



## Research Article

### Infant Feeding Patterns of HIV Positive Mothers and Disclosure of Status to Family and Partners in Botswana

Tshiamo Reginald Keakabetse<sup>1\*</sup>, Tebatso Paul<sup>1</sup>, Lemphi Moremi<sup>1</sup>, Onalenna Seitio-Kgokgwe<sup>1</sup>, Thuto Tomeletso<sup>1</sup>, Rex Stockton<sup>2</sup> and Ratanpriya Sharma<sup>3</sup>

<sup>1</sup>Institute for Development Management, Botswana

<sup>2</sup>Indiana University, Indiana, USA

<sup>3</sup>University of Miami, Florida, USA

#### Abstract

Transmission during breast feeding, which is a multifactorial process, has been associated with increased HIV transmission of 35%-45% in the developing countries. Infants who are formula fed stand a higher risk of morbidity and mortality due to other causes such as malnutrition, pneumococcal infections and diarrhoeal diseases. It is against this background that this study was conducted to assess women's decisions making process regarding PMTCT, decisions on infant feeding, infant testing and status disclosure to significant others. The results of this study will be used to develop pragmatic interventions and healthcare practices that better address the barriers to prevention of mother to child transmission of HIV while ensuring infant survival.

**Keywords:** Breast Feeding; HIV Positive Mothers; Malnutrition; Multifactorial process; Transmission

#### Introduction

Almost 98% paediatric HIV infection occurs through mother-to-child transmission during the processes of pregnancy, childbirth or

**\*Corresponding author:** Tshiamo Reginald Keakabetse, Department of Public Health, Institute of Development Management, 20222 Mbutho Road, Gaborone, Botswana, Tel: +267 71834676; email: tkeakabetse@idmbis.ac.bw

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breastfeeding [1]. Transmission during breastfeeding, which is a multifactorial process, has been associated with increased HIV transmission of 35%-45% in the developing countries [2,3]. However, babies who are not breastfed stand a higher risk of morbidity and mortality due to other causes such as malnutrition, pneumococcal infections and diarrhoeal diseases. These has created a dilemma amongst HIV positive mothers on whether to breastfeed and expose babies to HIV infection or formula feed and risk their new-borns to die from other causes of mortality [4]. As observed by Chisenga choosing an infant feeding practice for HIV positive African women is quite complex [5].

Globally, infant feeding guidelines have changed rapidly overtime since HIV was discovered in breastmilk and its transmission through breastfeeding was confirmed [6-10]. This has led to confusion and non-adherence to HIV positive mothers on the mode of infant feeding. Several authors have noted that adhering to infant feeding patterns as outlined in the guidelines has remained a challenge in developing countries especially within the African context (Botswana included), where there is a high premium placed on breastfeeding [11,12]. With evidence linking mother to child transmission through breastfeeding, mothers have been very reluctant to opt for the option of exclusive breastfeeding. Studies done in Nairobi and Uganda both reported increased rates of HIV transmission through breastfeeding and this evidence illustrate a dilemma amongst healthcare workers and mothers regarding which method of infant feeding to promote and practice, respectively [13-15].

On the other hand, due to stigma associated with HIV infection, formula feeding has been perceived as "forced" disclosure of HIV status, as women who opted to formula feed are believed to be HIV positive. Moreover, studies have also indicated that there are other determinants that pressure women to opt for a particular infant feeding pattern. Some women have reported pressure from service providers, partners or caregivers and other socio-cultural or economic factors [16-18]. Sibeko observed that where infant formula is the recommended mode of infant feeding, it is rarely feasible in resource constraint settings due to stigma associated with formula feeding [19]. Ndubuka reiterate that AIDS related stigma poses a significant barrier to the uptake of formula feeding in Botswana, thus nullifying the government efforts of ensuring exclusive formula feeding amongst HIV positive mothers. HIV positive women who have accepted their HIV status have significantly higher knowledge of infant feeding practices and this knowledge can easily be transferred to practice.

A study by Stockton observed a tendency among women in Botswana to hide their status from significant others [20]. This lack of disclosure has a bearing on the uptake of recommended PMTCT services including patterns of infant feeding. Furthermore, the rates of infants testing have remained significantly low in Botswana. Disclosure rates to sexual partners have been found to be higher (16-86%) for women who attend voluntary testing and counselling clinics than women tested at antenatal clinics (ANC). Amongst the ANC tested

women, an average of 8% of women reported a violent reaction from partners upon disclosure, thus having implications on optimal uptake and adherence to infant feeding practices [21].

