SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
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INFANT AND YOUNG CHILD FEEDING PRACTICES AMONG HIV POSITIVE MOTHERS IN MANYA KROBO DISTRICT, EASTERN REGION, GHANA.

BY

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This dissertation is submitted to the School of Public Health, University of Ghana, Legon in partial fulfillment of the requirement for the award of Master of Public Health Degree.

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Declaration

I hereby declare that with exceptions of specific quotations and ideas attributed to specific sources, this study is an original work and it has not been presented to this or any other university.

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Dedicated

To
My dear Wife, Kafui, my life-long partner.

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Abstract

This study was aimed at providing comprehensive information on infant and young child feeding practices adopted by HIV positive mothers participating in the nation's pilot PMTCT programme in the Manya Krobo District, Eastern Region of Ghana. It also drew comparisons with the same feeding practices among mothers of unknown HIV status.

Secondly, the study provided information on the relationships between infant and young child feeding practices and selected background factors of both sero-positive mothers and mothers of unknown sero-status in the project area.

All available and accessible HIV positive mothers with children aged 0-23 months and participating in the PMTCT programmes and mothers of unknown HIV status with children 0-23 months attending child welfare clinics in the two major hospitals were the study targets. The sample comprised of all qualified HIV positive mothers participating in PMTCT programme (49 out of the 100 registered). In addition, mothers of unknown HIV status (100) were purposely sampled as they attended child welfare clinics.

Data was collected using structured questionnaires to interview the respondents at child welfare clinics. In addition, in-depth interviews were conducted among service providers and HIV positive mothers. The data was analyzed using EPI Info data analysis package.

The first level of analysis used simple frequency tables and column charts to describe the nature and type of infant and young child feeding practices and compared

and contrasted such practices among mothers of unknown HIV status and positive mothers.

The second level of analysis similarly used simple frequency tables and column charts to examine the relationships between selected background characteristics of respondents and their infant and young child feeding practices.

The findings on the demographic and socio-economic background of the respondents showed that both positive mothers and mothers of unknown HIV status fell within the ages of 18 to 40 years. However, while 19% of mothers of unknown HIV status were teenage mothers, none of the positive mothers were in their teens.

Furthermore, a higher proportion (91%) of mothers of unknown HIV status constituted town dwellers than HIV positive mothers (80%). Respondents who were natives (born in their places of current residence) or had stayed in their places of residence for more than five years made up the majority (48-54%) among both HIV positive mothers and mothers of unknown HIV status.

The percentage of respondents with any level of education was higher (92%) among mothers of unknown HIV status than among positive mothers (71%). While 24% of mothers of unknown HIV status said they could read a letter or newspaper without difficulty, only 10 percent of HIV positive respondents said they were capable of doing so.

While about 90% of mothers of unknown HIV status listened to radio daily, 74% of positive mothers did so. A higher percentage (75%) of mothers of unknown HIV status claimed to be in stable marriages than positive mothers (60%) who claimed so.

The major findings related to the type/nature of infant and young child feeding practices adopted by the two categories of respondents showed that all (100%) children of mothers of unknown HIV status were ever breastfed while 86% of children of positive mothers were ever breastfed. While 60% of HIV positive mothers initiated breastfeeding immediately (within one hour after birth) only 37% of mothers of unknown HIV status did so.

The proportion of infants fed using feeding bottle with nipple was as high as 15% among HIV positive mothers but only 1.3% among mothers of unknown HIV status. Furthermore, the study found that the proportion of mothers using iodized salt in the preparation of child food was generally low irrespective of HIV status with only 40% and 35% of mothers of unknown HIV status and positive mothers respectively making use of the salt.

Over 90% of children of HIV positive mothers received Vitamin A while only 57% of the children of mothers of unknown HIV status did so. The complementary feeding adopted for more than 75% of all children of both positive mothers and mothers of unknown HIV status did not contain commonly available, affordable and easy to use nutritious food items such as vitamin A-rich oranges and other fruits, yellow vegetables and dark green vegetables.

Certain factors were found to have influenced infant and young child feeding. The percentage of mothers who ever breastfed was high (75% to 100%) in stable and unstable relationships among both mothers of unknown HIV status and positive mothers. However, greater proportions of mothers in stable relationships (100% and 93% among mothers of unknown HIV status and positive mothers respectively) had ever breastfed

than women in unstable relationships (95% and 75% among mothers of unknown HIV status and positive mothers respectively). The use of iodized salt among mothers of unknown HIV status and positive mothers tended to be higher in those mothers in stable relationship. Among mothers in stable relationships, positive mothers used less iodized salt (38%) than mothers of unknown status (42%).

A greater percentage of mothers in unstable relationships (84% and 75% among mothers of unknown HIV status and positive mothers respectively) initiated breastfeeding immediately (within an hour after delivery} than those mothers in stable relationships irrespective of HIV status (70% and 60% among mothers of unknown HIV status and positive mothers respectively). The percentage of all mothers who ever breastfeed their current babies' increased with age to a peak within either 20-24 age group (for mothers of unknown HIV status) or 25-29 age group (for HIV positive mothers) and from hence decreased progressively with age.

The study made recommendations towards improving infant and young child feeding practices in the study area. These related to improving community mobilization and advocacy, strengthening social support for stable marriages, conduct of ethnographic studies to support evidence based policies and programmes, and income generating activities for mothers. Other recommendations related to the improvement of girl child education, capacity building for health workers, male involvement, repackaging and launching of national BCC campaigns on critical maternal and child health issues.

Definitions of Terms

In 1991, the World Health Organization convened an informal meeting to establish definitions and indicators for assessing breastfeeding practices in household surveys. The main purpose of promoting the use of the indicators was to have a common set of measures to assess practices and monitor the progress of breastfeeding promotion programmes. Several of the following definitions are taken from this document; others are taken from the documents entitled "International Code of Marketing of Breast-milk Substitutes", "Breastfeeding Counseling: a training course" and "HIV and Infant Feeding: guidelines for decision makers"

Breastfeeding

The child has received breast milk (direct from the breast or expressed). Breastfeeding practices may be further described according to timing and frequency. In terms of timing, breastfeeding may be described as on-demand (by the child) or on schedule (determined by a schedule or work/separation demands of the mother).

Exclusive breastfeeding

The infant has received only breast milk from his/her mother or a wet nurse, or expressed breast milk and no other liquids, or solids with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines. A child may be exclusively

breastfed with expressed human milk from his mother, a breast milk donor or from a milk bank.

Predominant breastfeeding

The infant's predominant source of nourishment has been breast milk. However the infant may also have received water or water-based drinks (sweetened or flavoured water, teas, infusions, etc.); fruit juice; Oral Rehydration Salts (ORS); drop and syrup forms of vitamins, minerals, and medicines; and folk fluids (in limited quantities). With the exception of fruit juice and sugar-water, no food-based fluid is allowed under this definition.

Breast milk substitute

Any food being marketed or otherwise presented as partial or total replacement from breast-milk, whether or not suitable for that purpose.

