

Infant feeding and HIV positive mothers in the Capricorn District of Limpopo Province

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HIV-positive mothers who practise infant feeding of their choice at Mankweng clinic in the Limpopo province are experiencing specific problems with various feeding methods. This study was undertaken with the aim to explore and describe the socio-economic and cultural experiences of HIV-positive mothers who practise infant feeding of their choice. The research design was exploratory, descriptive, qualitative and contextual in nature. A phenomenological approach was adopted to focus on the lived experiences of HIV-positive mothers. The study sample was purposely selected. Ten HIV-positive mothers volunteered to participate in the study. Data were collected through in-depth unstructured interviews. All participants responded to an open-ended question: "Could you please tell me, in detail, your experience on infant feeding of your choice?" Interviews were conducted until saturation, as was reflected in repeating themes, was reached. The model of trustworthiness, as outlined in Guba and Lincoln (1985:301-318), to ensure credibility and dependability, was used in this study. The study adhered to the ethical standards as set by DENOSA (1998:2.3.2-2.3.4). Data were analysed according to Tesch's method, as outlined in Creswell (2003:192) and De Vos (1998:343). Literature control was performed to verify the results. Two main categories that emerged were guided by options for infant feeding; namely those that chose formula feeding for their babies and those participants who opted to breast-feed their babies

The study proposed to recommend guidelines for the development of relevant content for inclusion in health education programmes of registered midwives who, in turn, can use such information to educate mothers

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Introduction

Vertical transmission of the HIV virus from mother to child can occur during pregnancy, during delivery or post-natally through breast-milk (Coutsoudis, Pillay, Kuhn, Spooner, Tsai & Coovadia, 2001:380). Rates of mother-to-child-transmission (MTCT) range from 5–25% in developed and 13–42% in developing countries. Without specific interventions, the rate of vertical transmission is around 15–20%, but breastfeeding might increase the rate to 35–40% (Coutsoudis et, 2001: 381). Data from various studies indicate that breastfeeding may be responsible for one-third to one-half of HIV infections in infants and young children in Africa (Coutsoudis et al, 2001: 382). The reduction of HIV transmission during lactation is one of the most pressing global health dilemmas confronting health policy makers and HIV-infected women in many regions of the world (Van de Perre, Lepage, Homby & Dabis, 2005:506; Bertolli, Hu, Nieburg, Macalalad & Simonds, 2003:2090). Coutsooudis (2005:89) and Van de Perre (1999:503) asserted that MTCT occurs primarily through contact between the virus and infant mucosal surfaces. It was further speculated that HIV might enter through breaches in the mucosal barrier, or through infection of mucosal-associated lymphoid tissue. If a cell-free or cell-associated virus is able to infect lymphocytes in the submucosa by passing through disruptions in the intestinal epithelial, damage may increase the risk of transmission. HIV-positive women's multiple responsibilities combined with their relative powerlessness, and cultural values which tend to stigmatise them as vectors of disease, make them particularly vulnerable to psychological stresses associated with HIV/AIDS such as: isolation, guilt, fear about the future of their children, and loss of esteem and dignity. Stigma and discrimination may be fiercer and the consequences more severe for women than for men. They may include rejection, abandonment, extreme poverty and sometimes violence. Women's lack of decision-making power with regard to reproductive health matters not only exacerbates the problems relating to HIV and infant feeding but also increases the women's stress. It is known that the success of interventions relates strongly to the degree of control women exercise over

decisions and practices. Where a partner or family opposes or disapproves of a woman's informed choice, she will need support for her decision from counsellors and health workers.

Pregnant mothers are encouraged to undergo Voluntary Confidential Counselling and Testing (VCCT) so that information to make an informed choice regarding infant feeding is provided (Misihairabwi, Sabatier & Chikukwa, 1998:12). The programme on the prevention of transmission of HIV/AIDS from mother to child (PMTCT) is believed to be instrumental in the prevention of AIDS in children if instituted early in pregnancy, as it provides for the care of mothers who have tested positive for HIV. Of importance is the advice and support given regarding infant feeding. The programme emphasises the importance of exclusive breast-feeding or formula feeding in the first six months, at least. Pregnant women who are HIV infected, or of unknown serostatus, are given information about exclusive breast-feeding for the first six months of the infant's life, with sustained breast-feeding thereafter. HIV-infected women are counselled on different feeding options available to them (WHO, 2004).

When free formula for infants of HIV mothers is provided in tandem with counselling, MTCT decreases (PMTCT Advisory Group and Infant Feeding Study Group, 2002:430). When informed choices on infant-feeding methods are promoted, women's decisions might still be compromised by the advice given, due to some options not being accurately explained by the health worker (De Paoli, Manongi & Klepp, 2004:148).

In developed countries, mothers use commercial formulas to feed their infants, whereas in developing countries, HIV-positive mothers experience challenges, for example, when feeding babies on commercial formulas.

The challenges experienced by HIV-positive mothers intending to formula feed their babies include:

- unreliable water sources for the cleaning of equipment and preparation of feeds;
- unsustained availability of the formula due to lack of money in cases of unemployment or an

unsupportive family structure, which often renders the costs of formula feeds, fuel or electricity to sterilise feeding utensils and to boil water for preparing feeds, unaffordable;

- lack of refrigeration for the storage of feeds and to prevent these from being infected (SAFAIDS, 1999; UNICEF in action (a), 2002).

