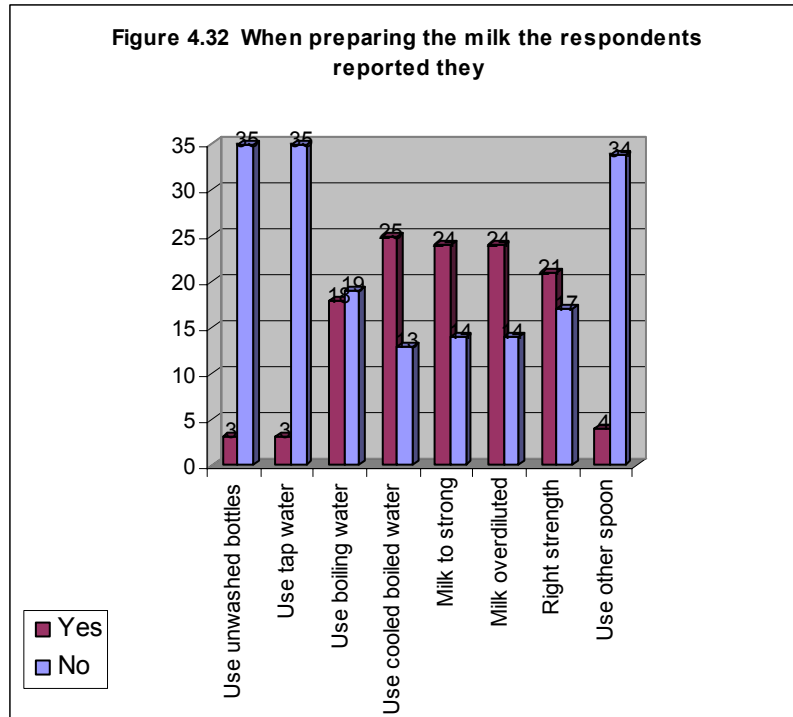
Twenty-three (60.5%) of the respondents replied that the nurse/sister taught them to prepare the milk and fifteen (38.5%) said that the counsellors taught them (Figure 4.30). None of the respondents replied that family, friends, or the media taught them.



#### 4.4.4 When preparing the NAN Pelagron

The respondents reported (figure 4.31) that they wash their hands before they start (n=36; 94.7%), use unwashed utensils (n=3; 7.8%), use tap water to prepare NAN Pelagron (n=3; 7.8%), use boiling water to prepare NAN Pelagron (n=34; 89.4%), use cooled boiled water to prepare NAN Pelagron (n=25; 65.7%), add more powder to prepare the feed (n=24; 63.1%),

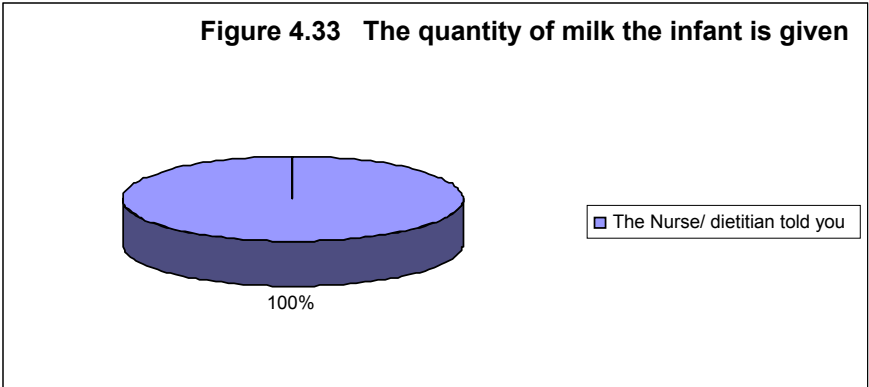
add more water to prepare the feed (n=24; 63.1%), make the feed the strength the container/sister says (n=21; 55.2%), use a spoon other than the one provided to measure the powder (n=4; 10.5%).



There are some inconsistencies in the data as twelve of the respondents said they use cooled boiled water and boiling water to prepare the NAN Pelagron, twenty-four said they make the NAN Pelagron the strength the container/sister says and they said they add more water, twenty of the respondents said they make it the strength the container/sister says yet they also claim to add more formula to the bottle. These inconsistencies show that the respondents probably did not understand the question. It might, however, show that the respondents adhere to the instructions on how to make the milk at times and choose to ignore them at times.