Botswana has had a successful PMTCT Programme with a testing uptake of 98%, ART uptake of 96% and a mother-to-child transmission (MTCT) rate ranging between 3-4% and a low testing rate (47%) of HIV-exposed babies at 6-8 weeks old using DNA PCR [22,23]. HIV testing is routinely provided as part of antenatal care, delivery, and post-natal care services as part of the PMTCT processes. HIV prevalence among pregnant women remains high at 30.4% and a high percentage (93.5%) of mothers who test positive during ANC are enrolled into the PMTCT program [24,25].

In accordance with the United Nations recommendations on breastfeeding, Botswana National PMTCT Guidelines were revised and endorsed exclusive formula feeding for the first 6 months of life, with introduction of complimentary feeds thereafter provided that this option was acceptable, feasible, affordable, sustainable, and safe, commonly dubbed the AFASS criterion. To support this recommendation, the government, through the Ministry of Health, provided infant formula feeds for free for up to twelve months of life. For the HIV positive mothers who did not meet the AFASS criteria as per the guidelines, optimal breastfeeding is recommended. Optimal breastfeeding is defined as exclusive breastfeeding for the first six months of life. After the initial six months, formula feeding can be introduced at any time provided the AFASS criterion is met [26,27].

A clinical trial commonly known as the Mashi study, done by Botswana Harvard Partnership which compared the efficacy and safety of two infant feeding strategies (breastfeeding and formula feeding) in preventing postnatal mother-to-child HIV transmission has shown that infants who were in the formula-fed group had lower rates of HIV infection but increased rates of early mortality and adverse events from infectious diseases than those who were in the breastfed group. Based on the results of Mashi study, exclusive breastfeeding was regarded as the feasible method of preventing mother-to-child transmission in Botswana [28,29].

As the country moves towards implementation of option B+ in order to eliminate MTCT of HIV, understanding of the infant feeding patterns including knowledge, attitudes and practices is crucial. It is against this background that this study was carried out to fill this knowledge gap. The study seeks to assess the infant feeding patterns of HIV positive mothers and disclosure to family or care givers in an effort to greater understand the factors which contribute to infant feeding decisions and practices.

Building on the information gathered thus far, the current study focuses on women's decisions regarding PMTCT, including decisions on infant feeding, infant testing and status disclosure to significant others. The results of this study will be used to develop pragmatic interventions and healthcare practices that better address the barriers to prevention of mother to child transmission of HIV.

## Methods

### Study design

The study utilized a cross sectional quantitative and qualitative methodology to assess the patterns of infant and the influence of disclosure on the different feeding choices amongst HIV positive

mothers attending postnatal clinics. Results of the quantitative component have been published elsewhere [30].

### Population, sampling and setting

Data was collected from 305 (quantitative) and 60 (qualitative) HIV positive women, postnatal within 6 months of delivery attending Child Welfare Clinics (CWC) in selected districts and government health facilities. Using the booking register at the respective facilities, eligible women were approached about the study and those who agreed to participate were interviewed. Eligibility criteria included: HIV positive mothers exposed to PMTCT, over 18 years old, having a live baby within 6 months post-delivery and not having any HIV defining illnesses. Purposive sampling was employed to recruit participants from randomly selected clinics from city, town, urban, and rural areas. The sites included Gaborone, Selebi Phikwe, Lobatse, Mahalapye, Boteti/Letlhakane and Ghanzi districts.

### Survey instrument

A survey instrument was developed and translated to Setswana and English as these are the two national languages in Botswana. For the qualitative arm, open-ended questions were administered seeking in-depth information on participants' decisions on infant feeding, infant testing, experiences in disclosing HIV/AIDS status to partner, and the ways in which disclosure impacts feeding decisions. The survey included the following sections: socio-demographic information, baby's health, mother's health, infant feeding intentions/practices and disclosure to partner/family.

### Procedure

The study was approved by the Ministry of Health in Botswana (Health Research and Development Committee). Informed consent was administered to respondents in English or Setswana based on the preference of the participant. Participants were informed of the study rationale, were assured that participation was voluntary, and were informed of the limits of confidentiality. Trained research assistants travelled to each of the selected clinic sites and explained the study and consent procedure to potential participants. Those who agreed to participate signed a consent form and the study tool administered.

