

# Factors affecting HIV-infected mothers' ability to adhere to antenatally intended infant feeding choice in Tshwane

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**Objectives.** To determine the factors influencing the ability of HIV-infected mothers to adhere to antenatal feeding choices after routine prevention of mother-to-child transmission counselling.

**Patients and methods.** The postnatal feeding practices of 222 HIV-infected mothers were compared with their prenatal intentions and with those of 53 uninfected mothers.

**Results.** Ninety-four per cent of HIV-negative mothers were breastfeeding their babies at age 6 weeks, while 69% of HIV-positive mothers were formula feeding. Of the HIV-positive mothers who intended to formula feed prenatally, 25% changed their minds and breastfed, while 50% of 52 women planning to breastfeed switched to formula feeds. Mothers who did not adhere to their original intention to formula feed were significantly younger than those who remained with their original choice, and were more likely to have received negative or domineering support and to share their home with someone other than their partner.

**Conclusion.** Women are influenced by circumstances in their homes and at the hospital to depart from their original feeding intent.

South African guidelines on prevention of mother-to-child transmission (PMTCT) of HIV include counselling on appropriate feeding of the newborn child and provide advice on two infant feeding options. Women who choose to breastfeed are expected to have been counselled on the benefits of exclusive breastfeeding for a limited time, followed by abrupt cessation. Women who choose replacement feeding are expected to have been informed of the state's commitment to provide free infant formula for 6 months.<sup>1</sup>

In its practical application, such counselling is inevitably weighted towards replacement feeding unless the counsellors are particularly well informed, well trained and themselves strongly supportive of breastfeeding.<sup>2,3</sup> In a study of antenatally intended feeding choices made by newly diagnosed HIV-infected pregnant women a median of 1 week after post-test counselling, we found that 74% decided on replacement feeding for their babies once they were born, and that these were mothers with higher levels of disclosure, education, resources and coping skills.<sup>4</sup>

The socio-cultural complexity of an HIV-infected woman's decision on infant feeding has been documented.<sup>5,6</sup> Without express reinforcement of information and attitude by the counselling process, which usually takes place several

months before the baby is born, it is likely that various influences can change feeding practices after birth. We also hypothesised that disclosure and stigma would influence actual infant feeding practices after delivery.

The Serithi research project was designed as a prospective study of the psychological impact of the diagnosis of HIV infection on mothers and their children. It offered the opportunity to determine maternal HIV disease progression, nutritional status, feeding choices and children's outcomes. All four clinic sites chosen for inclusion in the Serithi project were implementing PMTCT services fully when the study commenced in July 2003.

## Aim of the study

We aimed to describe the infant feeding practices of HIV-infected mothers from birth to 3 months, establish the social and economic determinants thereof, and compare these with antenatal infant feeding intentions.

## Patients and methods

Newly diagnosed HIV-positive women were referred to the Serithi project by trained HIV counsellors in the PMTCT

programme after routine pre- and post-test counselling using standard PMTCT guidelines.

After written, informed consent, HIV-positive women were enrolled at approximately 28 weeks' gestation and participated in the initial and subsequent follow-up interviews up to 24 months after delivery (feeding practices were determined from birth to 3 months). Inclusion criteria included women aged 14 years and over, who are permitted by law to give informed consent, who had been newly diagnosed as HIV positive during the current pregnancy. Information on the feeding practices of a group of HIV-negative mothers was collected at 6 weeks. This information was used to establish current infant feeding practices in the non-HIV-infected population and assess whether the HIV-positive mothers had feeding practices that were different from the general population.

At the first interview, conducted at 28 weeks' gestation, information was gathered on infant feeding intentions and socio-demographic and psychosocial indicators that might potentially determine infant feeding practices. The psychological variables measured included coping, using an adapted version of the Brief Cope Scale.<sup>7</sup> Stigma was measured using standardised measures.<sup>8</sup> Postnatal feeding practices were determined at 3 days, 6 weeks and 3 months after delivery. The HIV-negative mothers were interviewed only 6 weeks after delivery for the sole purpose of providing information to indicate infant feeding practices among non-HIV-infected women in the community.

## Statistical analysis

Data were entered into an MS Access 2000 database (Microsoft Corp., Redmond, WA, USA) and analysis was performed using SPSS for Windows version 13.0 (SPSS Inc, Chicago, IL, USA).

Associations between independent variables affecting the change from formula feeding intent to actual breast feeding practice were examined using the chi-squared test for categorical data and Student's *t*-test for continuous data. Factors associated with feeding intent that had a *p*-value of <0.25 were subsequently entered into a logistic regression (enter method) to determine which factors were independently associated with breastfeeding intent and practice and with a change from initial feeding intent. A *p*-value of <0.05 was considered statistically significant.