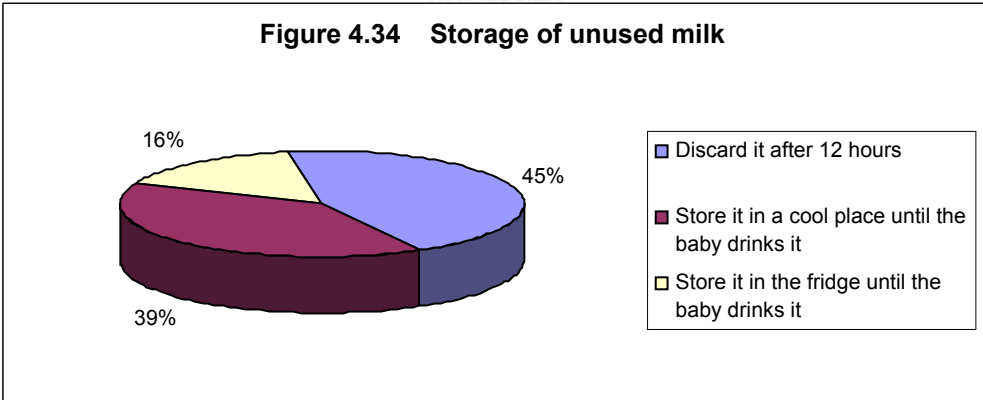
#### 4.4.5 The quantity of milk the mother gives the baby

The respondents were asked how they know how much milk the infant should get. All of the respondents said that the nurse/dietician told them (Figure 4.32). None of the respondents considered following the instructions on the container or feeding the baby according to individual needs.



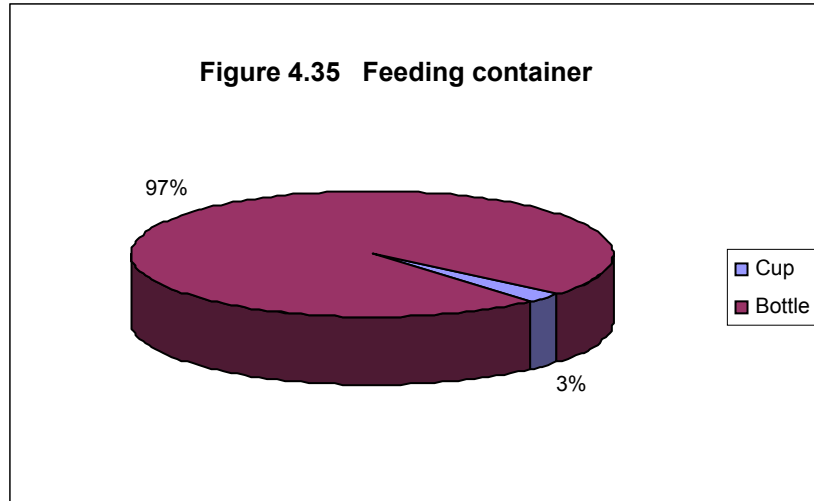
**4.4.6 The time span before the respondent discards leftover milk**

Seventeen (44.7%) respondents replied that they discard leftover milk only after 12 hours if the baby did not finish the bottle. Fifteen (39.4%) store the leftover milk in a cool place until the baby drinks it and six (15.7%) store it in the fridge until the baby drinks it (Figure 4.33). None of the respondents knew that leftover milk should be discarded after an hour, as it is an excellent medium for bacterial growth.



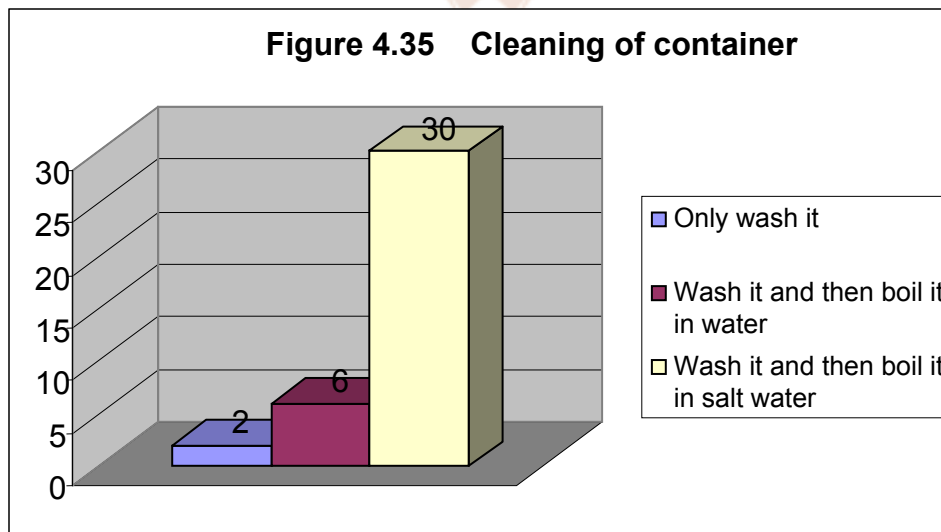
**4.4.7 Container the baby is fed with**

The majority (n=37; 97.4%) of respondents feed their babies with a bottle. Only one (2.6%) of the respondents reported that she cup feeds her baby (Figure 4.34).