Goal number 4 in the 'Millennium Development Goals' (WHO, 2000; UNICEF in action (c)2002 & UNAIDS, 2002) is set to reduce the proportion of infants infected with HIV by 20% in 2005 and by 50% in 2010. In an attempt to contribute to meeting this goal the researcher endeavoured to explore and describe how socio-economic and cultural experiences impact on the infant feeding choices of HIV-positive mothers. The study was conducted at Mankweng Clinic, in the Capricorn District in the Limpopo Province. Based on the findings, relevant and contextual content of health education was proposed to be utilised by registered midwives in educating and supporting HIV-positive mothers who practise infant feeding of their choice.

According to UNICEF in action (b) (2002 online), policy makers and health care managers are faced with the challenge of providing the necessary support to enable mothers to make and carry out their choices, whether to breastfeed or to use supplementary feeds. Moreover, health workers are morally and ethically obliged to communicate appropriate information regarding infant feeding practices to HIV-positive mothers. Added to the peril facing HIV-positive mothers is the burden of making the right decision with respect to infant feeding options in relation to their socio-economic circumstances. Studies conducted in Sub-Saharan Africa and Uganda showed that HIV-positive mothers invariably find it difficult to adhere to the infant feeding method they have chosen during or shortly after counselling (Wendo, 2001:online).

After delivery, all infants born to HIV-positive mothers need regular follow-up to ensure that infant feeding choices are sustained and to monitor infant weight and health. The Integrated Management of Childhood Strategy (IMCI) has been adopted to include care of infants born to HIV-positive

mothers. Therefore, all infants born to HIV-positive mothers should be followed up according to the IMCI guidelines, regardless of infant feeding choice. The guidelines describe the feeding option for consideration by HIV-positive mothers, which include the following:

- replacement feeding with commercial or home prepared formula;
- exclusively breast-feeding for the first six months;
- use of heat-treated expressed breast milk.

Providing adequate formula for HIV-infected women in resource-poor settings may be difficult because of lack of infrastructure. The decision of what to do must rest with the mothers, who will want to do what is best for their babies. In African communities where breastfeeding is still the norm, mothers would opt for breastfeeding because of the fear of stigmatisation; hence the grandmothers make decisions regarding infant feeding (Coutsoudis, Pillay, Spooner, Coovadia, Pembrey & Newell (2003:890). Lyall (1998:127) argues that many women face ostracism from their families when diagnosed as HIV-positive, and in other parts of the world where breastfeeding is the norm, a woman who does not breastfeed will be suspected of HIV infection. Likewise, mothers may be anxious at being seen collecting tins of formula from the clinic and may stop such an arrangement or process altogether (Laura, Guay, Andrea & Ruff, 2001:5; UNICEF in action (b), 2002: online).

This study investigates the aggravating experiences of HIV-positive mothers who practise infant feeding methods of their choice, and how their needs can be addressed through proposed contextual health education programmes.

Problem Statement

The virus is known to be present in breast milk. However, the timing and mechanism of transmission remain unclear. Mothers must have the appropriate information about their chances of transmitting HIV to infants, and also be informed of the risks of artificial feeding, breastfeeding and mixed feeding. The key role of health workers includes counselling and encouraging women to consider their circumstances and

sustain their decisions (Department of Health, 2000:11; UNICEF in action, 2002 (a): online). Governments in the developing countries are faced not only with the problem of providing HIV-positive mothers with infant formula for the first six months of life, but also have to make provision for training of health care workers so that they can support HIV-positive mothers throughout the infant feeding period. However, due to the contextual socio-cultural dynamics, little is known about what content is provided by midwives to mothers during the infant feeding period. Therefore, it became imperative that the relevant items specific to infant feeding should be taught to HIV-positive mothers.

Aim of study

The aim of the study was to explore and describe the socio-economic and cultural experiences of HIV-positive mothers regarding infant feeding at one clinic in the Capricorn District of the Limpopo Province. Furthermore, the study's aim was to compile content for health education programmes that can be utilised by midwives when educating HIV-positive mothers on infant feeding.

Research questions

The following research questions guided the study:

- What are the socio-economic and cultural experiences of HIV-positive mothers regarding infant feeding?
- How might the research findings contribute to the development of content for the health education programme that will be utilised by registered midwives when educating HIV-positive mothers regarding infant feeding?

Objectives of the study

The objectives of the study will be to:

- explore and describe the socio-economic and cultural experiences of HIV-positive mothers regarding infant feeding
- propose the development of content for health education programme that will be utilised by registered midwives when educating HIV-positive mothers regarding infant feeding

Conceptual definitions of terms

For the purpose of this study, the following concepts were used:

HIV-positive Mother

HIV-positive mother in this study refers to a mother who has delivered a live infant, who has undergone Voluntary Confidential Counselling and Testing, tested HIV positive and is practising infant feeding of her own choice.

