



Advancing Exclusive Breastfeeding among HIV-Positive Mothers in Low Resource Settings

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Exclusive breastfeeding (EBF) involves giving only breastmilk without addition of any complementary foods during the first 6 months of life. Diarrhoeal diseases is the second leading cause of death in under five children globally. On the other hand, exclusively breastfed infants have a reduced risk of gastrointestinal infections. Within the context of mother to child transmission (MTCT) of Human Immuno-deficiency Virus (HIV) following birth, exclusive breastfeeding of the HIV exposed infant is the gold standard infant nutrition. New guidelines by the World Health Organisation (WHO) stipulated new approaches especially public health approach in applying the updated infant feeding. The new guidelines borders on amongst others, the duration of breastfeeding by mothers living with HIV (MLWH). It is now recommended that MLWH should breastfeed for at least 12 months and may continue breastfeeding for up to 24 months just as it is applicable in the general population or longer while being fully supported for anti-retroviral therapy (ART) adherence. Despite the benefits of exclusive breastfeeding, inadequate knowledge of breastfeeding has been identified as a constraint to exclusive breastfeeding especially among HIV positive mothers in low resource settings. Exclusive breastfeeding by HIV positive mothers is imperative especially in low resource settings where malnutrition and poor environmental conditions are endemic. This will reduce infant morbidity and mortality. Non-exclusive breastfeeding, more than doubles the risk of vertical transmission of HIV and confers lesser

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protection against serious childhood illnesses such as diarrhoea and pneumonia compared to exclusive breastfeeding.

Selection Criteria: Systematic reviews, randomised controlled trials, policy briefs, and cross-sectional studies that border on effects of exclusive and non-exclusive breastfeeding on HIV-free survival of HIV-exposed infants.

Keywords: Exclusive breastfeeding; HIV; low resource setting; pregnancy; HIV free survival (HFS).

1. INTRODUCTION

Exclusive breastfeeding involves giving no other food or drink, not even water except breastmilk during the first six months of life [1]. Nevertheless, exclusive breastfeeding allows the infant to receive oral rehydration solution (ORS), drops and syrups (vitamins, minerals, and medicines) if/when the need arises. The World Health Organisation in various fora has been advocating for exclusive breastfeeding in a child's first six months of life. The benefits have been shown to be enormous which includes achievement of optimal growth, development, and health [1].

Infant feeding within the context of HIV poses significant challenges due to the risk of possible transmission of the HIV through breastfeeding. Prior to 2010 and the updated 2016 WHO HIV and infant feeding guidelines, avoidance or early cessation of breastfeeding was seen to be the gold standard. However, empirical studies revealed a higher morbidity and mortality rate amongst babies that were not exclusively breastfed owing to diarrhoea, malnutrition and other diseases [2].

Findings from a systematic review involving two controlled trials and 18 other studies carried out in both developed and developing countries revealed the advantages exclusive breastfeeding for six months have over exclusive breastfeeding for four months followed by mixed feeding (breast milk + complementary feeds) [2]. The reported benefits include amongst others, a lower risk of gastrointestinal infection for the baby, delayed return of menstruation, and more rapid maternal weight loss [2].

Exclusive breastfeeding has been shown to be the gold standard amongst all the infant feeding options [3]. In an article titled 'Going for Gold', it was reported that breastfeeding, and in particular exclusive breastfeeding for the first six months of a child's life, ranks among the most effective interventions for improving child survival and health [3].

2. HISTORY OF EXCLUSIVE BREASTFEEDING

Prior to 2001, the World Health Organisation (WHO)'s recommendation was that babies be exclusively breastfed between four to six months with a subsequent introduction of complementary feeds [4]. However, following expert consultations as well as systematic reviews at the instance of WHO, the recommendation was changed to exclusive breastfeeding for a minimum of six months. This was sequel to the review commissioned by the WHO which showed that babies exclusively breastfed for at least six months experienced less morbidity, from gastrointestinal infections and showed no deficits in growth [4].