#### 4.4.8 Cleaning the feeding container

Two (5.3%) of the respondents said that they only wash the bottle/cup before they use it again, six (15.8%) respondents said they boil it in water after they washed the container and the other thirty (78.9%) knew they should boil the containers in salt water after they have washed it (Figure 4.35).

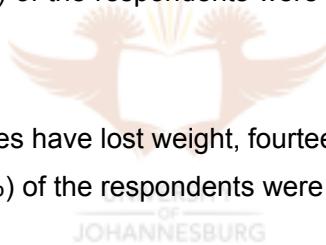


## 4.5 HEALTH OF THE BABY

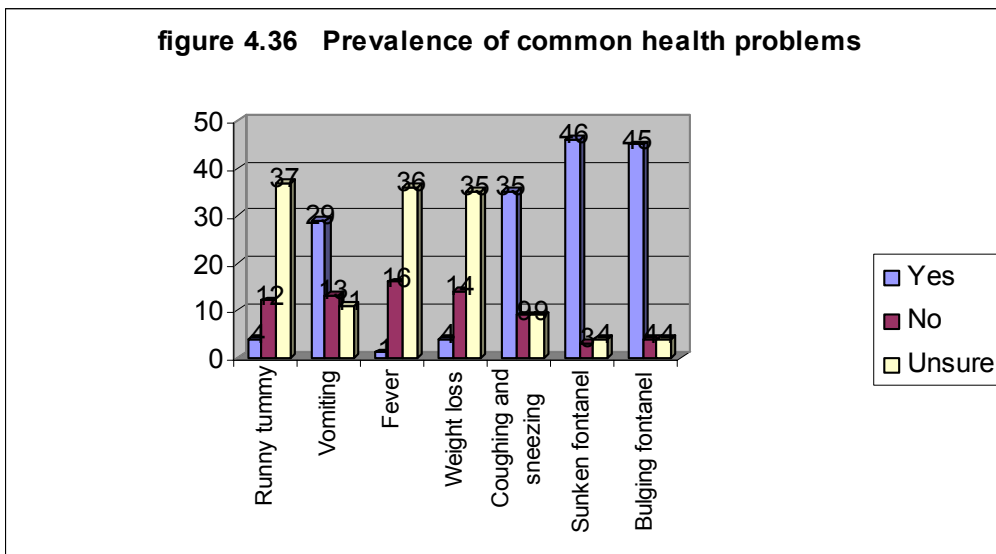
### 4.5.1 Prevalence of common health problems in infants, related to infant feeding

Prevalence of (Figure 4.36):

- Diarrhoea (runny tummy)
  - Four (7.5%) babies have had diarrhoea, twelve (22.6%) have not had diarrhoea.
  - The majority (n=37; 69.8%) was unsure if their babies have had diarrhoea.
- Vomiting (after more than one feed)
  - Twenty-nine (54.7%) have vomited, thirteen (24.5%) have not vomited.
  - Eleven (20.8%) respondents were unsure whether their babies have vomited or not.
- Fever
  - One (1.9%) baby has had fever, sixteen (30.2%) have not been feverish.
  - Thirty-six (66.0%) of the respondents were unsure whether their babies have been feverish.
- Weight loss
  - Four (7.5%) babies have lost weight, fourteen (26.4%) have not lost weight.
  - Thirty-five (66.0%) of the respondents were unsure whether their babies have lost weight.
- Coughing and sneezing
  - Thirty-five (66.0%) babies have been coughing and sneezing, nine (17.0%) have not been sneezing or coughing.
  - Nine (17.0%) were unsure whether their babies have sneezed or coughed.
- Sunken fontanel (dehydration)
  - Forty-six (86.8%) of the babies have had sunken fontanels, three (5.7%) have not have sunken fontanels.
  - Four (7.5%) of the respondents were unsure whether their babies have had sunken fontanels
- Bulging fontanel (incorrect mixing of the formula)
  - Forty-five (84.9%) of the babies have had bulging fontanels, four (7.5%) have not have bulging fontanels.
  - Four (7.5%) of the respondents were unsure whether their babies have had bulging fontanels