Infant Feeding

Infant feeding shall refer to feeding of the baby from birth to six months, choosing one of the following feeding options:

Exclusive breastfeeding

Exclusive breast-feeding is the recommended mode of infant feeding for those HIV-infected women for whom replacement feeding is not acceptable, feasible, affordable, sustainable or safe (WHO, 2006). It refers to giving the baby no other food or drink (not even water), apart from breast milk (including expressed breast milk fed by cup), with the exception of drops or syrup consisting of vitamins, mineral supplements or prescribed medicines during the first six months (DOH, 2000:3).

Exclusive formula or supplementary feeding

This refers to the giving of breast milk substitute to a child who is not receiving any breast milk. A breast milk substitute, when prepared correctly, provides all the nutrients the child needs until that child is ready to be fully fed on family foods. Breast milk substitutes include commercial infant formula.

Mixed feeding

Mixed feeding means feeding the baby with breast milk and formula as well as with foods such as porridge and drinks or water.

Experiences

Experience is defined as "living through" what happens and how a person reacts to his/her surroundings (Hawkins, 1998:225). In this study, experience shall mean lived socio-economic and cultural experiences of HIV-positive mothers who practise infant feeding of their choice.

Theoretical assumptions

These assumptions are testable and offer theoretical pronouncements about

infant feeding in the era of HIV and AIDS. In this study, theoretical assumptions will be based on the UNFPA/UNICEF/WHO/UNAIDS (nd) guidelines and Global strategy on infant and young child feeding. According to these guidelines, HIV infection can be transmitted through breast-feeding. Appropriate alternatives to breast-feeding should be available and affordable in adequate amounts for women whom testing have shown to be HIV-positive.

Research methodology

Research Design

Burns and Grove (2003:43) refer to qualitative research design as a systematic, subjective approach used to describe life experiences and give them meaning. In this study an exploratory, descriptive, qualitative design was used to explore and describe the lived experiences of HIV-positive mothers regarding infant feeding. Phenomenological research was used to describe the socio-economic and cultural experiences regarding infant feeding as lived by HIV-positive mothers.

Study Population and Sampling

The study was conducted at Mankweng Clinic, which was purposely sampled as it was accessible to the researcher. The population comprised of all HIV-positive mothers who had undergone Voluntary Confidential Counselling and Testing during pregnancy, tested HIV positive and who attended child health care services at the Mankweng Clinic of the Capricorn District in the Limpopo Province. Out of the total population of pregnant women who attend antenatal care at this clinic monthly, 5% had tested HIV positive. The non-probability purposive sampling method was used. Purposive sampling is a type of non-probability sampling in which data are collected from a group of respondents chosen for a specific key characteristic (Sells, 1997:172).

Inclusion Criteria

The criteria for inclusion were as follows:

- mothers who had undergone VCCT and were found to be HIV positive and practising infant feeding of their choice; and

- mothers who were willing to participate in the study and signed an informed consent form.

A sample of ten participants was used in this study because at this point theoretical saturation of each new category was reached as the researcher planned an intense, in-depth study of participants' experience (Strauss & Corbin, 1990:188).

Ethical Considerations

Ethical considerations were based on the Democratic Nurses Association of South Africa (DENOSA) Ethical Standards for Nurse Researchers (DENOSA, 1998:2.3.2-2.3.4). The approval and permission to conduct the study was obtained from the University of Limpopo Ethics Committee, Department of Health Research Committee and the management of the clinic. The researcher selected participants on the basis of their HIV status and infant feeding of their choice. To access HIV-positive mothers, the HIV and AIDS counsellor introduced the researcher to the participants. The researcher explained the purpose of the study to the participants, and indicated that participation would be voluntary and anonymity and confidentiality would be ensured. Consent form was signed by the participants.

Data Collection

Data was collected by the researcher who began by collecting the biographical data of the HIV-positive mothers through a structured interview guide, and in three sessions through in-depth unstructured interviews. One central question was asked "*Could you please tell me your experiences regarding infant feeding in detail?*" The question was followed by probing as a communication skill, as postulated in De Vos (1998:318). Sells (1997:172) indicated that open-ended interviews should start with a broad, non-directive question that allows informants to say whatever they think with minimum guidance from the interviewer. During the interviews, open-ended questions were asked and ethical aspects related to research were observed. Interviews were conducted at the clinic in a private room that was utilised by the counsellor, away from distractions, to ensure privacy and confidentiality. Inter-

views were conducted in the local language (vernacular) and were transcribed verbatim and translated into English. Permission to use a tape recorder was obtained and field notes were taken to validate the taped comments. The recording was done on a small notebook tape recorder that easily fits into the pocket and the tape included the empirical observations and their interpretations.

Data Analysis

Data analysis is a process of bringing order, structure and meaning to the mass of collected data for its interpretive and meaningful quality (Marshall & Rossman, 1999:111). To meet this objective, Tesch's open-coding method was used to analyse data as outlined in Cresswell (2003:192) and De Vos (1998:343).