Complementary feeding

Any food, whether manufactured or locally prepared, suitable as a complement to breast milk or to infant formula, when either become insufficient to satisfy the nutritional requirements of the infant. Such food is commonly called "weaning food" or "breast-milk supplement"

Partial breastfeeding

Means giving a baby some breastfeeds, and some artificial feeds, either milk or cereal, or other food.

Replacement feeding

Means the process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs. During the first six months this should be with a suitable breast-milk substitute — commercial formula, or home-prepared formula with micronutrient supplements. After six months it should preferably be with a suitable breast-milk substitute, and complementary foods made from appropriately prepared and nutrient-enriched family foods, given three times a day. If suitable breast-milk substitutes are not available, appropriately prepared family foods should be further enriched and given five times a day.

Acronyms

ANC	Ante Natal Clinic
BCC	Behavioural Change Communication
BF	Breast feeding
DHMT	District Health Management Team
EPI	Expanded Programme of Immunization
FGD	Focus Group Discussion
FM	Frequency Modulation
FHI	Family Health International
GES	Ghana Education Service
GHS	Ghana Health Service
HIV/AIDS	Human Immune Deficiency Virus/Acquired Immune Deficiency Syndrome
IDI	In-depth Interview
IYCF	Infant and Young Child Feeding Practices
MOE	Ministry of Education
MOH	Ministry of Health
MTCT	Mother-to-child Transmission
NMIMR	Noguchi Memorial Institute of Medical Research
ORS	Oral Rehydration Salt
PI	Principal Investigator
PMTCT	Prevention of Mother-to-child Transmission
RA	Research Assistant
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
VCT	Voluntary Counseling and Testing
WHO	World Health Organization.
WIFA	Women in Fertile Age

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Chapter 1

1.0 Introduction

1.1.1 Background

Over the years, most African countries have been unable to produce enough food and nutrition to meet their peoples' basic needs for health, growth and development. The advent of HIV/AIDS has clearly made the situation more challenging.

Africa has become the global epicenter of HIV/AIDS. Though the continent habours only 10 percent of the world's population, it accounts for as much as 70 percent of adults and children living with HIV/AIDS world-wide (29.4 million out of 42 million). In the same vein, Africa is home to 75 percent of the number of children estimated to be living with HIV/AIDS (2.4 million of 3.2 million), 82 percent of HIV/AIDS-related deaths in children (500,000 out of 610,000) and 87.5 percent of children newly infected with HIV (700,000 out of 800,000) (UNAIDS, 2002).

HIV/AIDS affect all sectors of national economy and it is rapidly eroding the development potential of the continent. As a result, the continent finds it even more difficult to ensure food security, education and other basic services.

Women in Africa, especially young women, are disproportionately affected by HIV/AIDS. Data suggest that about 55 percent of all new infections in Africa occur among women (UNAIDS, 2002).

Coupled with high birthrates, the high disease burden in women in Africa has contributed to large numbers of infants infected on the continent. Infant and child mortality rates are therefore rapidly increasing due to pediatric HIV-related deaths (Connolly et al.,

1998). In Zimbabwe, for example infant mortality is expected to have increased from 30 to 60 per 1000 live births between 1990 and 1996. In addition, the child mortality rate rose from 8 to 20 per 1000 live births in the same period. (UNAIDS, 1999). The gains made in child survival measures such as breastfeeding, immunization, and oral rehydration therapy are therefore being rapidly reversed by the HIV/AIDS pandemic in Africa.

In Ghana, the median HIV prevalence among adults is 3.4 percent (GHS 2002). The cumulative total reported cases of AIDS were 72,010 (June 2003, 30% estimated level of reporting). The National Aids Control Programme (NACP) reported that the number of HIV infections in Ghana is approximately. 550,000 (NACP, 2001). Women bear a greater share of the disease burden with the female/male ratio changing from a high of 6:1 in 1987 to 2:1 in 2002. Furthermore, the HIV prevalence among commercial sex workers in Accra-Tema and Kumasi stand at 75.8 percent and 82 percent respectively (NACP, 2002).

In spite of the relatively low prevalence of HIV in Ghana (3.4%) as compared to the high rates in Southern Africa (20-30 percent), the danger signs for accelerated growth are apparent. For example, since 2000, the HIV prevalence rate has been on the increase, growing from 2.3 percent in that year to 3.4 percent in 2002. Furthermore, the number of sentinel sites with a prevalence of more than 5 percent in Ghana has grown from two to six between 1996 and 2002 (MOH, 2002). It is also noteworthy that these six high prevalence sites are spread all over the country.

The discovery of HIV in human breast marked a renewed assault on infant nutrition and health particularly in Africa. Breastfeeding is an important traditional practice in Africa and an important source of nutrition for infants in their first years of life. Breastfeeding, therefore, remains one of the most effective strategies to improve the health and survival of

both mother and child. It provides psychological and child spacing benefits to infants and mothers, and reduces infant and child morbidity and mortality by protecting children from diarrhoeal diseases, pneumonia, and other infections.

Unfortunately, between 10 and 20 percent of HIV-infected mothers will pass the virus to their babies through extended breastfeeding (Le Roy et al., 1998). In resource-constrained countries as those in Africa, the challenge is how to effectively protect infants from mother-to- child transmission of HIV while at the same time ensuring that effective measures are put in place to promote, protect and support breastfeeding.

1.2 Problem Statement

The first case of HIV was recorded in Ghana in 1986. With the passing years Ghana's immediate neighbours such as Togo and La Cote d'Ivoire have attained relatively higher HIV prevalence rates. In Ghana, the disease burden continues to increase and the number of surveillance sites with rates higher than 5 percent has increased. The regional prevalence varies from 2 percent in the Northern region to 7.9 in the Eastern Region. The median adult HIV prevalence has been estimated at 3.4% (2002). MTCT is an important mode of infection of HIV in Ghana besides sex and blood, accounting for 12-15 per cent of infections (NACP, 2001).

In view of the growing importance of mother-to-child transmission (MTCT) of HIV on the African continent and the need to ensure an expanded and comprehensive national response to the HIV/AIDS disease in Ghana, The Ghana Health Service initiated a pilot project for the Prevention of Mother-to-child Transmission (PMTCT) of HIV. The project

is based in the Atua Hospital and Saint Martins de Pores Catholic Hospital in the Manya Krobo District, one of the highest sero-prevalence districts in the country (6.6% in 2002).

The aim of the project was to reduce MTCT of HIV and improve health services provision and psychological support for mothers and children. The objectives of the PMTCT programme include to "advise HIV-infected mothers on the appropriate alternatives to breastfeeding" (MOH, 2003).

After 20 months of implementation, the Ministry of Health (MOH) took a decision to expand the programme. As a result, a review of the pilot project was commissioned in August 2003 with the view of drawing lessons from the pilot in order to inform the scale-up process.