**figure 4.36 Prevalence of common health problems**

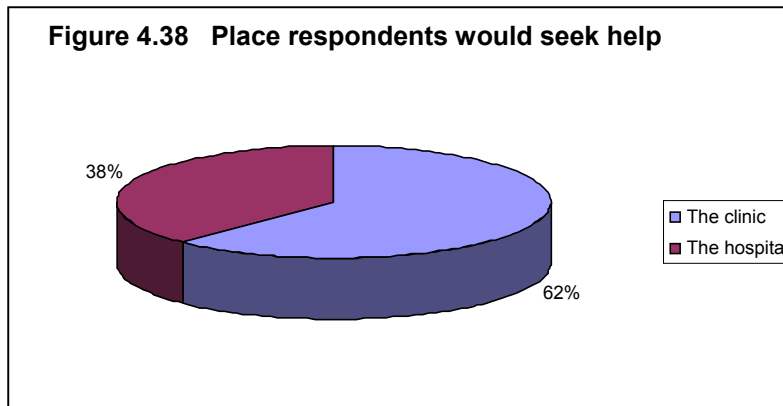


Forty-five (84.9%) of the respondents said their babies had both sunken and bulging fontanels. This might reflect the inconsistencies in 4.4.4, as the incorrect preparing of the feeds will lead to sunken (in case of formula being too concentrated-dehydration) or bulging fontanels (over-hydration). It is clear that the respondents either did not understand the fieldworker or did not know how to identify common health problems in their infants. It is unlikely that they did not understand as the fieldworker spoke in their own language. The respondents, therefore, had poor knowledge on the recognition of symptoms related to common health problems.

#### **4.5.2 Taking the baby for health care**

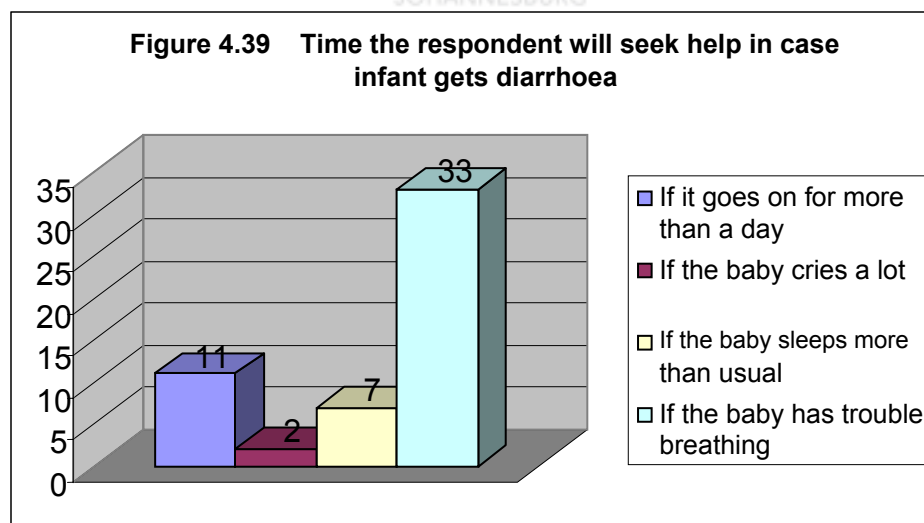
Among the options of where to take the baby in case of illness, the respondents could choose between a family member, the clinic, the hospital, traditional healer or the option to wait until the baby gets better. Thirty-three (62.3%) said they will take the baby to the clinic and twenty (37.7%) said they would take the baby to the hospital (Figure 4.37).





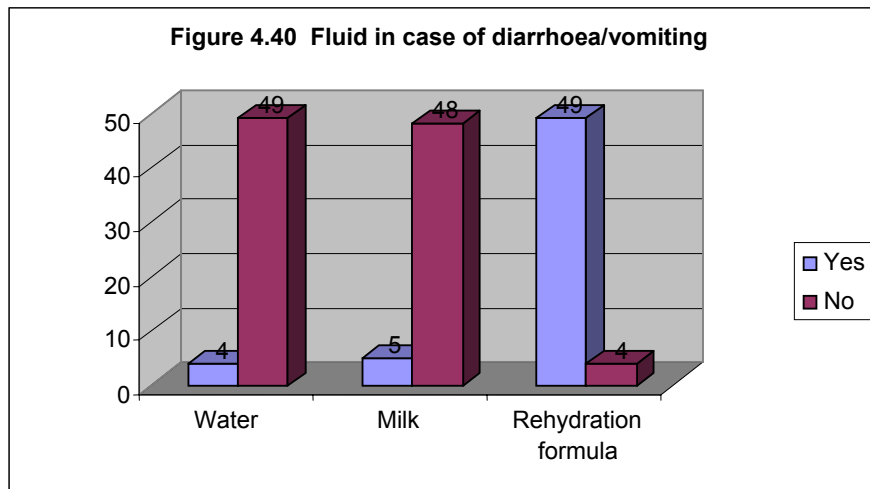
#### 4.5.3 When the respondent will take the sick infant for help

The respondents were asked when they would take the infant to the clinic/hospital in the event of the infant having diarrhoea (Figure 4. 38). Eleven (20.8%) respondents will take the baby to the clinic/hospital if the diarrhoea persists for more than a day, two (3.8%) said they will take the baby if it cries a lot, seven (13.2%) said they will take the baby if it sleeps more than usual. Thirty-three (62.5%) of the respondents replied that they would only take the baby when it is too late (only when it has trouble breathing).