Trustworthiness

The criteria for ensuring trustworthiness as outlined in Guba and Lincoln (1985:301-318) were used. **Credibility** was ensured by prolonged engagement wherein the researcher had contact with the HIV-positive mothers during three sessions. Triangulation was used through the following data collection methods:

- unstructured interview;
- field notes;
- use of tape recorder as well as literature control (De Vos, 1998:318; Sells, 1997: 172);
- member checks: the last session was conducted on completion of data analysis and the participants were visited at their homes for member checks. This was done to validate the truth and to confirm the results.

Dependability

According to Babbie and Mouton (2001:277), dependability refers to an inquiry that must provide its audience with evidence that if it were to be repeated with the same respondents in the exact context, the findings would be similar. In this study, dependability was established through thick description that is a complete description of the design, method and accompanying literature control, and through peer reviews. Stepwise replication was used in which the researcher and the inde-

Table 1: Profile of HIV-positive Mothers Recruited to the Study (n =10)

CHARACTERISTIC	n	%
1. AGE IN YEARS ON YOUR LAST BIRTHDAY		
12-16	0	0
17-21	4	40
22-26	2	20
27-31	3	30
32-36	1	10
37+	0	0
2. PARITY		
Para 1	2	20
Para 2-3	6	60
Para 4-5	2	20
Para >6	0	0
3. AGE OF THE BABY		
2 – 6 Weeks	1	10
7 – 12 Weeks	5	50
13 – 18 Weeks	2	20
19 – 24 Weeks	2	20
4. CULTURAL/ETHNIC GROUP		
Northern Sotho	9	90
Tsonga	0	0
Venda	0	0
Asian	0	0
Whites	0	0
Others	1	10
5. FAMILY STATUS		
Married	3	30
Single	7	70
Divorced	0	0
Widow	0	0
6. RELIGIOUS AFFILIATION		
Lutheran	3	30
Dutch Reformed Church (NG)	0	0
Zion Christian Church (ZCC)	4	40
Apostolic Church	2	20
Other	1	10
7. EDUCATIONAL LEVEL		
Never Literate	0	0
Primary School Literate	4	4
Secondary School Literate	1	1
Tertiary Institution	5	5
8. EMPLOYMENT STATUS		
Unemployed	9	9
Casual Labourer	0	0
Unskilled Labourer	0	0
Skilled Labourer	0	0
Professional	1	1
9. WATER SOURCE	10	10
Piped Water (Tap)	0	0
Non-piped Water (River, Well)		
10. SOURCE OF ENERGY		
Electricity	2	20
Wood	4	40
Paraffin	4	40
Solar	0	0
11. SANITATION		
Flush Toilet	3	30
Pit Latrine	7	70
Bucket Latrine	0	0
None	0	0

pendent coder discussed the data analysis and reached consensus on the findings.

Transferability

Transferability is the extent to which the findings can be applied in other contexts or with other respondents (Babbie & Mouton, 2001:278). In this study transferability was attained through thick description of research methodology. The researcher collected sufficiently detailed descriptions of data in context and reported. A nominated sample was fully described to allow adequate comparison with other samples.

Confirmability

Confirmability is a measure of the degree to which the findings are the product of the focus of the inquiry and not the biases of the researcher (Babbie & Mouton, 2001:278). In this study confirmability was tested through the involvement of an experienced supervisor who, as an independent coder, analysed transcriptions, reviewed raw data, tape-recorded data, written field notes, documents and results independently. The representativeness of data, that is, whether the researcher had indeed interviewed all categories of participants needed to obtain a complete picture of the topic, was examined by referring back to the in-depth interview discussions because all participants were to have contributed. The independent coder also reviewed open-coding (analysis) products, axial (synthesis) products, selective and theoretical coding materials relating to intention (proposals) and instrument development information. Seminars were attended to establish the truth-value of the data.

Discussion of results

HIV-positive mothers should be enabled to make fully informed decisions about the best way to feed their infants in their particular circumstances. Whatever they decide, they should receive educational, psychosocial and material support to carry out their decision as safely as possible, including access to adequate alternatives to breast-feeding if they so choose. To make fully informed decisions about infant feeding, as well as about other aspects of HIV, MTCT and reproductive life, women

need to know and accept their HIV status (WHO, 1998). HIV infection can be transmitted through breast-feeding. Appropriate alternatives to breast-feeding should be available and affordable in adequate amounts for women whom testing have shown to be HIV-positive.

The results were discussed in relation to the socio-economic and cultural experiences of HIV-positive mothers who attend Mankweng Clinic in the Capricorn district of the Limpopo Province. The sample comprised 10 HIV-positive mothers (Table 1) who were practising infant feeding of their choice. Interviews were conducted until the data reached saturation with repeating themes. The results of the experiences of HIV-positive mothers revealed two major categories with sub-categories (Table 2), namely, those who opted for replacement feeding for their infants and those who opted for breastfeeding for their infants.

Experiences of mothers who opted to formula feed their infants (n=8)

Formula feeding is designed to meet the nutritional needs of the baby for the first six months of life (DOH, 2000:3; WHO, 2001). The National PMTCT protocol ensures that mothers who choose to formula feed their infants are given a six-month supply of free infant formula.