The August 2003 Rapid Assessment made the following key findings on the infant feeding situation on the project:

1. There is a conducive environment for the implementation of the infant feeding strategy. The policy on Breastfeeding is in place as well as the implementation guidelines. The Code of Marketing of Breast Milk Substitutes is implemented at national level with regulations.
2. Infant feeding practices remain an issue. The rate of exclusive breastfeeding in the Manya Krobo District s not known. In addition little is known about what happens after 6 months to the women who have been exclusively breastfeeding
3. There was no clarity about the duration of exclusive breastfeeding for HIV-infected women. Some were advised to feed for 3 months and others for 6months.
4. 5% of HIV infected women opt not to breastfeed. With the weak follow-up of women in the home and the high level of stigmatization attached to artificial

feeding, it is not sure if all the implications of providing infant formula have been taken into consideration.

The above findings raise a number of research questions relating to infant and young child feeding practices in the project area among which are the following:

1. What factors influence choice of and maintenance of feeding options among mothers? What role does stigmatization play?
2. How far is exclusive breastfeeding practice affected within the context of HIV/AIDS?
3. What is the nature and timing of infant and young child feeding practices adopted by HIV-infected mothers in the project area?
4. What is the level of adherence to infant and young child feeding standards being promoted among positive mothers to ensure the prevention of MTCT of HIV?
5. What gaps should health workers address in their effort to support appropriate feeding practices promotive of the health and survival of both babies and mothers?

In the light of its findings, the August 2002 PMTCT Rapid Assessment had recommended, among others, that "an operational research on infant practices is urgently needed in order to inform programming around infant and young child feeding." This recommendation therefore constitutes the key marching orders of the proposed study.

By the second quarter of 2004, this information gap expressed in the above-cited recommendation still existed among officials of the Ministry of Health (including those in the Reproductive and Child Health Unit and the National AIDS/STDs Control Programme), UNICEF, WHO, UNFPA, UNAIDS, NMIMR and FHI.

The research problem is therefore a highly relevant one, meant to fill an urgent information gap in programming and of high policy relevance to government, relevant development partners, the project communities and the general public.

1.3 Rationale of the Study.

The proposed study will provide comprehensive information on infant and young child feeding practices being adopted by HIV-positive mothers in the project area. In addition, the study will cover the socio-economic and demographic factors that influence the choice and maintenance of feeding practices by a sero-positive mother.

The results and findings of the proposed study will assist policy makers, programme managers and other stakeholders in the following areas:

- Provide adequate information on the factors relevant to the choice and maintenance of feeding options among positive mothers as inputs for the design, and provision of evidence-based feeding strategies within PMTCT programmes.
- Provide information on extent of breastfeeding among positive mothers as a basis for the protection of breastfeeding in both positive and negative mothers.
- Support adequate monitoring and evaluation of the level of adoption of infant and young child feeding standards being promoted among positive mothers to ensure the prevention of MTCT of HIV.
- Identify the gaps in the quality of counseling and support that the health worker currently provide and provide guidance on the nature of information and support that will make mothers' choice of feeding practice as safe as possible. Health worker will have available relevant information that they can translate into

knowledge that the mother can use to make the best infant and young child feeding decisions.

- To provide inputs that will strengthen the PMTCT policy and enhance the implementation of the programme in the study district and the newly installed programmes nation-wide through the clearing of existing uncertainties.

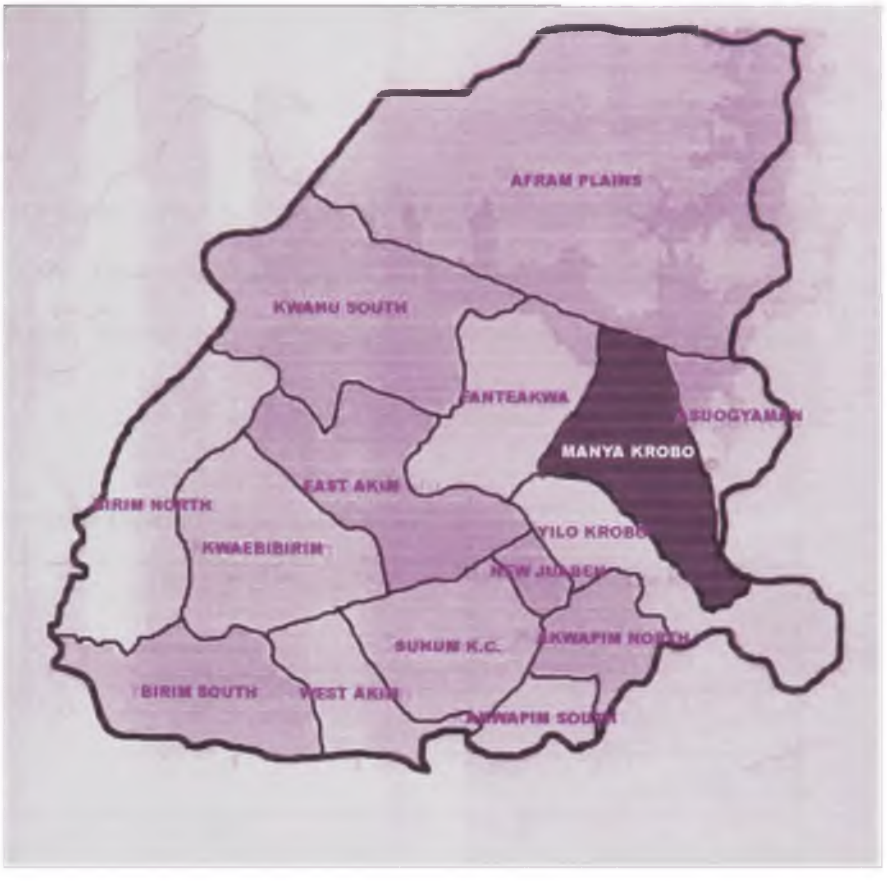
1.4 Study Area

1.4.1 Introduction

The Manya Krobo District is one of the fifteen (15) districts in the Eastern Region. The district lies at the south–eastern part of the Eastern Region between latitudes 6-05 S and 6-30 N and longitudes 0-08 E and 0-20 W. The Kwahu North and the Fanteakwa districts bound the district on the northeast and northwest sides respectively. On the east, the district is bound by the Asougyaman District and on the west by the Fanteakwa and Yilo Krobo districts. The Volta, the largest man-made lake in the world, is found in the east beyond the Asougyaman district. The North Tongu District lies to the South of the district. The total surface area is one thousand, four hundred and seventy-six square kilometers (1,476 sq. km.).

The Manya Krobo is composed of two divisions, namely Upper Manya and Lower Manya with Asesewa and Odumase Krobo as their respective capitals. It covers fifty–four (54) electoral areas, one hundred and sixty-five (165) unit committees and three-hundred and seventy-one (371) communities. The district capital, Odumase, is situated eighty (80) kilometers from Accra, the national capital.

1.4.1 MAP OF EASTERN REGION



1.4.2 Population

The Manya Krobo District has an estimated population of 160873[1] and an annual growth rate of 1.4%. There are six sub-districts in the district as follows: Odumase, Kpong-Akuse (Lower Manya) and Asesewa, Otrokpe Anyaboni, and Sekesua (Upper Manya).