#### 4.5.4 Fluid the respondent will provide to her infant in case the infant has diarrhoea or were vomiting

Four (7.5%) respondents replied that they would give the infant water, while forty-nine (92.5%) said they would not give the infant water. Five (9.4%) respondents said they would give the infant milk, while forty-eight (90.6%) respondents said that they would not give the infant any milk. Forty-nine (92.5%) respondents knew to give the infant rehydration formula and four (7.5%) respondents did not (Figure 4.39).



## CHAPTER 5

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 INTRODUCTION

A quantitative descriptive design (simple survey) was done. The primary objectives of this mini-dissertation were to describe the knowledge of and attitude towards infant feeding among women with HIV infection. Another objective was to recommend guidelines for maternal education regarding infant feeding for HIV-positive mothers.

Fifty-three respondents older than eighteen gave informed consent to be interviewed by the fieldworker. The completed interview schedules were analysed by STATCOM at the Rand Afrikaans University.

#### 5.2 KNOWLEDGE AND ATTITUDE OF THE RESPONDENTS

The specifics on the use of Nevirapine were not an objective of this study. It is alarming that 84.9% of the respondents drank the Nevirapine weeks before the onset of labour. The Nevirapine would not have had an influence on the decrease of MTCT but might have influenced resistance against this ARV.

In reporting on the important factors in making a feeding choice the following was found. 96.2% of the mothers felt that it was important that nobody found out that they were HIV positive. 84.9% felt prevention of Mother to Child Transmission was important, 79.2% felt it was important to feed their babies the way their mother/grandmother did, 75.5% felt it was important to feed their babies the way their friends do, 62.3% felt the opinion of their husband/partner/fiancé played a role, 43.4% felt the opinion of her family played a role, 39.6% felt the opinion of her friends was important, 37.7% felt the opinion of the hospital staff/counsellors played a role and 1.9% felt that media reports played a role. These factors should be considered when giving counselling.

71.7% of the respondents reported that they feed their babies NAN Pelagron (the milk which is provided at the clinic as part of the PMTCT program), 23.3% feed their babies breast milk.

There are thus two infant feeding groups. 72.0% feed their infants artificial infant feeding and 28.0% breast-feeds. 52.8% also give their babies medication provided at the hospital/clinic and 3.8% give their infants traditional medication. Mothers denied giving their infants tea, juice, water, porridge or vegetables. This shows that mothers know that they should not mix-feed.

92.1% of the respondent's family/friends were in favour/very much in favour of them 'bottle feeding'. 62.3% respondents said that in making a feeding choice, the opinion of their husband/partner/fiancé was important and 43.4% said the opinion of her family was important.

94.7% of the respondents reported that they wash their hands before they start preparing the milk. Infants are exposed to unhygienic preparation as 7.8% use unwashed utensils and tap water to prepare NAN Pelagron. 89.4% use boiling water to prepare NAN Pelagron, which destroys the essential nutrients in the milk. 65.7% knew to use cooled boiled water to prepare NAN Pelagron. 55.2% knew to make the milk the correct strength. 63.1% reported that they sometimes add more powder to prepare the feed and sometimes more water. 10.5% reported to use a spoon other than the one provided to measure the powder. The respondents therefore adhere to the instructions on how to make the milk at times and choose to ignore them at times.



The respondents were asked how they know how much milk the infant should get. All of the respondents said that the nurse/dietician told them. None of the respondents, therefore, considered following the containers' instructions or feed the baby according to individual needs.

None of the respondents knew that the leftover milk should be discarded after an hour, as it is an excellent medium for bacterial growth.

78.9% knew they should boil the bottles in salt water after they have washed it.

When asked about the prevalence of common health problems in infants, related to infant feeding, 69.8% was unsure if their babies have had diarrhoea. 20.8% respondents were unsure whether their babies have vomited or not. 66.0% of the respondents were unsure whether their babies have been feverish. 66.0% of the respondents were unsure whether their babies have lost weight. 17.0% was unsure whether their babies have sneezed or

coughed. 7.5% of the respondents were unsure whether their babies have had sunken fontanel. 7.5% of the respondents were unsure whether their babies have had bulging fontanels. The respondents, therefore, had poor knowledge on recognition of the symptoms related to common health problems.