### Data analysis

Qualitative data were constructed into themes using basic content analysis when reading through the participants' responses. This technique has been hailed as a quick and efficient early method in qualitative data analysis [31]. From this early thematic analysis, a conceptual framework constructed and final themes were streamlined into the framework based on repeats commentary, concepts and key words derived from responses. The process of thematic analysis was conducted independently by author one and confirmation of themes through discussion with research assistants. Firstly, pre-determined themes from literature were used as the framework for content analysis and emerging issues were added to the framework following discussion and interpretation by analysis team. Initial themes that were derived from literature included health system support, negative experiences of disclosure, stigma and discrimination as some of the factors that influenced infant feeding choices [32-34].

## Findings

Table 1 shows the demographic status of the 60 respondents in the study. The age range of the women was 15-42 years, with mean age of 32 years. Majority of the women, 53% (n=32) were in a cohabitation relationship. The mothers had high literacy with 86% (n=52) having gone beyond primary level. Unemployment levels remained high at 68% (n=41).

Age (Years)	Frequency (N=60)	Percentage%
15-19	3	5
20-24	12	20
25-29	13	22
30-34	14	23
35-39	16	27
>40	2	3
<b>Marital status</b>		
Single	22	37
Married	5	8
Cohabiting	32	53
Divorced	1	2
Widowed	0	0
<b>Education</b>		
None	2	3
Non-formal	2	3
Primary	5	8
Secondary	35	58
Post-secondary	17	28
<b>Employment</b>		
Unemployed	41	68
Salaried employed	11	18
Casual employment	3	5
Self-employed	5	9
Other	0	0
<b>Income (Pula)</b>		
None	41	68
<1000	8	13
1000-2000	4	7
2001-3000	3	5
3001-4000	3	5
4001-5000	1	2
> 5000	0	0

**Table 1:** Demographic characteristics.

## Factors influencing method choice and disclosure

The respondents provided data on factors influencing infant feeding patterns and experiences of disclosure to family members. A variety of factors emerged from the data ranging from service provision approaches like counselling, mothers' perspectives as well as their knowledge and circumstances. Responses were categorised and presented as per the themes that follow.

### PMTCT counselling

As part of routine PMTCT services, mothers receive counselling during antenatal care, delivery, and postnatal periods. Mothers were

asked about factors that influence their decision to select any infant feeding method. Mothers who chose exclusive breastfeeding indicated that PMTCT counselling had a significant role in aiding them to choose the method. This was buttressed by some of excerpts from a mother who said:

*"I was taught by a nurse that I can still breastfeed without passing the virus to my child..."*

Mothers were given advice based on their individual conditions post assessment to guide on which method would be suitable. Based on the mothers' medical condition, service providers suggested specific infant feeding practice as one of the mothers explained:

*"Because I was told to breastfeed by the Doctor as my CD4 count was high."*

### Perceived benefits

Decision making about the choice of infant feeding practice was also influenced by the perceptions mothers had about a particular method. Mothers who chose breastfeeding believed that the method is beneficial to the baby as it is convenient and prevents infections. The mothers indicated that:

*"Baby grows well and the milk is ever ready and at correct temperature."*

*"Breast milk prevents poor hygiene illnesses as it is safe and clean"*  
*"Breast feeding, because it prevents the baby from short illnesses like diarrhoea"*

So mothers who chose breastfeeding believed that it had a protective effect on the baby and that influence their decision making about the method of choice for infant feeding.

### Perceived stigma

Mothers expressed that there is a societal expectation that they should breastfeed their babies post-delivery. They said if they choose not to breastfeed, people will know their HIV status. One mother said:

*"Exclusive breastfeeding helps us in terms of stigma and no one will know if you are sick or what..."*

To avoid this kind of "forced disclosure", mothers chose exclusive breastfeeding. From the mothers' perception, stigma has a role in influencing the method of infant feeding by HIV positive mothers, specifically inclination to choose exclusive breastfeeding.

### Fear of infecting the infant

Understanding that transmission of HIV can occur during breastfeeding influenced mothers to consider formula feeding as a method of choice. This was expressed during conversations with mothers indicating what influenced their decision not to choose breastfeeding. Their individual responses were:

*"I am scared to infect my baby..."*

*"I do not want to transmit the virus to the baby"*

*"I did not want my baby to contact the virus through breastfeeding. Formula is much safer"*

### Mother's circumstances

Some participants chose their index method of infant method because of their circumstances. They would have otherwise chosen a different

method (breastfeeding) but because of their prevailing situations, they ended resorting to another method (formula feeding). This data was deduced from the following verbatim expressions from individual mothers:

*"Formula feeding because i started ARV late."*  
*"Formula feeding because I am working and I go on trips sometimes."*  
*"...my nipples are too small so the midwife advised me to formula feed"*

### Mother's knowledge

Knowledge about infant feeding method practices and transmission of HIV played a role in influencing mother to opt for a particular method. Mothers who had limited information chose formula feeding either because, they did not get sufficient information or all they knew was that HIV positive mothers should not breast feed. Asked which they were on and what influenced their decision, mothers said:

*"Formula feed because I have the virus."*  
*"Formula feeding because I didn't understand or get the information properly about breastfeeding."*

### HIV disclosure experiences

Upon disclosure of status to significant other, parents or partners, HIV positive mothers had either positive or negative experiences. Positive experiences were reported as illustrated by the following expressions from different women:

*"Accepted and encourages me on taking treatment"*  
*"Both my partner and family were so supportive"*

However, those who went through negative experiences said:

*"At first the family was not supportive. They didn't care about me after I delivered the baby they showed me support, my partner was supportive"*  
*"I have realised that people who use to be your friends will discriminate you, saying bad things about you"*

It is evident from the above mothers' expressions that disclosure can enhance support through positive experiences or can bring about regretful moments if mothers receive negative experiences after disclosing their positive status.

The study explored infant testing practices, enablers and barriers as part of the PMTCT continuum. There was general anecdotal data on inadequate testing rates by HIV positive mothers hence the key question in this regard related to reasons for low uptake of the service. Mothers expressed varying causes ranging limited information on when infants should be tested, logistical challenges related to scheduling of services and infrastructural issues or lack of commodities for infant testing. Some of the reasons are supported by the following excerpts derived from the data:

*"Health professionals keep sending me back home promising to call"*  
*"I am still waiting for booking date"*  
*"I was not aware I should test her"*

As clearly observed from the mothers responses, reasons for lack of infant testing were mainly facility related which provides opportunity for improvement of this service.

## Discussion

The survival of HIV exposed infants is highly dependent on PMTCT interventions including infant feeding practices of HIV positive mothers. Mothers struggle with recent HIV diagnosis, challenges of caring for the baby including infant feeding and disclosing their status to significant others. HIV positive mothers should be informed about the different infant feeding modalities regardless of their preferences. While guidelines recommend the criteria of AFASS to be used to guide service providers on counselling HIV positive mothers about the method of infant feeding, it should not that the decision making process is quite complex. It should take into consideration the intricate local societal environment and the mothers' ability to withstand its influences. Poggensee reiterate that there is need for assessment of local context to implement appropriate evidence informed interventions. Data on exclusive breastfeeding in African context has been reported to be very low ranging from 17% in Zimbabwe, 23% in Zambia (WH), 2003 and 29% in South Africa [35-37]. Globally, studies from Bangladesh and Brazil have shown early introduction of other feeds increases mortality due to diarrhoea and pneumonia [18]. HIV positive women in this study made decisions about infant feeding based on a variety of factors including personal circumstances and their knowledge or lack; about HIV transmission during breastfeeding. A study by Laher concluded that for the success of HIV prevention through the PMTCT service provision, a variety of individual, social and structural factors must be addressed [38].

Disclosure of HIV status to sexual partners has been identified as an important strategy towards prevention and control of HIV [39]. Despite the benefits of disclosure, some women have had negative experiences post exposure including loss of economic support, discrimination, abuse and family disruptions. However, majority of women who disclosed their status reported supportive responses from their partners and families. It is equally important to take advantage of the prevailing disclosure environment and to implement programmatic interventions. This would potentially eliminate barriers to disclosure.

Potential limitations of this study include the fact that the sample size was typically small, hence the experiences presented do not necessarily represent all HIV positive women. Moreover, we used purposive sampling method which could the mothers who participated in the study may have had similar characteristics thus their openness to share their experiences. However, participants were sought from rural and urban settings with variant socio demographics variables. We therefore believe that findings are applicable to HIV positive women with similar characteristics.

## Conclusions and Recommendations

To address infant feeding practices amongst HIV positive mothers, it is imperative to use a multifaceted approach addressing socio-cultural and economic determinants of decision making amongst these women. PMTCT interventions have to be strengthened to ensure mothers receive appropriate information at the right time. Mothers should be supported together with their significant others on disclosure of HIV status. Early Infant Diagnosis (EID) remained a challenge in this study, further investigations should be considered to unravel the nuances that could be attributable to that.

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