Table 1.1.1: Population Distribution by Sub-districts

Sub-district	Estimated Population	Percentage share of Population
Odumase	37,966	23.6
Kpong-Akuse	25,740	16.0
Asesewa	33,783	21.0
Otrokpe	15,283	9.5
Anyaboni	23,327	14.5
Sekesua	24,774	15.4
Total	160,873	100

The estimated population of children less than 24 months is 9,652 (6%), that of women in fertile ages, 15-44 years (WIFA) is 37,001 (23%) while expected pregnancies and births stand at 4826 (3%) each.

[1] Projected from data of the 2000 Population and Housing Census of Ghana.

The main ethnic groups in the district are the Krobo and Ewe making up 70.5% and 18.2% respectively of the total population. Christians are in the majority forming 76.4% of the population while Moslems and Traditional believers form 17.5% and 6.1% respectively.

1.4.3 Household Characteristics

The average household size in the district is 7.5. This is higher than both the regional and national averages of 4.6 and 5.1 respectively. The large household size is a reflection of the influence of the extended family ties in the social structure. Women head 40% of the households in the urban areas of the district.

1.4.4 Health facilities

The district is served by three hospitals. Two of these hospitals, the Atua and the Saint Martins hospitals host the pilot PMTCT project in Ghana started in December 2001. The district is one of the UNICEF Sentinel districts in the country and therefore runs the Bamako Initiative Programme (based at the Atua Government Hospital), which is the bedrock of the cash and carry system of the hospital.

Chapter 2

2.0 Literature Review

Over the past three decades, considerable improvements have been made in child health through the adoption of strategies to reduce child mortality and promote family health (World Development Report, 1993). Promotion of breastfeeding easily stands out as one of these strategies. Breastfeeding contributes to reduced child mortality by providing optimum nutrition, by protecting against common childhood infections, and by its child spacing effects (American Academy of Pediatrics, 1997; Golding et al., 1997; Victora et al., 1987; Monteiro et al., 1990; De Soysa et al., 1991).

However, HIV in children threatens to reverse these steady gains made through wide scale implementation of child survival programmes. This sad realization dawned on the world in the mid 1980s when HIV was cultured from breast milk in HIV-infected mothers, and cases were reported of breastfed infants seroconverting during the postpartum period (Preble & Piwoz, 1998). Since then it has been established through several studies that breastfeeding by an HIV-positive mother increases the risk of HIV transmission to her infant (UNICEF/UNAIDS/WHO, 1998).

HIV and AIDS have seriously affected women of reproductive age in sub-Saharan Africa. Since HIV infection in children is directly linked to that in mothers, over 90 per cent of paedriatic HIV infections are maternally acquired.

In spite of the rapid advances made all over the world in scientific understanding of mother-to child transmission (MTCT) of HIV (also known as vertical transmission) over the last decade, the number of children falling prey to the virus still continues to grow. In

2002, a total of 3.2mn children were estimated to be living with HIV/AIDS worldwide with 2.4mn of them from Sub-Saharan Africa. In the same year, 800,000 children were newly infected with HIV with 700,000 of them from Sub-Saharan Africa. Out of the estimated 610,000 children who died from HIVAIDS in 2002, 500,000 were from Sub-Saharan Africa (UNAIDS, 2002). In general, therefore, 90% of these HIV-positive infants live in Sub-Saharan Africa where health services are already overburdened with other diseases and the governments could only afford only a few dollars per individual per year for health services. (Gilks et al.,1997)

In Ghana, cumulated total reported cases of AIDS were 72,010 (June 2003, 30% estimated level of reporting). The National Aids Control Programme (NACP), Ghana, reported that the number of HIV infections in Ghana is approx. 550,000 (NACP, 2001). The median adult HIV prevalence is 3.4% (2002). MTCT is an important mode of infection of HIV in Ghana besides sex and blood accounting for 12-15per cent (NACP, 2001).

2.1 Impact of HIV on infants and children

HIV is contributing to the fuelling of infant and child mortality in most Sub-Saharan African countries. In countries with a high prevalence of HIV, about 4% of all infants can be expected to become infected through breastfeeding. In South Africa, for example, this means that more than 30,000 infants may be infected through breastfeeding each year. In Zambia and Zimbabwe, where the prevalence in pregnant women is above 20 percent in urban areas, the infant mortality rate is 25 per cent higher than it would have been in the absence of AIDS. Under-five mortality has increased by over 70 per cent in

Botswana and Zimbabwe. (Staneki & Way, 1996). This situation sounds a clarion call for the establishing of the safest feeding methods for infants of HIV-infected mothers.

The UNAIDS and WHO had reported that between 25 and 40 per cent of HIV-infected children die before their fifth birth date (UNAIDS/WHO, 1998). Other studies have established that HIV is already contributing significantly to increased childhood mortality. (Ryder et al., 1194; Nesheim et al., 1994). Although HIV transmission through breastfeeding is only partially to blame for this increase, infant and young child feeding in the context of HIV is an important public health issue, particularly in high HIV prevalence countries. (UNICEF/UNAIDS/WHO, 1998).

2.2 Evidence of Breast-milk Transmission of HIV

Since the close of the 1980s, several studies indicate clear evidence of HIV transmission through breastfeeding among seropositive mothers. Many studies estimated the risk of HIV transmission through breastfeeding by comparing overall vertical transmission rates among formula-fed and breastfed infant. (Ryder et al., 1991; Hutto et al., 1991; Gabiano et al., 1992). Using this approach, findings revealed that the risk of HIV transmission attributable to breastfeeding varies greatly from 0 to 46 per cent. In a clinical study conducted in Nairobi, Kenya, it was found that formula feeding using cup reduced post-natal HIV transmission by 44 per cent. (Nduati et al., 2000). Additional evidence from prospective studies also indicate that among infants born to HIV-positive mothers, those who are breastfed are more likely to be infected than those who are formula-fed. This has been proven true even after allowing for all other factors known to be associated with mother-to-child transmission of HIV (European Collaborative Study, 1992; Tovo et al., 1998) Generally, higher rates of mother-to-child transmission of HIV are observed where

most infants are breastfed rather than where fewer infants are breastfed. However, other reasons for variations in transmission rates such as maternal nutrition status, stage of HIV disease and possible differences in transmission of HIV subtypes cannot be excluded. Meta analysis of studies conducted estimated a transmission rate of 14 per cent from mothers who are seropositive at the time of delivery and 29 per cent from others who had primary infection during the postpartum period. (Dunn et al., 1992).