The respondents were asked when they would take the infant to the clinic/hospital in case the infant had diarrhoea. 20.8% respondents will take the baby to the clinic/hospital if the diarrhoea persists for more than a day, 3.8% said they will take the baby if it cries a lot, 13.2% said they will take the baby if it sleeps more than usual. 62.5% of the respondents replied that they would only take the baby when it is too late (only when it has trouble breathing).

On being asked what they will give the infant to drink when it has diarrhoea the respondents replied that 7.5% would not give the infant water, while 9.4% respondents said they would give the infant milk and 92.5% respondents knew to give the infant rehydration formula.



### **5.3 GUIDELINES FOR MATERNAL EDUCATION**

The counsellors and sisters in the antenatal clinic and maternity ward are doing a wonderful job in caring and counselling the HIV-positive patients.

The following recommendations are made after the conclusion of the data:

- The correct use of anti-retroviral medication.
- The preparation of artificial milk;
  - Washing of container and utensils.
  - Using cold boiled water.
  - Correct strength of milk.
  - Storing and discarding of milk.
- Recognition and essential treatment of common health problems the infant might be prone to such as;
  - diarrhoea,
  - vomiting, and
  - pneumonia.

Consideration should be given to the following in giving information:

- the respondent's home language and how well she understands the language the education is given in,
- level of literacy of the respondent,
- factors that influence infant feeding choices;
  - Anonymity.
  - MTCT.
  - Cost of infant feeding.
  - Peer pressure.
  - Pressure from family members.
  - Religion, etc.
- the recommendations of the World Health Organization are the;
  - promotion of exclusive breast-feeding for at least the first six months of life among woman uninfected with HIV or unknown status,
  - avoidance of breast-feeding by mothers with HIV infection wherever 'acceptable', feasible, affordable, sustainable and safe replacement feeding is available,
  - exclusive breast-feeding by mothers with HIV infection where no safe alternatives are available,
  - discontinuation when safe and acceptable alternatives become available, and
  - provision of information and clinical care to mothers with HIV infection including contraception and nutrition.

#### **5.4 RECOMMENDATIONS FOR FURTHER STUDIES**

It is recommended that this study be repeated using a bigger sample. The use of a fieldworker should be reconsidered, as discrepancies can appear when the fieldworker and the respondents unknowingly misunderstand the interview schedule.

## CHAPTER 6

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APPENDIX

July/August 2004

Dear madam

I am undertaking a research project to determine how patients from this feeding clinic feed their babies.

With your help I wish to understand more about how you feed your babies and to help medical staff/ counselors to give appropriate and adequate information to the mothers in the antenatal clinics

You will be asked a few questions, it should take no longer than 20 minutes of your time. Your response is of the utmost importance to me.

You will be asked to sign this form to give me permission to use your answers, the questions will be asked by my assistant. You have the right to withdraw from the study at any time. Question lists will not be numbered and can not be traced back to you. Therefore your answers are confidential and your name will not be used at any time.

Please ask if you have any questions regarding the study..

Marisa Wilke

Yours sincerely  
Sister M. Wilke



CONSENT FORM

Hereby I ----- (name) give Marisa Wilke consent to use the information obtained, from the interview following this consent, as part of her dissertation for her M.Cur (midwifery and neonatology) in Nursing.

I understand that;

- I have the right to withdraw from the study at any time.
- Question lists will not be numbered and can not be traced back to me. Therefore my answers are confidential and my name will not be used at any time.
- Information obtained will not be used for any other purpose than this study.

Signed at: Dr Yusuf Dadoo Hospital on this ----- day ----- 2004

-----  
Respondent

-----  
witness 1

-----  
witness 2

## **1. Demographic data**

1.1 How old are you?

<input type="text"/>	<input type="text"/>
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1.2 Current marital status.

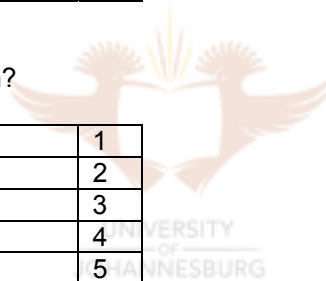
Single	1
Engaged	2
Married (traditional)	3
Married (law)	4

1.3 Your highest educational qualification?

No formal schooling	1
Some primary school	2
Some secondary (high) school	3
Grade 12 (Matric, std 10)	4
Post-Matric Diploma or certificate	5
Degree(s)	6

1.4 How well can you read English?

Not at all	1
Poor	2
Average/ Moderate	3
Well	4
Very well	5



1.5 Where were you born?

Urban (city)	1
Rural (countryside)	2

1.6 What language do you speak at home?

English	1
Afrikaans	2
South Sotho	3
North Sotho	4
Tswana	5
Xhosa	6
Zulu	7
Venda	8
Ndebedi	9
Shangaan	10
Pedi	11
Other (specify)	12