3. BREASTFEEDING PRACTICES IN AFRICA

The practice of breastfeeding is as old as human existence. It has been the primary source of feeding for newborns for both human and primate populations. Nonetheless, the breastfeeding practices differ across various climes. More than 95% of infants are breastfed in Africa but the feeding practices are often inadequate, with addition of water and other liquids to young infant's diet very prevalent [5]. Similar finding were reported in the 2013 Nigeria Demographic and Health Survey. The report noted that only 17.0% of infants at the age below 6 months regardless of their HIV status were exclusively breastfed [6].

In the article, 'Global trends in Exclusive breastfeeding', the practice of exclusive breastfeeding was found to be least in Africa [7]. Furthermore, in Africa, west and central Africa have the lowest levels of practice of exclusive breastfeeding. Due to cultural beliefs hindering exclusive breastfeeding in Africa, HIV-positive mothers may have to go against cultural norms that support early introduction of mixed feeding in the continent [8,9].

The breastfeeding patterns or practices can be as a result of some factors. High amongst the factors that contribute to mixed feeding is perceived breast milk insufficiency [10]. The wrong perception by some mothers that babies cry of hunger because the breastmilk is sometimes not enough was influential to how they interpreted the baby's crying even after breastfeeding. This perception often led these mothers to introduce mixed feeding [10].

3.1 Benefits of Exclusive Breastfeeding

Exclusive breastfeeding has been shown to be highly beneficial to all newborn babies. As pointed out earlier, studies in different parts of the world have shown that exclusive breastfeeding reduces morbidity associated with gastrointestinal infections [2,4]. A Cochrane review reported that infants breastfed exclusively for 6 months have a reduced risk of gastrointestinal infections. Furthermore, mothers who exclusively breastfeed their babies have a higher likelihood of remaining amenorrhoeic for six months postpartum and to lose weight postpartum at a slightly faster rate [11].

An observational study in the Dhaka slums of Bangladesh revealed that compared with exclusive breastfeeding in the first few months of life, partial or no breastfeeding was associated with a 2.23-fold higher risk of infant deaths resulting from all causes and 2.40 and 3.94-fold higher risk of acute respiratory infection (ARI) and diarrhoea respectively [12]. A secondary analysis of data from the National Health and Nutrition Examination Survey III found that infants who were fully breastfed for four to less than six months were at greater risk for pneumonia than those who were fully breastfed for more than six months [13].

Furthermore, exclusive breastfeeding for at least 6 months contributes to a child's immunity to infectious diseases and malocclusion, increases intelligence, and adds to a probable reduction in overweight and diabetes [14].

3.2 Hindrances to Exclusive Breastfeeding

Despite the benefits accruing from exclusive breastfeeding, there are still widespread hindrances to exclusive breastfeeding. There are reports of low uptake of breastfeeding despite its

positive effects both to the mother and the baby. In a study to ascertain the constraints to exclusive breastfeeding in South West Nigeria, it was discovered that the desire to practice exclusive breastfeeding was often compromised shortly after birth [15]. The major constraints noted were poor nutrition, inadequate support from spouses, and conflicting position from significant others. Other major hindrances found in this study were the perception that babies continued to be hungry after they have been breastfed, maternal mental health problems (example: puerperal psychosis), fear of babies becoming addicted to breastmilk, and the need for speedy return to work [15]. In a similar study to determine the barriers to exclusive breastfeeding in Ayeyarwaddy region of Myanmar, stakeholders reported that despite widespread knowledge of exclusive breastfeeding, there was low adherence because mothers, spouses, and grandmothers believed that exclusive breastfeeding was not sufficient for the babies and that solid foods and water were necessary [16].