Socio-Economic Experiences Adequate Supply of Infant Formula from the Clinic (1)

Eight participants indicated that they received four (4) tins of formula per month from the clinic, which equaled twenty-four tins of (500 g) formula for six months. According to the DOH (2000:6), at least a two-week supply of free infant formula should be given to the mother on discharge. Mother no. 1 stated that she received an adequate supply of formula: *"The tins which I receive from the clinic are enough as the newborn baby doesn't eat too much"*. She subsequently made a contradictory statement: *"I used my social grant to buy extra tins of formula for my infant"*. In an informal conversation with the lay counsellor, it was established that HIV-positive mothers who practised exclusive formula feeding were given 3 tins (500 g each) of

formula per month for the first three months of life and 4 tins of formula per month for the second 3 months. This equaled 21 tins of formula for 6 months.

Minimal Supply of Infant Formula from the Clinic (7)

HIV-positive mothers who opted for infant formula experienced problems with the minimal supply of formula from the clinic. Mothers no. 2 and no. 4 said *"At the clinic they gave me four tins (500 grams) of formula and the supply was not adequate because it did not last for a month, they were finished a week before the month ends"*. Mother no. 8 corroborated that the tins of milk formula, which she receives from the clinic, are minimal: *"Sometimes I fill the bottle with water and pour little milk so that it takes me through the whole month."*

According to Science Direct (1995) and WHO (1993) 44 x 500 g tins of formula are needed to feed a baby artificially for the first six months. WHO (1993) further clarified that a mother needs about 5 tins in the first month, 7 tins in the second month and 8 tins a month for the next four months. According to WHO (1993) mothers who run out of formula before the scheduled date used the following strategies:

- buy alternative milk or formula;
- substitute milk with sugar and water or fruit drinks between formulas;
- give fewer feeds per day by over-diluting the formula;
- return to the clinic earlier than the scheduled time.

Allain and Devy (2001) support the above observations by pointing out that even mothers who can read and write make the mistake of mixing too much powder with too little water or too little powder in a lot of water, so often the baby is given under- or over-diluted milk. It was further accentuated in Nutrition and HIV (1998: online) that the instructions on the tin for mixing formula should be followed exactly to ensure that it is neither too concentrated nor diluted. Over-concentration can overload the infant with salts and proteins which can be dangerous whereas over-dilution can lead to malnutrition. These notions were supported by Raisler (2005:279) who underscores the fact that formula distri-

bution is sometimes delayed and quantities are inadequate, leading to feeds being supplement with inappropriate weaning food.

Laura, Guay, Andrea and Ruff (2001:5) state that the strict eligible criteria that include having access to clean water and an uninterrupted supply of free formula are clearly not representative of the resource-poor setting in which many HIV-infected women live. Replacement or formula feeding should only be chosen after carefully considering whether all demands to provide safe replacement feeding can be met. These include access to clean water and resources to buy formula if the mother cannot get to the clinic to receive her free supply, or if the clinic runs out of stock.

Financial versus Non-financial Support from Family Members and Spouses/Partners

The majority (90%) of mothers interviewed were unemployed and only 10% were employed. Some received financial support from their family members and spouses and others did not.

Mothers Who Received Financial Support from Family Members (3)

Mothers no.2, no. 6 and no. 8 indicated that they received financial support from their parents and/or partner: "My parents helped me and bought a tin of formula for my child". "He helped me as much as he can because he does not have a full-time job, he has piece jobs but when he has money he helped me by buying tins of milk and clothes for the child". The DOH (2004) promotes the notion that both parents share the responsibility for the health and welfare of their children. The type of infant feeding method has health and financial implications for the entire family. Mothers, fathers and other members of the family should understand the issues and risks, and be encouraged to reach informed decisions about infant feeding matters together. Ultimately, the decisions about infant feeding tend to be the mother's.

Mothers Who Lacked Financial Support from Their Family Members (6)

The choice not to breastfeed is especially difficult for poor women in developing countries. Such women have

inadequate access to resources, including breast milk substitutes and equipment, fuel and also education and health. Mothers who indicated that they lacked finances to support their infants cited the following: Mother no. 3: "Milk get finished when I don't have money to buy extra tin for my child and I do feel that it is better to breastfeed than to give formula feeding because the first child I was breastfeeding and I was not suffering like this". Mother no. 2: "I found myself in trouble because I am not working". Mothers often relied on social grants to buy additional milk formula for their infants. Mothers no. 1 and no. 4: "This month I have received my social grant and I hope is going to help me a lot, I will be able to buy extra tin for my child".

According to DOH (2000:6) there should be an adequate and continued supply of milk powder, which will cost approximately R100 per month for formula only. Other participants indicated that they relied on the previous child support grants: Mothers no. 3, no. 7 and no. 8: "I am receiving the support grant for my first born child even though is too little to support us". Other participants relied on current child support grants as borne out by the quotations that follow.

Mothers no. 5 and no. 6: "Presently I'm supporting my child with his grant, if it wasn't there Hmm ... I don't know what was going to happen". Six participants had registered their infants for the child support grant and already received a grant from a previous registration. Mother no. 7: "As I have already indicated that I receive child support grant for the first child, even this one I have registered her and hope that by the time she gets it, it will be such a relieve".