1.7 Are you religious?

Yes	1
No	2

## **2. Housing**

2.1 How would you describe the area in which you are residing?

Urban (city)	1
Rural (countryside)	2

2.2 In what type of dwelling do you live?

Brick house	1
Shack	2
Traditional hut	3

2.3 Where do you get water for use in your 'house'?

Running water in the "house"	1
Tap outside	2
Communal tap	3
Stream/ River/ Dam	4

2.4 Do you have a toilet your "house"?

Yes	1
No	2

2.5 Do you have a fridge in your "house"?

Yes	1
No	2

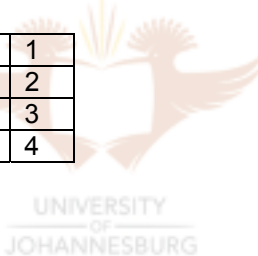
2.6 Do you have a separate area for cooking in your "house"?

Yes	1
No	2

2.7 How is waste disposed of where you live?

Municipality removes it	1
Communal waste dump	2
Dumped in stream/ river/ dam	3

2.8 What do you use most often to boil water?



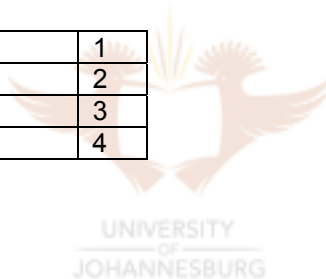
Electricity	1
Paraffin	2
Gas	3
Fire	4

2.9 Which of the following people live with you in your house/dwelling (for at least three months of the year)?

	Yes	No
Husband	1	2
Boyfriend/fiancée	1	2
Parents	1	2
Grandparents	1	2
Siblings or other family	1	2
Friends	1	2
Child(ren)	1	2

2.10 How many people, including yourself, live in your house/dwelling (for at least three months of the year)?

2-4	1
5-7	2
8-10	3
11 or more	4



### **3. Finances.**

3.1 How did you get to the hospital today?

Public transport (minibus or taxi)	1
Own transport	2
A lift	3
Walked	4

3.2 How much did it cost you to get here today?

R10 or less	1
R11-R20	2
R21 – R R30	3
More than R30	4



3.3 Which of the following people provides you with financial support?

	Yes	No
Self	1	2
Husband/ Boyfriend/fiancée	1	2
Parents	1	2
Grandparents	1	2
Siblings or other family	1	2
Friends	1	2

#### **4. Obstetrical history**

4.1 How many times have you been pregnant?

--	--

4.2 How many miscarriage(s) have you had?

--	--

4.3 How many abortion(s) have you had?

--	--

4.4 How many of them are still alive?

--	--



P	G
---	---

#### **5. The baby you get milk for.**

5.1 When did you have the baby?

Premature (less than 8 months)	1
Full-time (9 months)	2
Post mature (more than 2 weeks late)	3

5.2 What type of delivery did you have?

Normal delivery	1
Suction (Vantous) delivery	2
Forceps delivery	3
Caesarean section	4

5.3 When did you drink Niviripine?

Weeks before labour	1
When you went into labour	2
Drinking it at the moment	3
Have never drunk Niviripine	4

5.4 How old is your baby now?

		weeks
--	--	-------

5.5 Who gave you advice on what to feed your baby?

	Yes	No
Nurse/sister	1	2
Counselor	1	2
Family	1	2
Friend(s)	1	2
Media	1	2

5.6 Was each of the following important to you, when you decided to “bottlefeed” your baby?

	Yes (important)	No (unimportant)
Not to transmit the virus to your baby	1	2
To make sure nobody finds out you are HIV positive	1	2
To feed your baby the same way your friends do	1	2
To feed your baby the same way your mother/ grandmother did	1	2
To get the milk for free	1	2
The opinion of your husband/ fiancé/ boyfriend	1	2
The opinion of your family	1	2
The opinion of your friends	1	2
The opinion of the sisters at hospital/ clinic	1	2
Media reports on bottlefeeding	1	2

5.7 Do you feed/give your baby the following to drink?

	Yes	No
The milk you are provided with (NAN Pelagron)	1	2
Breastmilk	1	2
Animal milk (cow/ goat)	1	2
Water	1	2
Tea or juice	1	2
Cereals or porridge	1	2
Vegetables or fruit	1	2
Medication (hospital/ clinic)	1	2
Traditional medicines	1	2

5.8 What do most of your friends feed their babies?

The milk you are provided with (NAN Pelagron)	1
Other tin milk (S26, Lactogen, Soy milk)	2
Breastmilk	3
Animal milk (cow/ goat)	4