Some studies suggest that the risk of vertical transmission is greatly enhanced with the adoption of early mixed feeding (breast milk plus other foods and juices) than exclusive breastfeeding (Tess et al., 1998). Coutsoudis et al in a Durban study showed, that at three months, MTCT in children exclusively breast fed (14.6 per cent) was significantly lower than those given mixed feeding (24.1 per cent). Moreover, exclusive breastfeeding did not seem to increase the risk of MTCT over formula feeding. This effect appeared to be sustained to 18 months despite continuous breastfeeding. The mechanism for this reduction in risk is not clear but may be associated with early mixed feeding causing mucosa inflammation, facilitating transmission of HIV (Coutsoudis et al., 1999).

Recent studies from 1995 onwards focused more on the role of breastfeeding in mother-to-child transmission. These studies estimate the effects of breastfeeding on the risk of late postnatal HIV transmission. Studies in Cote d'Ivoire (Ekpini et al., 1997) and the former Zaire (Bertolli et al., 1996) conclude that breastfed infants of HIV –1-infected mothers who escape early infection remain at risk of HIV transmission after six months (4 per cent in Zaire; 12 per cent in Cote d'Ivoire). In Cote d'Ivoire, the risk increased to 20 per cent among infants who were breastfed for at least twelve months. Current information available is insufficient to estimate the exact association between duration of breastfeeding

and the risk of transmission of HIV to infants and babies. However, there is strong evidence supporting the conclusion that there is a gradual and continuous increase in transmission risk as long as the child is breastfed (Taha et al., 1998, Leroy et al., 1998). In this regard several researches and mathematical modelers suggest that early weaning should be explored as a possible intervention to reduce HIV transmission through breastfeeding.

2.3 Timing of HIV transmission during breastfeeding

Transmission of HIV through breastfeeding can take place at any point during the period of breastfeeding. The persistence of maternal antibodies and the presence of a window period' during which infection is undetected using currently available technology, make it impossible to determine if an infant has been infected during delivery or during breastfeeding in the period following birth. Therefore, when seropositive women breastfeed their infants, it is not possible to differentiate transmission attributable to delivery and that resulting from breastfeeding from birth. (Newell, 1998; Mandelbrote et al., 1996; Datta et al., 1994).

A study conducted in Nairobi, Kenya evaluated the probability of breast milk transmission of HIV-1 per day of breastfeeding and per liter of breast milk ingested. Mother/infant pairs were followed for two years with periodic collection of breastfeeding information. It was found that breast milk infectivity appeared to be constant per liter ingested over time, indicting volume of milk ingested and length of exposure are both important factors in breast milk transmission of HIV-1 (Richard et al., 2000).

Several studies conducted on the risk associated with non-breast feeding fail to differentiate between voluntary and involuntary weaning as a result of pre-existing maternal/infant illness. This has the tendency of overestimating the risk associated with formula feeding. However, the 1995 Uganda Demographic and Health Survey helped to clarify this issue. In the survey 4,000 mothers with live borne infants were asked about breastfeeding and whether weaning was 'voluntary' (i.e. as a result of age of child or work demands) or involuntary (i.e. preceding maternal/infant mortality). Voluntary weaning was associated with lower mortality rates. This strongly suggests that voluntary feeding should be used as the benchmark in assessing the risks and benefits of formula feeding by HIV positive mothers (Gray et al., WeOrC496).

In spite of several years of promotion of exclusive breastfeeding in Africa, compliance faces a number of constraints. A prospective study of infant feeding practices in rural Kwazulu Natal was conducted to understand the constraints to exclusive breastfeeding. Of 113 mothers of live borne babies, 39 per cent of mothers intended to breastfeed to 6 weeks of age and 16 per cent to 12 weeks of age. In practice, 53 out of 113 mothers supplemented breast milk within 48 hours of life. By 6 weeks of age, only 5 per cent (3/52) of infants had been exclusively breastfed since birth. Additional feeds were introduced due to unsatisfied baby (59 per cent) or perceived insufficient breast milk (13 per cent). The study also found out that although more than half the women intended to return to work or school in the first six months after delivery this was a minor reason for supplementation (Bland et al., WeOrC497)

It is important for programme planning purposes to clarify the attitude of mothers concerning infant and young child feeding within the context of HIV/AIDS. Among 300

women who ever breastfed and were attending clinics in Bobo Dioulasso, the mean duration of breastfeeding was 20 months while 187 of them had never bottle-fed infants. Among them, 75 per cent said they would accept a wet nurse if they were HIV positive, the most suitable person being their own sisters. Furthermore, 70 per cent of the mothers would agree to be wet nurses to babies borne to a HIV positive mother and 65 per cent would use a milk extraction device to feed that baby. (Nacro et al., WePpC1318).

Chapter 3

3.0 Objectives of the Study

3.1.1 General Objective

Describe the types of infant and young child feeding practices currently adopted by HIV positive mothers and mothers of unknown HIV status in the Manya Krobo District, Eastern Region, Ghana.

3.2.1 Specific Objectives

1. Provide the demographic and socio-economic information on HIV positive mothers participating in the PMTCT programme and mothers of unknown HIV status in the Manya Krobo District
2. Describe the nature/types of infant feeding practices currently adopted by HIV positive mothers and mothers of unknown HIV status in the study district.
3. Describe the factors influencing the choice of infant feeding practices among HIV positive mothers and mothers of unknown HIV status
4. Make recommendations relevant to the improvement of infant and young child feeding programme planning and implementation.

3.3 Study Variables

The main variables will be the major categories of infant and young child feeding practices. These will comprise the following:

1. Exclusive breastfeeding
2. Exclusive Formula Feeding or Replacement Feeding
3. Mixed Feeding

4. Complementary Feeding
5. Food Group Diversity

A number of indicators were used in differentiating between and describing the various types of feeding practices. The WHO Guiding Principles 2003 and the guidelines contained in the PMTCT Training Manual of the Ministry of Health, Ghana, provided the framework for the selection of indicators. Some of these indicators are as follows:

Indicators

(MOH: PMTCT Manual for Health Workers, 2001)

1. Duration of exclusive breastfeeding	1. 0-5 months: Exclusive breastfeeding yesterday.
2. Initiation of Breast feeding	2. Percentage of children put to breast within an Hour of Birth.
3. Use of Food Groups in complementary Feed	3. Percentage of Children fed from various Food Groups.
4. Meal frequency	4. 6-23 months: Minimum age-appropriate frequency of feeding
5. Nutrient content of complementary foods.	5. 6-23 months; high dietary diversity i.e. number of food sources.

3.4 Background Factors

The following background factors of mothers were considered during the study and the influence of a selected number of them on the choice of infant and young child feeding among sero-positive and negative mothers were described:

1. Age
2. Place and Duration of Residence
3. Education
4. Marital Stability
5. Income
6. Media Habits
7. Occupation
8. Religion
9. Mother's perception of stigma.

Chapter 4

4.0 Methodology.

4.1.1 Study Design.

The study was originally conceived as a cross-sectional descriptive one dealing with only HIV positive mothers. However, due to the exigencies met during the data collection phase, as expected and documented in the project proposal, the study was changed to a comparative cross-sectional study by including mothers of unknown HIV status.