HIV-positive mothers may find it difficult to cope with constraints of replacement feeding in terms of cost, workload and time, and with the additional health care needs of non-breast-fed infants. Coutsooudis et al (2003:894) state that hygienic preparation and feeding can be difficult and formula is expensive. There are conditions which must exist for safe and adequate breast milk substitute feeding with formula feeding, such as an adequate and continued supply of formula milk powder.

Lack of Appropriate Home Facilities

Appropriate home facilities required for HIV-positive mothers who opted for formula feeding were found to be largely lacking. HIV-positive mothers who prepare infant formula need the proper facilities as stipulated in WHO (2000), DOH (2000:2), Nutrition and HIV/AIDS (1998:online) and Linkages (2005:2). These include:

- sufficient supply of good quality water to clean utensils and to prepare feeds;
- adequate fuel to boil water, sterilise utensils and make feeds safe;
- clean utensils, containers and cups;
- time to prepare fresh formula before each feed if refrigeration is not available; and
- if using a bottle, also the ability to boil it for 5 minutes or sterilise after use.

Participant mothers lacked facilities for the preparation of formula for their infants. The following citations supported this observation. Mother no. 1: "I found it very difficult to feed the baby on formula because I am using a pressure stove to boil water so that I can prepare feeds. I have to clean bottles and even have to buy Milton for soaking bottles but sometimes I don't have money to buy that". Mother no. 3: "I have to prepare bottle for feeding my baby during the day and at night I woke up to prepare again. If she didn't finish, I don't have a place to put the remaining milk as I don't have a fridge, then milk is wasted, when I prepare small feeds/milk the baby finishes quickly and start crying".

The above responses from participant mothers are consistent with the view that preparing safe formula requires a substantial amount of work and time on the part of the mother, particularly in resource-poor settings (Coutsooudis et al, 2003:892). Mothers have practical difficulties in preparing formula at night and this has implications for both time and fuel requirements. According to UNICEF in Action (c) (2002), SAFAIDS (1999) and the DOH (2000:5), HIV-positive mothers in developing countries have many problems regarding feeding. These include:

- lack of clean water for the clean-

ing of utensils and preparation of the feeds;

- lack of money to purchase formula feeds, fuel or electricity to sterilise feeding utensils or boil water for preparing feeds; and
- no refrigerators to store feeds and maintain freshness for subsequent feedings.

Allain & Devy (2001: 2) assert that many families cannot afford to buy enough formula milk for their babies, pay for electricity to prepare bottles and buy teats and gas. According to the United Nations Population Fund ([SA], 2009), considerable resources are required to prepare formula feeds whether commercial or home made. The mother:

- needs water to clean utensils and prepare feeds;
- requires adequate fuel to boil water to sterilise utensils and make feeds safe;
- needs to prepare up to 6 feeds at a time and keep them cool for up to 24 hours to prevent spoilage.

Raisler (2005:279) states that poor mothers who lack fuel, running water or refrigeration, are often unable to prepare the formula safely. According to UNICEF in action (a) (2002), the formula distribution programme made bottle-feeding affordable, but not feasible, safe or acceptable.

Early Introduction of Solids (6)

In the study *'Exclusive breastfeeding in Vietnam'* by Almroth, Arts, Quang, Thuy-Hoa and Williams (2008:1067) it is clear that exclusive breast-feeding is not practised. None of the mothers interviewed in their study had practised exclusive breast-feeding. All of them had given their infants a variety of fluids and foods from an early age. Similarly, the grandmothers and the *oldest women* reported that they had introduced fluids and foods to their children early.

It was established that HIV-positive mothers who experienced problems with the minimal supply of tinned formula from the clinic resorted to early introduction of solids. Cultural factors influence the mothers' decisions to practise mixed feeding for their babies. Mothers believed that babies introduced to solids at an early age will grow in size and in weight. Mother no. 2: *"I have started my infant on Maltabella*

on the second month because tins of milk finish quickly and I had to come back to the clinic before the last tin finishes and I found that they have nothing in stock". Mother no. 3 indicated that she had started her infant on soft porridge when she was 2 months old: *"I have started my child on soft porridge at two months, and tins of milk which I receive from the clinic do not finish quickly any more"*. Mother no. 4: *"I have started feeding my child on soft porridge at six weeks because the tins of milk which I receive from the clinic are too little and when I go back to the clinic to request for some more tins, I found that the clinic is out of stock"*. Coustoudis, Pillay, Spooner, Kuhn & Coovadia (1999:473) suggest that the practice of supplying free milk formula should be carried out with caution as this seems to encourage mixed feeding, especially if inadequate formula is supplied. In addition, running out of formula is one of the reasons that HIV-positive mothers do not always use formula feeding exclusively. Laura et al (2001:6) state that HIV-positive mothers who live in resource-poor settings find it difficult to source an uninterrupted supply of free formula.