## Results

Three hundred and seventeen pregnant women were recruited between June 2003 and December 2005. Twenty-four participants had prior knowledge of their HIV status and were excluded, leaving 293 subjects for analysis. A further 71 were excluded because of incomplete infant feeding data, allowing analysis of 222 subjects for infant feeding practices. The excluded women did not differ in terms of feeding intention at the first interview (68% v. 77% intended to formula feed;  $p=0.13$ ) from those with complete feeding information.

The comparison of feeding practices shows that the vast majority (94%) of HIV-negative mothers were breastfeeding their babies at age 6 weeks, while 69% of HIV-positive mothers were formula feeding. Five (7.4%) of the HIV-infected mothers who breastfed claimed to be exclusively breastfeeding by 6 weeks, while among the HIV-negative mothers 14% had already introduced solids or semi-solid food by 6 weeks. Only

1 HIV-infected mother had stopped breastfeeding by 6 weeks, stating that she had to return to work.

Of the 222 HIV-positive women, 170 (77%) intended to formula feed but 25% changed their mind and breastfed, while 50% of 52 women planning to breastfeed switched to formula feeds. This left 154 formula feeders (69%) and 68 breastfeeders (31%) (Fig. 1).

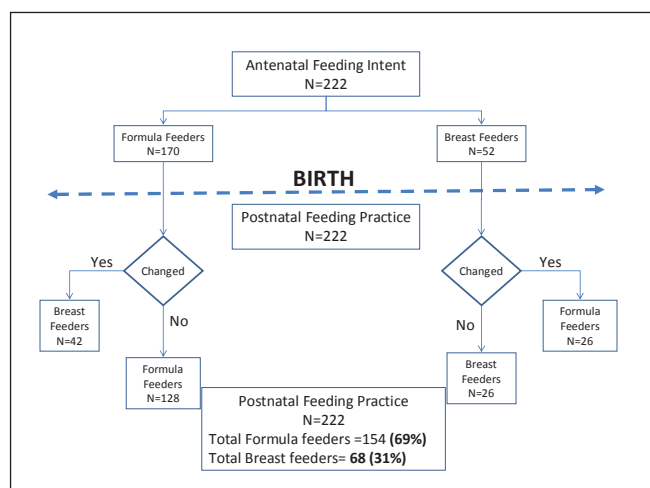


Fig. 1. Comparison between prenatal infant feeding intention and postnatal feeding practice in HIV-positive women.

## Reasons for changes from feeding intention to feeding practice

The factors associated with the change from formula feeding intention to breastfeeding practice are set out in Table I.

Logistic regression analysis (Table II) showed that mothers who did not adhere to their original formula feeding intention were significantly younger than those who remained with their original choice, and were more likely to have received negative or domineering support and to share their home with anybody other than their partner.

We were unable to identify any factors that were independently associated with the change from breastfeeding intention to formula feeding practice, owing to the small number of mothers in this category.

No significant association was found between disclosure or measures of stigma at recruitment and change from formula feeding intention to breastfeeding practice. However, when interviewed 6 weeks after delivery the women who formula fed were asked how they replied when others asked why they were not breastfeeding, and 61 of the 69 women who responded to this question said they felt it was necessary to give an excuse, such as ill health (including breast cancer, tuberculosis, sore or itchy breasts), work, school, breast refusal or personal choice.

Standard measures of stigma and disclosure in this study did not reveal any correlations between these factors at the time of recruitment and changes between prenatal infant feeding intentions and post-natal infant feeding practices. Nevertheless, breastfeeding is the cultural norm in this setting and infant feeding-related stigma was certainly experienced, especially among those mothers who chose to formula feed.

**TABLE I. DETERMINANTS OF CHANGE FROM ANTENATAL FORMULA FEEDING (FF) INTENTION TO BREASTFEEDING (BB)**

Variable	FF choice to FF practice (N=128)	FF choice to BF practice (N=42)	p-value
<b>Continuous variables (mean (SD))</b>			
Age (yrs)	26.5 (4.9)	24.7 (4.7)	0.03
Negative or domineering support	2.2 (2.3)	1.4 (2.1)	0.07 (NS)
Active coping	31.5 (3.6)	32.4 (4.1)	0.17 (NS)
<b>Categorical variables (N (%))</b>			
Disclosure to others other than partner	51 (39.8)	10 (23.8)	0.06 (NS)
Partner providing support	86 (67.2)	35 (83.3)	0.05
Share home with anybody other than partner	108 (84.4)	30 (71.4)	0.06 (NS)
Partner schooling (tertiary or not)	22 (17.2)	2 (4.8)	0.05
Maternal schooling (tertiary or not)	26 (20.3)	3 (7.1)	0.05

SD = significant deviation; NS = not significant.

**TABLE II. LOGISTIC REGRESSION ON FACTORS ASSOCIATED WITH CHANGE FROM FORMULA FEEDING INTENT TO BREASTFEEDING PRACTICE AMONG HIV-INFECTED MOTHERS**

Variable	AOR (CI)	p-value
Age	0.89 (0.82, 0.97)	0.01
Negative or domineering support	0.80 (0.65, 0.98)	0.03
Staying with someone other than partner	0.38 (0.14, 0.97)	0.04
Partner schooling (tertiary or not)	0.16 (0.03, 0.81)	0.02

AOR = adjusted odds ratio; CI = confidence interval.