The study, therefore, described the types of infant and young child practices among HIV positive mothers and analysed the demographic and the socio-economic factors influencing choice of infant and young child feeding practices among HIV positive mothers. Comparisons were made on these issues among mothers of unknown sero-status

4.1.2 Data Collection Techniques and Tools

4.1.2.1 Sampling

The study unit was an HIV positive mother with infant(s) (under two years) who was currently participating in the Manya Krobo District PMTCT programme. The study population was all HIV positive mothers with infants and participating in the Manya Krobo District PMTCT programme based at either the Atua or the St. Martins Hospitals. The comparative study unit was a mother of unknown HIV staus with infant(s) under two years that attended child welfare clinic in one of the two major hospitals.

4.1.2.2 Determination of Sample Size

The following considerations that derived from targets attained during the course of implementation of the pilot PMTCT in the Manya Krobo District guided the determination of the sample size:

By the end of July 2003, a total of 5,370 new ante natal registrants were recorded; 2822 (53%) had VCT; 339 (12%) tested for positive; more than 50% of HIV positive mothers attending ANC did not come back for supervised delivery. (MOH, 2003) In effect, the proportion of HIV positive pregnant women who availed themselves of the PMTCT programme out of all pregnant women opting for VCT was less than 6%.

The sample of HIV positive mothers was therefore calculated as follows:

$$n = \frac{p\,(100 - p)}{e^2} = \frac{6\,(100 - 6)}{2.5^2} = \frac{90.24}{}$$

n = sample size

p = 6% (Proportion of HIV positive mothers participating in the PMTCT programme)

e = standard error =2.5

95% precision required

(Varkervisser et al.,1991)

The last review of the available data (in both Atua and St. Martins hospitals), prior to the commencement of this study in March 2004, put the actual number of positive mothers participating in the PMTCT at just around 100. All the 100 registered positive mothers were therefore target by the study.

As stated in the study proposal though 90 was the determined sample size, the actual number of positive women recruited for the study was determined by those who were available, accessible and willing to participate at the time the study took off. These turned out to be forty-nine (49). These included some who were traced to the community and interviewed after they failed to turn up in the clinic as scheduled. Some of the positive mothers who were part of the PMTCT programme in the district had moved out of the district, and could not be traced. After 49 of the positive women were interviewed a long drawn out search and waiting could not produce any more new such respondents. After consultations with the Supervisor, the PI re-oriented the design to include mothers of unknown HIV status with children less than two years and attending welfare clinics in the two hospitals in the study area. Their number was pegged at double (100) that of the positive mothers (49) earlier obtained.

4.1.2.3 Sampling Procedure

Since HIV positive mothers participating in the PMTCT programme were already just about 100, all of them were targeted. The counselors (health workers) in the two hospitals were requested to invite to the hospitals on the usual child welfare clinic days the HIV positive mothers for interview. On the other hand, the mothers of unknown status

were purposively sampled up to the desired number as they attended child welfare clinics in both hospitals

4.1.2.4 Data Collection Tools

Initial in-depth interviews (IDI) of selected positive mothers and care providers were conducted using In-depth Interview Guides. These initial interviews provided the necessary information for the revision of the main structured questionnaire to include culturally relevant and locality specific issues, format or approaches. Structured interviews questionnaires were then used to conduct structured interviews of both positive and negative mothers.

4.1.2.5 Data Collection

Selection and training of Research Assistants – Five qualified Research Assistants (RA) were initially recruited and trained by the Resident who was the Principal Investigator (PI). The PI supervised all the processes. All the RAs were fluent in Krobo, the local vernacular and one or two other Ghanaian languages.

The training of RAs consisted of building and improving knowledge and skills in survey data collection and IDI. Skills needed for building rapport and securing the confidence of respondents were discussed and practiced. In addition, various ways and means to ensure confidentiality and non-disclosure of the sero-status of respondents were also treated. The IDI guides and questionnaires were translated from English to the vernacular and back into English for use during the training, pretest and actual field study.

The training took a total of three days. The third was devoted to pre-testing of the questionnaires. After pretesting of the questionnaires, the necessary adjustments and corrections occasioned by the pretesting were made.

Respondents were met during the usual child welfare days. The respective counselors specifically invited the positive mothers while the negative mothers were interviewed as they attended their usual child welfare clinics.

After each day's work, the PI checked each completed questionnaire manually for completeness and consistency. The non pre-coded questions were then coded and independently double entered into EPI Info by PI and a Statistician.

4.1.2.6 Data Analysis

A number of methods were adopted in the analysis of the data. Frequency tables and bar charts were used to show the distribution of HIV positive and mothers of unknown HIV status adopting each feeding practice. In addition, cross tabulations of selected socio-economic and demographic factors of mothers and kind of feeding practice were produced. Cross tabulations of the number of children using each feeding option were produced.

4.1.2.7 Ethical Considerations

The PI and RAs took steps to obtain the approval of all stakeholders involved or were one way or the other affected by the study both at the institutional, community and the personal levels. The permission of the School of Public Health, Legon, the Manya Krobo District Health Management Team (DHMT) and traditional and relevant community leaders was

obtained. In addition, the informed consent of the respondents and their spouses were obtained. The selection of scheduled welfare clinic days for the conduct of interviews was purposely decided in order to help ensure that the sero status of the respondents was not disclosed. Absolute confidentiality was maintained and interviews were conducted in side rooms to ensure privacy.

The design of the structured interview instrument prevented any disclosure of sero-status. The structured interview questionnaire, which was essentially on infant and young child feeding practices, has absolutely nothing directly referring to HIV/AIDS and does not mention the term. Therefore, during structured interviews, which were conducted for the generality of respondents, there was no risk of disclosure of sero-status of the respondent even if some one were to be listening in.

Snack was provided to respondents after the interviews and returned transport fares were reimbursed.

4.1.2.8 Weaknesses of the Study

In spite of the apparent strengths of this study, there were a couple of factors, which might affected the quality of the study.

In the first place, the PI did not understand nor speak Krobo, the vernacular of the project area in which the bulk of the respondents were interviewed. Though the RAs spoke the Krobo language fluently and were well trained, the PI was not in absolute control of the interview process. It was, however, hoped that the rigorous supervision of the PI during the data collection phase and the daily review of completed questionnaires, had prevented any serious errors.

Secondly, the low numbers of the HIV positive mothers that were accessible to the study, might have affected the strength of data analysis. However the challenge of low samples was more than adequately met when the decision was taken to turn the study into a comparative one by including mothers of unknown HIV status of the same background. Indeed, this decision had introduced a new dimension into the study and shed more light on the issues of infant and young child feeding that the original focus on HIV positive mothers would not have accomplished.

Chapter 5

5.0 Findings

5.1. Introduction

This chapter examines the background characteristics of respondents (nursing mothers). These characteristics are important because they will be used to analyse the feeding practices of respondents. The background characteristics examined in this chapter are age, HIV status, place of residence, duration of residence, education and grade. Other background characteristics are ability to read, listening to radio and watching TV. The rest are religion, ethnicity, occupation, income levels, number of children and marital status.