Physical Experiences

Lack of Physical Rest (2)

The normal lives of HIV-positive mothers often become disrupted and some do not cope with the preparation of feeds for their infants. This was evidenced by the following citations. Mother no. 3: *"It is difficult with this child because I am feeding him on bottle, I don't have rest day and night is the same. I have to prepare during the day and night I woke up to prepare again"*. She further stated: *"I find it better to breast-feed because the first child I was breastfeeding and I was not suffering like this"*. HIV-positive mothers may find it difficult to cope with the constraints of replacement feeding, in terms of cost, workload and time, and with the additional health care needs of non-breastfed infants. De Wagt & Clark (2003) support this view by noting that the preparation of safe formula feeds requires a substantial amount of work and time on the part of the mother, particularly in a resource-poor setting. In particular, HIV-positive mothers have practical difficulties in preparing formula at night, as they

have to wake up and prepare formula. Bland, Rollins, Coovadia, Coutoudis and Newell (2007:295), indicate in their study that "those women with inadequate fuel were less likely to adhere to replacement feeding, suggesting there were practical difficulties in preparing formula with wood or no fuel".

Cultural Experiences

Support and Lack of Support from Significant Others

In respect of the feeding methods they have chosen it appeared that some mothers received support from their spouses or partners while others did not.

Support from Significant Others (5)

Some of the mothers indicated that they received support from family members regarding the feeding options they had chosen. Mother no. 10 said: *"My mother accepted the method I have chosen because I am still at school and she wants me to finish as next year is my last year"*. Mother no. 9 indicated that she received support from her husband and her sister's child who helped her with household chores. She cited the following *"The father of my child and my sister's child help me with preparation of feeds as I have indicated that the baby cries a lot"*. According to the DOH (2004), infant feeding methods have health, cultural and financial implications for the entire family. Mothers, fathers and other members of the family should be helped to understand the issues and risks, and be encouraged to reach informed decisions about feeding matters together. De Wagt & Clark (2003: 100) maintain that the father and grandmothers have a considerable amount of influence on the choice of infant feeding method. Where possible and when appropriate, the partner of the mother should be counselled and assisted in understanding the situation so that he will provide the mother with the necessary support. A negative attitude contributes significantly to an unfavourable outcome (DOH, 2000:2). It has been affirmed that formula feeding becomes easier if the baby's father knows the mother's HIV status and supports her decisions (Raisler, 2005:279). Both parents are responsible for the health and welfare of their children and the chosen infant feeding method has health- and financial implications for the entire family.

Therefore, the involvement of the male partner in decision-making about infant feeding seems to be a key factor in the acceptability of formula use by HIV-positive mothers (De Wagt & Clark, 2003: 98).

No Support from Significant Others and Partners (3)

In many cultures there is a stigma attached to mothers who do not breastfeed (UNICEF in Action (b), 2002 online). In this context, 90% of participant mothers were Northern Sotho speaking. It was clear from the participants' responses that breastfeeding is regarded as the norm. This was confirmed by Mother no. 5: *"I am staying with my sister and she doesn't understand why I am not breast-feeding. She said I am not a good mother because each and every mother is supposed to breast-feed her child"*. Mother no. 1 indicated that she was afraid of going home because of her HIV status: *"I am afraid of going home because my partner has told them my status."* Mother 2: *"Hmm... I don't know whether to call it support or not, because he saw the baby once and on that day he asked me why I am not breast-feeding the baby."* Thus, where breastfeeding is the cultural norm, women who do not breastfeed are concerned that this may signal their HIV-infected status to others. Some women may find it difficult for social or cultural reasons, including fear of violence, stigma, ostracism or being abandoned because they are HIV-positive (Laura et al, 2001:4; DOH, 2004). According to De Wagt and Clark (2003:99), fathers and grandmothers of the infant have considerable influence on the choice of infant feeding method. Grandmothers are the main secondary carers for infants, especially when the mother has to be away at work. However, fathers claim to help and participate in child feeding, child care and housework, assisting with tasks such as: *'helping the wife to take care of the baby with feeding and drinking'*; *'Hold baby, give baby a bath'*; *'Sometimes cooking, and washing'* (Almroth, et al, 2008:1068).

In an attempt to assist those who have to provide formula feeds, the Department of Health (DOH) (2000:2) has outlined the following as criteria for safe and adequate formula:

- adequacy: a guaranteed and

continued supply of milk powder. This is measured against an approximate cost of R100 per month for formula for six months. This excludes other costs such as fuel for sterilisation of bottles;

- availability: the selected formula is to be available within easy reach and should be easy to prepare;
- sufficient provision of good quality water;
- acceptable sanitation in the surrounding community;
- facilities for sterilising the bottle, teats/cups/utensils;
- adequate supply of fuel for sterilisation (boiling water) or other sterilisation solutions;
- thorough understanding of the method and process of formula mixing and feeding (bottle or cup), and the ability of the mother to demonstrate such;
- convenient access to infant growth monitoring (clinics); and
- reasonable access to health care services.