Inadequate knowledge about breastfeeding has also been attributed as a constraint to exclusive breastfeeding. In a cross-sectional study involving 384 mother-infant dyads to determine barriers to exclusive breastfeeding in Eldoret, Kenya, the reported barriers to exclusive breastfeeding included; breastmilk unsatisfying to the infant (n=157, 64.4%), insufficient lactation (n=35, 14.3%), to improve the nutritional status of the baby by adding complementary feeds (n=18, 7.4%), that complementary feeds enables the baby to learn about alternative feeding (n=19, 7.7%), and mother's need to resume work (n=15, 61%) [17].

There are maternal and infant factors that hinder breastfeeding. High amongst maternal factors that hinder exclusive breastfeeding is previous negative breastfeeding experience. Mothers who did not enjoy their previous experience appear to hesitate from exclusive breastfeeding in their subsequent births [18]. In addition to maternal and infant factors, there are societal factors that also hinder exclusive breastfeeding. Cultural myths and beliefs associated with breastfeeding are among the obstacles to attaining exclusive breastfeeding on the African continent [19]. The cultural practices highlighted include: that colostrum (first breastmilk) is to be disposed and the belief that mixed feeding is necessary for adequate infant nutrition. It is believed in these climes that exclusive breastfeeding will not be

enough for infant growth and development. The mothers in the rural areas of this study that manually expressed and discarded the colostrum held the view that the first milk was dirty and they feared that it might make the child sick. Another cultural myth that hinders the adoption of exclusive breastfeeding is the belief that sexual intercourse during breastfeeding pollutes the breastmilk. This has led mothers who intend to recommence sexual intercourse to introduce complementary feeding earlier than expected [20].

Furthermore, the vocation of the nursing mothers appear to hinder exclusive breastfeeding in some instances. A study to ascertain the determinants of exclusive breastfeeding in the Atwima Nwabiagya District of Ghana revealed that farming as a profession was a major setback to the practice of EBF in the Barekese sub-district [21]. Female farmers from rural Ghana reported that they leave their babies in the care of others and travel miles away to engage in farming activities. Consequently, in the mother's absence, the main food fed to baby is a locally prepared cereal meal, tenaciously increasing baby's chances of contracting gastrointestinal infections [21]. Absence of EBF volunteers and EBF promotion activities are amongst other factors identified as contributing to failure of mothers to adhere to exclusive breastfeeding [20]. Mothers need teaching and guidance in establishing breastfeeding. First time mothers often find it difficult to cope with the demands of child rearing [20]. In this study, the absence of community volunteers in exclusive breastfeeding promotion became the primary hindrance to the practice of EBF in the two areas studied. When mothers in these areas lose touch with the community volunteers, other uninformed sources of information appeared to drown out the proper information on exclusive breastfeeding the mothers may have learnt. Mothers-in-law were forced to reckon with in this regard [21].

3.3 Exclusive Breastfeeding and HIV/AIDS

Breastfeeding is the standard infant nutrition for HIV infected and non-infected infants owing to the fact that human milk is the ideal nourishment for infants' survival, growth and development [22]. On its updates on HIV and infant feeding, the WHO submitted that breastfeeding is one of the foundations of child health, development and survival, especially where diarrhoea, pneumonia

and undernutrition are common causes of mortality among children younger than five years of age [23].

Following a two year prospective study in Uganda on the survival of HIV-positive and HIV-negative children born to HIV-positive and HIV-negative mothers, it was reported that the risk of mortality in all children born to HIV-infected mothers was significantly increased, and was associated with maternal ribonucleic acid (RNA) viral load [24]. Based, on prevailing evidence, the World Health Organisation in 2010 rolled out a new set of recommendations that has helped reduce mother to child transmission of HIV. The new recommendations stipulate that HIV-infected pregnant women in need of anti-retroviral therapy (ART) for their own health should start anti-retroviral therapy (ART) as soon as feasible regardless of gestational age and continue throughout pregnancy, childbirth, breastfeeding (if breastfeeding), and throughout life regardless of CD4 level [25]. On the other hand, it is also indicated for HIV-infected pregnant women who are not in need of ART for their own health to receive effective ARV prophylaxis. This is because, effective anti-retroviral (ARV) prophylaxis is needed to achieve HIV free survival in their infants. The WHO recommend that this ARV prophylaxis should be commenced from as early as 14 weeks of gestation (second trimester) or as soon as feasible during pregnancy, labour and delivery or thereafter [25].