5.1.1 Age

Age is an important determinant of behaviour particularly in the area of reproductive and child health practices. Table 5.1.1 shows the age distribution of all respondents.

Table 5.1: Age distribution of Respondents.

Age (Years)	Mothers of Unknown Status		HIV Positive Mothers	
	Freq	Percent	Freq	Percent
15-19	16	19	0	0
20-24	29	34.6	12	26.7
25-29	24	28.6	14	31.1
30-34	7	8.3	11	24.4
35-39	8	9.5	7	15.6
40-49	0	0	1	2.2
Total	84	100	45	100

Mothers of unknown HIV status are generally of the same age ranges as positive mothers. Mothers of unknown HIV status range from 18 to 39 years of age while positive

mothers range from 20 to 40 years. However, while 19% of mothers of unknown HIV status are teenage mothers, none of the positive mothers are below 20 years of age. Among mothers of unknown HIV status, the highest proportion of mothers (35%) falls within the 20-24 age group while among positive mothers, the highest proportion of mothers (31%) falls within the 25-29 age group. In addition, mothers of unknown HIV status cease child bearing earlier than HIV positive mothers. While only 9.5% of mothers of unknown HIV status are 35 years or older as much as 17.8% of HIV positive mothers are 35 years or older.

5.1.2 HIV Status

HIV positive mothers form 35 percent of the respondents while mothers of unknown HIV status make up 65 percent.

5.1.3 Residential Area

Table 5.1.3: Residential Area

Residential Area	Mothers of Unknown Status (%)		HIV Positive Mothers (%)	
	Freq	Percent	Freq	Percent
1. CITY	1	1.1	2	4.1
2. TOWN	81	91.0	39	79.6
3. VILLAGE	7	7.9	8	16.3
Total	89	100	49	100

Though the respondents are predominantly town dwellers irrespective of HIV status, a higher proportion (91%) of mothers of unknown HIV status live in towns than HIV positive mothers (80%).

5.1.4 Duration of Residence

Table 5.1.4: Duration of residence

Duration (Years)	Mothers of Unknown Status (%)		HIV Positive Mothers (%)	
	Freq	Percent	Freq	Percent
Less than 5	21	23.6	18	37.5
5-9	12	13.5	5	10.4
10 and above	10	11.2	6	12.5
Native/born there	38	42.7	17	35.4
Visitor	8	9.0	2	4.2
Total	89	100	48	100

Table 5.1.4 shows that respondents who are natives (born in their places of current residence) or have stayed in their places of residence for more than five years make up the majority (48-54%) among both HIV positive mothers and mothers of unknown HIV status.

5.1.5 Education

Table 5.1.5: School Attendance

	Mothers of Unknown Status		Positive Mothers		All mothers	
Ever Attendance	Freq	Percent	Freq	Percent	Freq	Percent
1 Yes	82	92.1	35	71.4	118	85.5
2 No	7	7.9	14	28.6	20	14.5
Total	89	100	49	100	138	100

At least 70% of respondents have had some level of formal education. However, the percentage of respondents with any level of education was higher (92%) among mothers of unknown HIV status than among positive mothers (71%).

5.1.6 Highest Educational Attainment

Table 5.1.6 Highest Level of School Attended

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Highest level of school attended	Frequency	Percent	Frequency	Percent	Frequency	Percent
1 Primary	26	31.7	11	31.4	38	32.2
2 Middle/JSS	47	57.3	19	54.3	66	55.9
3 Secondary/SSS	9	11.0	5	14.3	14	11.9
4 Tertiary	0	0	0	0	0	0
Total	82	100	35	100	118	100

In spite of the high ever attendance rates among the respondents, over half of all the respondents could only make it up to the middle/JSS level while non has tertiary education.

5.1.7 Ability To Read and Understand a Letter or Newspaper?

Table 5.1.7: Ability to read and understand a letter or a newspaper

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Can read and understand	Freq.	Percent	Freq	Percent	Freq	Percent
1 Easily	21	24	5	10.4	26	19.3
2 With difficulty	38	32.2	18	37.5	57	42.2
3 Not at all	28	43.7	25	52.1	52	38.5
Total	87	100	48	100	135	100

The quality of education among respondents is partly illustrated by Table 5.1.7 above. While 24 percent of mothers of unknown HIV status say they can read a letter or newspaper without difficulty, only 10 percent of HIV positive respondents say they are able to do so. This shows that a large majority of respondents may be incapable of accessing important health messages from newspapers or other print materials.

5.1.8 Radio Listening Habit

Table 5.1.8. Distribution of Mothers According to Radio Listening Habits

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Usually listen to radio Daily	Freq	Percent	Freq	Percent	Freq	Percent
Yes	79	88.8	36	73.5	115	83.3
No	10	11.2	13	26.5	23	16.7
Total	89	100	49	100	138	100

While about 90% of mothers of unknown HIV status say they listen to radio daily, 74% of positive mothers say they do so. The generally high proportions listening to radio among the respondents seem to have compensated for the low level of literacy among respondents.

5.1.9 Television

Table 5.1.19: Distribution of Mothers according to TV Viewing Habits.

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Usually Views TV weekly	Freq	Percent	Freq	Percent	Freq	Percent
Yes	72	80.9	34	69.4	106	76.8
No	17	19.1	15	30.6	32	23.2
Total	89	100	49	100	138	100

Viewing television is a popular pastime among respondents with at least 70 percent watching television at least once a week. However, viewing television is less popular among HIV positive respondents than among respondents of unknown HIV status.

5.1.10 Religion

Table 5.1.10: Religion

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Religion	Freq	Percent	Freq	Percent	Freq	Percent
Orthodox Christians	42	47.2	25	51.0	66	47.
Pentecostal/Charismatic/Spiritual.	41	46.1	22	44.9	65	47.1
Muslim	2	2.2	2	4.1	3	2.2
Traditionalist & Others	4	4.5	0	0.0	4	2.9
Total	89	100	49	100	138	100

The respondents are predominantly Christians. About 80 –90 percent of them are either Orthodox Christians or Pentecostal/charismatic Christians. The two groups have almost equal shares of the respondent population.

5.1.11. Ethnicity

Table 5.1.11: Ethnic Groups

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Ethnic group	Freq	Percent	Freq	Percent	Freq	Percent
Akuapim	2	2.2	1	2	3	2.2
Other Akan	1	1.1	2	4.1	3	2.2
Krobo	73	82.0	38	77.6	112	81.2
Other Ga Adamgme	5	5.6	5	10.2	9	6.5
Ewe	6	6.7	2	4.1	8	5.8
06 Hausa	0	0.0	1	2.0	1	0.7
07 Other	2	2.2	0	0.0	2	1.4
Total	89	100	49	100	138	100

As expected, Krobos make up the largest proportion of respondents. The other ethnic groups such as Ga Adamgme and Ewes make up less than 20 percent of the total number of respondents.