Experiences of mothers who opted to breast-feed their infants

Mixed Feeding (2)

Exclusive breastfeeding refers to giving the infant only breast milk and no other solids or liquids, not even water (WHO, 2000; Linkages, 2004). According to Science Direct (1995), breast milk can provide all the nutrition a baby requires for healthy development in its first 6 months of infancy and breast milk is the best. Moreover, the practice of mixing breastfeeding with formula is known to be less beneficial to babies than breast milk exclusively. However, 95% of mothers practised mixed feeding. The latter, according to De Wagt and Clark (2003), occurs when the mother gives both breast milk and other foods and liquids to her baby. They further contend that this is probably the worst feeding option because it subjects the child to the risks associated with artificial feeding as well as the risk of transmitting the virus. For that reason mixed feeding is extremely dangerous and increases the risk of the

child being infected with HIV. Important opinions on why mixed feeding carries a higher risk of MTCT include

- biological explanations of why mixed feeding (breast milk and other fluids or foods) in the early months of life carries a higher risk of HIV transmission from mother to child;
- discussion on the immune factors contained in breast milk, such as leucocytes, IgA protease inhibitor, lactoferrin, complement and glycosaminoglycans – which may in some instances neutralise the HI virus. Other foods and liquids may dilute these protective properties of breast milk;
- ingestion of contaminated water, fluids and food which may lead to disruption of immune barriers, resulting in inflammation of the gut lining, which may further facilitate passage of HIV across the mucosal membrane and into body tissues (Dorosko & Rollins, 2003:119).

Linkages (2005) support the above reflection in which mixed feeding is thought to irritate the infant's internal stomach lining and allow easier access to the virus through the infant's stomach. Besides, the practice of mixed feeding in the first three months of life puts the baby at an increased risk of HIV infection compared with exclusive breast-feeding (WHO, 2000; Laura et al, 2001:4; DOH, 2004). Exclusive breastfeeding is uncommon in Africa and most women give their babies mixed feeds (Hankins, 2000:23).

In this study, one mother who chose to breastfeed, felt compelled by the hospital staff to breastfeed as there was no provision for formula feeding in the hospital. Another mother was reluctant to resist the pressure to breastfeed, as this would reveal her status or fear of her HIV status. These mothers practised mixed feeding from the first month of their babies' lives. Citations recorded in support of this include: mother no. 9: *"I am breastfeeding my child and giving her water and Maltabella once a day"*. This mother seemed to be lacking appropriate knowledge because she further gave the baby formula as she said, *"I am mixing Maltabella with fresh milk which I buy from the shop. I wanted to*

test the baby as to whether she will be able to take *Maltabella*". Mother no. 6 said "From the first month I breastfed my child and gave him water only". Coutsoudis et al. (1999:474) indicate that women who chose to breastfeed were counselled to consider exclusive breastfeeding because of the possible dangers of damage to the wall of the intestines. For most mothers this is a difficult concept because it is culturally acceptable to give water and herbal teas early during breastfeeding and to introduce solids, such as infant cereals, within the first month of life. Raisler (2005:279) cited some obstacles associated with mixed feeding: these include preparation of formula, which is more time-consuming, especially in the absence of a refrigerator, clean running water or a ready supply of fuel for boiling water than mixed feeding, even if the mother has access to formula. There is strong evidence that mixed feeding carries considerable risk for HIV transmission (Coutsoudis et al, 2001:379).

Limitations of the study

- The study was conducted at one clinic in the Capricorn District of the Limpopo Province where Voluntary Confidential Counselling and Testing was done.
- A small number of participants were interviewed. This reduces generalisation within the province.

Recommendations

On the basis of the findings discussed in this study, there is a need to propose the development of the relevant health education programmes that can be utilised by midwives educating HIV-positive mothers regarding the infant feeding of their choice. The main objective is to establish safe infant feeding practices. Whatever feeding practice is chosen by the HIV-positive mother, counselling on infant feeding must take the following key factors into account (Raisler, 2005:279):

- acceptability;
- feasibility;
- affordability;
- sustainability; and
- safety.

Health education content provided

during the antenatal period should include:

- the risk of transmission through breast-feeding;
- the importance of exclusive infant feeding (be it breast or formula feed);
- the benefits of exclusive infant feeding;
- the risks of mixed feeding;
- formula feeding options;
- availability/access to safe clean water, infant formula, utensils and other equipment required for safe preparation of supplementary infant feeding and safe administration of replacement milk using a cup rather than a bottle;
- the feasibility and acceptability of exclusive formula feeding for the mother (taking into account social, cultural and economic factors) – correct and safe preparation of feeds, provision of at least a two-week supply on discharge;
- the feasibility and acceptability of exclusive breast-feeding for the mother (taking into account social, cultural, and economic factors) and ensuring a regular supply of the formula milk.
- Education and support to the mother on safe transition during weaning;
- counselling, where possible, should include a member of the family.

Conclusion

A total of 80% of mothers opted to formula feed their infants. However, most participants lacked appropriate facilities to sustain availability of the milk formula, basic sanitation and electricity. Those who opted for breast-feeding (20% of mothers) also practised mixed feeding. Decisions about feeding options should be based on adequate and unbiased information rather than ignorance – this is what informed choices is all about. Mothers who are HIV-positive have the right to information when they are making decisions about infant feeding. These decisions should be based on awareness of all the risks that the mother is taking in relation to her own health as well as

her infant's future. Comprehensive information on the possibility of MTCT, no matter how inconclusive, must be made accessible to all women who wish to weigh the risks against the social, cultural and economic realities of their own lives and those of families and communities. It was clear from the findings that HIV-positive mothers who practise infant feeding of their own choice do experience socio-economic and cultural problems.

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