Research has shown that breastfeeding especially exclusive breastfeeding, limited to breast milk only, plus any minerals, vitamins and prescribed medicines that may be needed for the first six months after birth reduces the risk of postpartum transmission of HIV from an infected mother to her baby [26,27,28].

On the other hand, non-exclusive breastfeeding, more than doubles the risk of vertical transmission of HIV [29]. Similarly, it was reported from a study to ascertain the factors affecting the duration of exclusive breastfeeding among HIV-infected and uninfected women in Lusaka, Zambia that when exclusive breastfeeding is practised, there is a lower risk of HIV transmission compared to mixed feeding [30]. Furthermore, mixed feeding or partial breastfeeding confers lesser protection against serious childhood illnesses such as diarrhoea and pneumonia than exclusive breastfeeding [31].

There is strong objective evidence in favour of mothers known to be HIV-infected (and whose infants are HIV uninfected or of unknown HIV status) to exclusively breastfeed their infants for the first six months of life, introducing appropriate complementary foods thereafter and continue breastfeeding after introducing complementary feeding [23]. Furthermore, the WHO guidelines also submitted that even when anti-retroviral drugs are not immediately available, breastfeeding may still provide HIV exposed infants a greater chance of HIV-free survival [23]. However, the WHO guideline stated that for HIV positive mothers, abrupt cessation of breastfeeding is not advisable. Rather, mothers known to be living with HIV who decide to stop breastfeeding at any time should stop gradually within one month. Mothers or infants who have been receiving ARV drug prophylaxis are strongly advised to continue prophylaxis for one week after breastfeeding is fully stopped.

Exclusive breastfeeding by HIV positive mothers is imperative. As pointed out by the WHO infant guidelines, preventing mother to child transmission (PMTCT) of HIV needs to be balanced with meeting the nutritional requirements of infants and protecting them from non-HIV morbidity and mortality [25]. The recommendation to breastfeed until 12 months of age and then consider whether to either stop breastfeeding or continue breastfeeding for longer was based on some considerations:

- The risk of mortality among young children after 12 months of age is lower than the risk in the first 12 months of life. Even though breastfeeding for longer periods has many other health benefits, it has less impact on mortality in this later period [14].

Infants breastfed exclusively for 6 months have a reduced risk of gastrointestinal infections [11]. Notably, a lot of infants die every year owing to gastrointestinal infections: mainly diarrhoeal diseases. In a fact sheet titled 'diarrhoeal diseases', the World Health Organisation submitted that diarrhoeal diseases is the second leading cause of death in children under 5 years old and is responsible for the death of about 760,000 children every year [32]. It is appropriate to state verbatim the guidelines from WHO.

In 2010, global WHO HIV and infant feeding guidelines were updated to recommend that, in settings in which diarrhoea, pneumonia and undernutrition were still common causes of infant

and child mortality, national health authorities should, while providing ARV drugs, promote and support breastfeeding among women and mothers living with HIV. Such mothers were recommended to exclusively breastfeed their infants for the first six months of life, to introduce appropriate complementary foods thereafter and to continue breastfeeding for the first 12 months of life. Mothers living with HIV should then consider stopping breastfeeding at 12 months if they are able to provide a nutritionally adequate and safe diet without breast milk. The guidelines noted that, for women living in food-insecure regions, continuing breastfeeding beyond 12 months may still be important for the child to achieve an adequate diet.

Furthermore, the guideline stipulated quite succinctly that in climes where the available health services provide and support lifelong ART, inclusive of adherence counselling, and promote and support breastfeeding among women living with HIV, the duration of breastfeeding should not be restricted.