**5.9 to 6.6 Only if they bottlefeed**

5.9 Do you feel guilty that you are not breastfeeding your baby?

Yes	1
No	2

5.10 Are people at home in favour of you "bottlefeeding" your baby?

Very much in favour	1
In favour	2
Against it	3
Very much against it	4

**6. Preparation of milk.**

6.1 Who taught you to make the milk?

Nurse/sister	1
Counselor	2
Family	3
Friend(s)	4
Media	5

**This page only if they bottlefeed**

6.2 Do you do the following when preparing the milk?

	Yes	No
Wash your hands before starting	1	2
Use a bottle/ cup that's not washed	1	2
Used tap water	1	2
Use boiling water (still very hot)	1	2
Use cooled boiled water	1	2
Add a bit more milk powder to prepare the milk	1	2
Add a bit more water to prepare the milk	1	2
Make the milk the strength the tin/ sister says	1	2
Use a spoon other than the one provided to measure the powder	1	2

6.3 How do you know how much milk your baby should get?

The Nurse/ dietitian told you	1
Family/ friends told you	2
You look at the back of the tin	3
You give the baby as much as he/she will take	4
You guess	5

6.4 If the baby does not drink all the milk, what do you do with the rest of the milk?

Discard it immediately	1
Discard it after an hour	2
Discard it after 12 hours	3
Store it in a cool place until the baby drinks it	4
Store it in the fridge until the baby drinks it	5

6.5 How do you feed the milk to the baby?

Cup	1
Bottle	2
Spoon	3

6.6 How do you clean the container afterwards?

Only wash it	1
Do not wash only boil it	2
Wash it and then boil it in water	3
Wash it and then boil it in <b>salt</b> water	4

**7. Health of the baby** (everybody)

7.1 Has your baby had any of the following **since he/she was born?**

	Yes	No	Do'nt know/ unsure
Runny tummy	1	2	3
Vomiting (after more than one feed)	1	2	3
Fever	1	2	3
Weight loss	1	2	3
Coughing and sneezing	1	2	3
Sunken fontanel (soft spot on head)	1	2	3
Bulging fontanel (soft spot on head)	1	2	3

7.2 When your baby gets sick, **where** do you take him/her for help?

A family member or friend	1
The clinic	2
The hospital	3
Traditional healer	4
Wait until baby gets better	5

7.3 When your baby's tummy runs a lot, **when** will you take him/ her to the clinic/hospital?

If it goes on for more than a day	1
If the baby cries a lot	2
If the baby sleeps more than usual	3
If the baby has trouble breathing	4

7.4 **Which** of the following do you give your baby when his/her tummy runs a lot/ he vomits?

	Yes	No
Water	1	2
Milk	1	2
Rehydration formula (water, salt and sugar mix)	1	2
Traditional medication	1	2

Marisa Wilke  
32 Gardenveiw  
Sirdar Street  
Kensington B  
Tel. 084 580 2851

Attention:

## **REQUEST PERMISSION TO CONDUCT RESEARCH**

Herby I request permission to do research at Dr Yusuf Dadoo Hospital at the Dietician clinic on Tuesdays. During the time free commercial infant formula is provided to the mothers.

I am currently registered at Rand Afrikaans University for an M.Cur Degree in Midwifery and Neonatal Nursing Science. My facilitator is Prof A. Nolte. The subject of my study is; Knowledge and attitude towards infant feeding of mothers with HIV infection.

It is a descriptive study to obtain the HIV positive mothers knowledge and attitudes towards infant feeding. There is very limited literature on this subject. It is imperative to know the HIV positive mothers knowledge and attitudes towards infant feeding as it will determinate compliance with the chosen infant feeding practice. Furthermore it can help counselors and midwives to improve the education given to these mothers. Empowering them to make an informed choice they can comply with. As it is vital to minimize postnatal mother to child transmission of HIV and child mortality.

Semi-structured interviews were chosen as the majority of respondents are illiterate. A trained fieldworker will be used since very little of the respondents would be able to give accurate answers in English. The fieldworker is a HIV peer educate in Zandspruit (a nearby squatter camp). I will however be available to answer questions the fieldworker might have.

I understand that it is a very sensitive subject. Respondents will not be forced in any way to partake, they will have the right to withdraw from the study at any time without penalty, question lists will not be numbered and could not be traced back to respondents, all information and their identity will be confidential and information obtained will not be used for any other purpose than this study. Only respondents above the age of 18 will be considered. Consent will be read verbatim to respondents. Consent forms can be signed or a thumbprint or cross can be provided.

Editing will be done when work is completed.

Yours sincerely

Marisa Wilke