Of the 42 respondents who changed to breastfeeding from their original intention of formula feeding, 38% said they were 'forced' to breastfeed in hospital and 10% that they were 'forced' by family members. Twenty-one mothers had breastfed for less than 7 days, in most cases because hospital staff or family members were expecting them to, especially if they had not disclosed their status.

## Discussion

Our study provides information on how feeding choices made by HIV-infected mothers after PMTCT counselling change in practice after the baby is born. These data are linked to indicators of psychosocial well-being as well as socio-economic factors. More mothers (75%) adhered to the prenatal infant feeding choice of formula feeding than to the plan to breastfeed (50%). This finding contrasts with findings in KwaZulu-Natal, where there was 78% adherence to breastfeeding and only 42% adherence to replacement feeding.<sup>3</sup> Low adherence to replacement feeding was also observed in pilot PMTCT programmes in Botswana.<sup>9</sup>

Factors that were significantly associated with the change from formula feeding intention to breastfeeding practice were younger age of the mother, and mothers who received negative or domineering support, had partners without

tertiary education, or shared their home with anyone other than a partner. These findings, which are similar to those documented elsewhere, indicate that infant feeding practices become increasingly complex without the necessary support that can only be obtained through disclosure by the mother of her HIV status.<sup>10-12</sup>

We found that only 50% of mothers adhered to an original intention to breastfeed, in contrast to the findings in KwaZulu-Natal, where adherence to the breastfeeding choice was less likely if the mother had electricity, gas or paraffin and if there had been only 1 antenatal visit. In that study it appeared that one of the factors that enabled women to adhere to their original prenatal choice was having been exposed to 4 antenatal feeding counselling visits.<sup>3</sup> Our findings suggest that a single antenatal counselling session incorporating both HIV post-test counselling and feeding advice is not likely to achieve adequately informed feeding decisions. Far too often the consequence will be mixed messages and therefore mixed feeding, acknowledged to be the worst feeding option for all babies.

The standardised stigma scales<sup>7</sup> that we applied in this research did not identify differing levels of stigmatisation between formula-feeders and breastfeeders. We further explored the existence of stigma related to formula feeding, which was shown by the high proportion of women (61 of 69) stating that they made up 'excuses' to explain why they were not breastfeeding.

*We found that women are influenced by circumstances in their homes and at the hospital to depart from their original feeding intent.*



These responses emphasise that choosing to formula feed is not always socially the 'easier' or more acceptable option, even in a peri-urban environment. The formula feeding-related stigma that appears to persist in this community has been documented in other PMTCT sites in South Africa, where women have reported feeling discriminated against because of their infant feeding practice.<sup>12,13</sup>

While the overall uptake of breastfeeding among the HIV-negative mothers was as high as 98% at 6 weeks, none of these mothers practised exclusive breastfeeding. In addition, both groups of mothers in our study introduced semi-solids and other liquid foods to the infant's diet as early as 1 day after birth. Early introduction of complementary foods among HIV-exposed infants has also been reported in Ivory Coast<sup>14</sup> and Zimbabwe.<sup>15</sup>

Some mothers faced an immediate dilemma at delivery of their babies when they felt that hospital personnel were forcing them to begin breast-feeding. This may indicate either that the PMTCT programme has fallen short in identifying those women who are HIV positive through the records, or that there was no facilitated process to enable women to be confident enough to disclose their status and preferred infant feeding choice at delivery.

The counselling process influences prenatal decisions on infant feeding choices within the South African National PMTCT programme. We found that a majority of women (77%) intended to formula feed their infants regardless of their household circumstances, despite the fact that only 30% had access to running water or lived in a concrete or brick house. Nevertheless, we also found that mothers who intended to formula feed have a higher level of education and better socio-economic resources than mothers intending to breastfeed. Furthermore, women who planned to formula feed had greater exposure to HIV than women who planned to breastfeed, either through knowing a family member with HIV or having frequent contact with a person living with HIV. Others have developed culturally sensitive and appropriate counselling tools that incorporate the belief systems of the counsellors and the local context as a means of addressing counsellor bias.<sup>16</sup>

## Conclusion

Making a decision on infant feeding is dependent on a woman's age, her ability to cope with her HIV status and most importantly her ability to disclose her status, from the health facility level through to the household level. We found that women are influenced by circumstances in their homes and at the hospital to depart from their original feeding intent. Since exclusive breastfeeding is seldom achieved, there is a need for increased advocacy and efforts to improve infant feeding knowledge and practices in this community. Initiatives that have adapted global feeding guidelines to local situations may present long-term solutions to tailoring infant feeding counselling within a culturally appropriate and family-centred approach and thus assuring sustainable and safe infant feeding practices.

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