It is of paramount importance to ensure that there is a balance between child survival and infant feeding practices. During the first three months of the war in Guinea-Bissau in 1998, children nine to twenty months of age who no longer breastfed were six times more likely to die than children still breastfeeding [33]. Sadly, despite other hot spots of war in other continents of the world, Africa consistently remains among the top places for ongoing conflicts. More than 65 million people globally fled their homes due to war, human rights violations, violence, and persecution in year 2015 [34]. Most affected was the continent of Africa where about 16 million people were either displaced or forced to flee to other countries in late 2015. The increasing refugee problems stemmed from the ongoing civil war in Somalia, the conflicts in South Sudan and Burundi, and the Boko Haram crisis in Nigeria [34]. Consequently, Africa is full of refugees. Civil wars prevalent in many countries of Africa result in the shutting down of facilities that provide basic amenities.

WHO guidelines reported that data from low and middle-income settings before the scaling up of anti-retroviral therapy for mothers living with HIV (in accordance with the 2010 WHO recommendations) showed a rise in mortality and morbidity, including growth faltering, among infants of mothers living with HIV who were never breastfed or who stopped breastfeeding early

[23]. Among these infants, breastfeeding was never initiated or the duration of breastfeeding was limited to reduce the risk of postnatal transmission of HIV [23].

4. WHY EXCLUSIVE BREASTFEEDING FOR HIV EXPOSED INFANTS

As pointed out earlier, in low resource settings and in areas with continuous conflict, breastfeeding in most cases is the best assured option for standard infant feeding. The importance of exclusive breastfeeding in enhancing child survival cannot be over emphasized. In Somalia, drought and famine have taken a toll [35]. Many Somali women do not exclusively breastfeed, instead feeding their infants with camel's milk, tea or water in addition to breastmilk [35]. This is because most rural women return to strenuous farm work within few days of giving birth thereby making it difficult for the women to adhere to infant feeding recommendations. The outcome is that the babies are often diagnosed of acute malnutrition [35].

Human breastmilk is highly regulated, comprising not only nutrients but immunologically active components to protect newborns against disease and support the maturation of their own immune system [36]. Furthermore, there is substantial experimental evidence showing that formula feeding led to higher morbidity and mortality rates among children who would have otherwise been HIV uninfected and alive in the long run [37].

A WHO collaborative team study submitted that infants who were not breastfed and received infant feeding formula or other replacement feeds had a six fold increased risk of dying during the first two months of life, a four-fold increased risk between two to three months, and a 2.5-fold increased risk between four and five months when compared with those that were exclusively breastfed [36]. The authors further opined that it will be difficult, if not impossible, to provide safe breastmilk substitutes to children from underprivileged populations [37].

Mixed feeding (involving supplementation of breastfeeding with fluids and solids) on the other hand was documented as strongly contributive to increasing the risk of HIV transmission to the baby. This may be attributed to the fact that additional feeds employed in mixed feeding may

compromise intestinal integrity and result in small lesions in the immature gut where the virus can pass and infect the infant [38].

A shifting paradigm in anti-retroviral treatment for pregnant and breastfeeding women, the 2013 WHO guidelines for the use of antiretroviral drugs in pregnant and breastfeeding women represent a major change from previous recommendations for PMTCT in low and middle-income settings [39]. Of noteworthy in the 2013 guidelines is the fact that prevention of mother to child regimen will no longer be determined by the woman's health status. Rather, all women, irrespective of CD4+ T-cell count or clinical stage, will initiate standard first-line ART to reduce the risk of HIV transmission to the child and to her uninfected partners.

The introduction of ARV use in pregnancy has been shown to be effective in reducing mother to child transmission of HIV and achieving HIV-free survival (HFS) (an infant or young child born to a mother living with HIV remains both HIV uninfected (confirmed negative HIV status) and also alive over a defined follow-up period. It is commonly reported at 18 months or 24 months of age.). An intervention cohort study to determine mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first six months reported that infants exclusively breastfed by women with CD4-cell counts less than 200 per μL were twice as likely to become infected and almost four times more likely to die before six months of age than were infants exclusively breastfed by women with CD4-cell counts above 500 per μL [40].

5. ARV USE IN THE PERINATAL PERIOD

It is widely accepted that scaling up ARV use in the perinatal period plays a significant role in the reduction of mother to child transmission of HIV. The use of ARV drugs for PMTCT has been shown to be effective since the mid-1990s in multiple clinical trials and programmes [25]. A PEPFAR report noted that the use of ARVs has averted an estimated 600,000 new HIV infections in children since 1995, the vast majority since 2005 [41]. ARV prophylaxis from as early as 14 weeks or as soon as feasible in pregnancy is recommended for HIV-infected pregnant women who are not in need of ART for their own health and whose infants require effective ARV prophylaxis to prevent HIV transmission to their infants [25].

6. THE TWO SIDES OF THE COIN

It is pertinent that we consider the two sides of the coin: what does empirical data reveal about the role of mixed feeding and exclusive breastfeeding in achieving reduced infant mortality and HIV free survival amongst infants of HIV positive mothers. A look at the available evidence is instrumental to arriving at a reasonable conclusion on the best approach that will help achieve a reduced infant mortality and enhance HIV free survival for infants of HIV positive mothers.

Comparing mortality and HIV-free survival of breast and formula-fed infants born to HIV-positive mothers in rural Rakai district of Uganda, the meta analysis revealed that though there were no differences in their HIV-free survival rates in both groups, infant mortality among formula-fed infants born to HIV infected mothers was over six times higher compared to mortality in the breast-fed infants group [42]. This finding was attributed to limited access to clean water and medical care in the rural Rakai district. Similarly, in an article titled 'HIV, infant feeding, and survival: old wine in new bottles, but brimming with promise', it was revealed that studies among HIV infected women in poor populations (living on less than one US dollar per day) have demonstrated that where formula milk is used to replace breastfeeding, either from birth or during infancy, diarrhoeal diseases and hospitalizations are frequent, growth and development falter, mortality rates increase, and overt malnutrition supervenes [43].

7. RECOMMENDATIONS

There are observationally proven effective approaches to achieving HIV free survival with exclusive breastfeeding. Notably, access to anti-retroviral treatment have proven to be crucial for the safety of breastfeeding in HIV-infected women. To ensure HIV free survival of infants of HIV positive mothers on exclusive breastfeeding, the following recommendations are bound to be effective:

- National authorities should aim to integrate HIV testing, care and treatment interventions for all women into maternal and child health services. Such interventions should include access to CD4 count testing and appropriate ART or prophylaxis for the woman's health and to

prevent mother-to-child transmission of HIV.

- Every effort should be made to scale up access to anti-retroviral drugs for both maternal health and preventing HIV transmission to infants. While ARV drug interventions are being increased, national authorities should not hold back from recommending that mothers living with HIV breastfeed as the most appropriate infant feeding practice in their setting.
- A public health approach to PMTCT will enhance access to comprehensive care to the larger population. Additionally, care and drugs should be provided free of charge.
- Anecdotal evidence shows that a large proportion of the health care service providers are unaware of the latest WHO guidelines on infant feeding within the scope of HIV exposed infants. It is therefore imperative that health-care providers, researchers and clinicians providing services to pregnant women and mothers living with HIV at various levels are educated on these available best practices so as to achieve universal access and the best possible outcome.

8. CONCLUSION

Exclusive breastfeeding by HIV positive mothers provides the best opportunity for HIV free survival of infants. Despite dearth of awareness in this regard, it is advised that concerted efforts be made so as to increase awareness in this regard.

This is because empirical evidence revealed that despite the benefits noted to be accruing from exclusive breastfeeding especially in infants exposed to HIV/AIDS in low resource settings, the practice of exclusive breastfeeding is low especially in the low resource settings of central and West Africa.

It cannot be over emphasized that exclusive breastfeeding is the best option both to achieve optimum infant nutrition and to achieve HIV free survival.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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