5.1.12 Occupation

Table 5.1.12 Occupation

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Occupation	Frequency	Percent	Frequency	Percent	Frequency	Percent
Apprentice	6	6.7	1	2.0	8	5.8
Caterer/Chop Bar keeper	3	3.4	2	4.1	5	3.6
Hairdresser	10	11.2	12	4.1	12	8.8
Seamstress	8	9.1	3	6.2	11	8.0
Trader	52	58.4	30	61.2	82	59.4
Unemployed	9	10.1	10	20.4	18	13.0
Farmer/Others	1	1.1	1	2.0	2	1.4
Total	89	100	49	100	138	100

About 60 percent of the respondents are traders. Apprentices, Hairdressers and Seamstresses are the other occupational groups. The unemployed form between 10-20 percent of the respondent population. However, the rate of unemployment is twice as high among HIV positive respondents as among respondents of unknown HIV status.

5.1.13 Income Levels

Table 5.1.13: Monthly Income Levels

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Monthly income level	Frequency	Percent	Frequency	Percent	Frequency	Percent
Less than ¢100,000	52	70.3	32	65.3	83	67.4
¢100,000-¢499,999.	21	28.3	14	28.6	36	29.3
¢500,000-¢999,999	1	1.4	3	6.1	4	3.3
¢1 Million plus	0	0	0	0	0	0
Total	74	100	49	100	123	100

Monthly earnings among the respondents are quite low. Table 5.1.13 shows that between 65 and 70 percent of both positive mothers and those of unknown HIV status earn less than ¢100,000 per month. It is significant that none of the respondents earn as much as ¢1,000,000 per month.

5.1.14 Respondents Living With Children

Table 5.1.14: Distribution of Sons and Daughters Living with Respondents.

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Mothers living together with sons and daughters.	Frequency	Percent	Frequency	Percent	Frequency	Percent
Yes	72	80.9	48	98.0	120	87.0
No	17	19.1	1	2.0	18	13.0
Total	89	100	49	100	138	100

Table 5.1.14 shows that between 80-98 percent of respondents live together with their daughters and / or sons. Almost all HIV positive respondents have at least one son or daughter living with them. This may be due to the possible anticipation of imminent need for assistance among HIV positive respondents.

5.1.15 Stability of Marriage

Table 5.1.5: Distribution of Respondents in Stable Marriages

	Mothers of Unknown Status		Positive Mothers		All Mothers	
Are you currently in a stable marital relationship?	Freq	Percent	Freq	Percent	Freq	Percent
Yes	64	75.3	29	59.2	92	68.7
No	21	24.7	20	40.8	42	31.3
Total	85	100.0	49	100	134	100

A high proportion of respondents say that they are not in stable marriages (between 25-40 percent). Unstable marriages are almost twice as high among HIV positive respondents as it is among respondents of unknown HIV status.

5.1.16 Summary

The analysis of the background factors shows that the respondents are mostly within the mid reproductive years. However about a tenth of mothers of unknown HIV status are teenagers while teenage births are absent among HIV positive mothers. The respondents are predominantly town dwellers and have stayed in their current place of residence over ten years.

Educational attainment is quite low and the majority of respondents have not gone beyond the JSS level. As a result, the majority of them cannot read easily. However, listening to radio and watching television are quite popular among respondents.

The overwhelming majority of respondents are Krobo while the Ewe, Akwapim and Other Adamgme elements form a small minority. The religion of the respondents is Christianity, with equal proportions of Orthodox and Charismatic/Pentecostal/Spiritual

Educational attainment is quite low and the majority of respondents have not gone beyond the JSS level. As a result, the majority of them cannot read easily. However, listening to radio and watching television are quite popular among respondents.

The overwhelming majority of respondents are Krobo while the Ewe, Akwapim and Other Adamgme elements form a small minority. The religion of the respondents is Christianity, with equal proportions of Orthodox and Charismatic/Pentecostal/Spiritual denominations. The respondents are mainly petty traders with extremely low levels of monthly earnings. Poverty is therefore, widespread among the respondents. The proportion of respondents in unstable marriages is high with HIV positive respondents living in the highest proportion of unstable marriages. The respondents are mothers of childbearing ages from a highly cohesive society but are poor, of low education, live in generally unstable marital relationship and depend mainly on the mass media for information and entertainment.

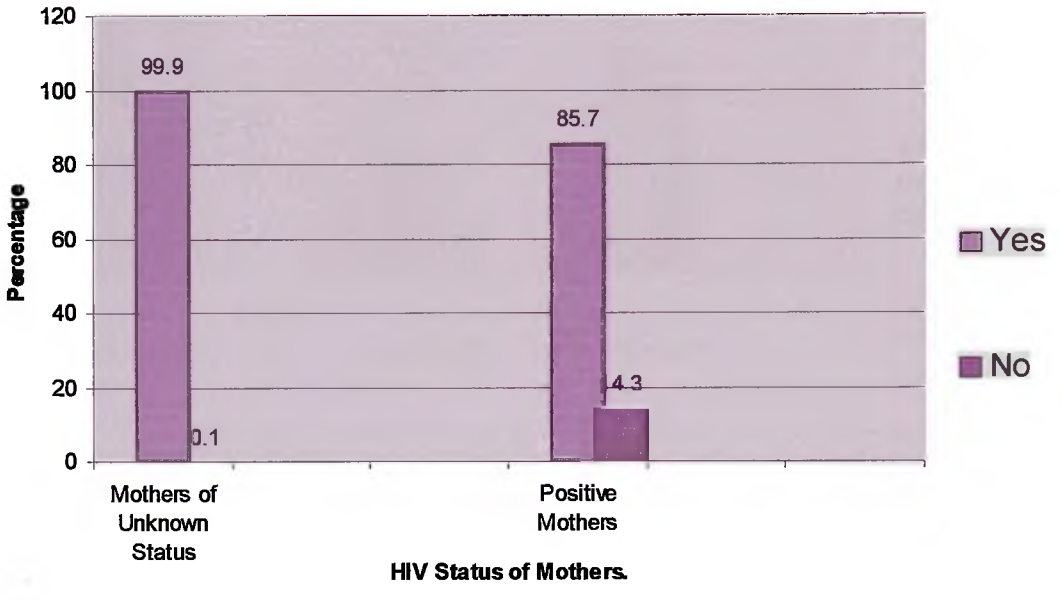
5.2.0 Description of Infant Feeding Practices Currently Adopted By Mothers.

5.2.1 Introduction

This section describes the type of infant and young child feeding practices adopted by mothers in the study area. The specific feeding practices are compared according to the sero-status of mothers.

5.2.2 Children Ever Breastfed

Figure 5.2.2. Percentage of Children Ever Breastfed.



Breastfeeding is still popular among women irrespective of HIV status.

Figure 5.2.2 shows that over 85.7 percent of children of all mothers were ever breastfed. However breastfeeding was still higher among mothers of unknown HIV status than among positive mothers.

5.2.3 Initiation of Breastfeeding

Figure 5.2.3. Initiation of Breastfeeding after Delivery

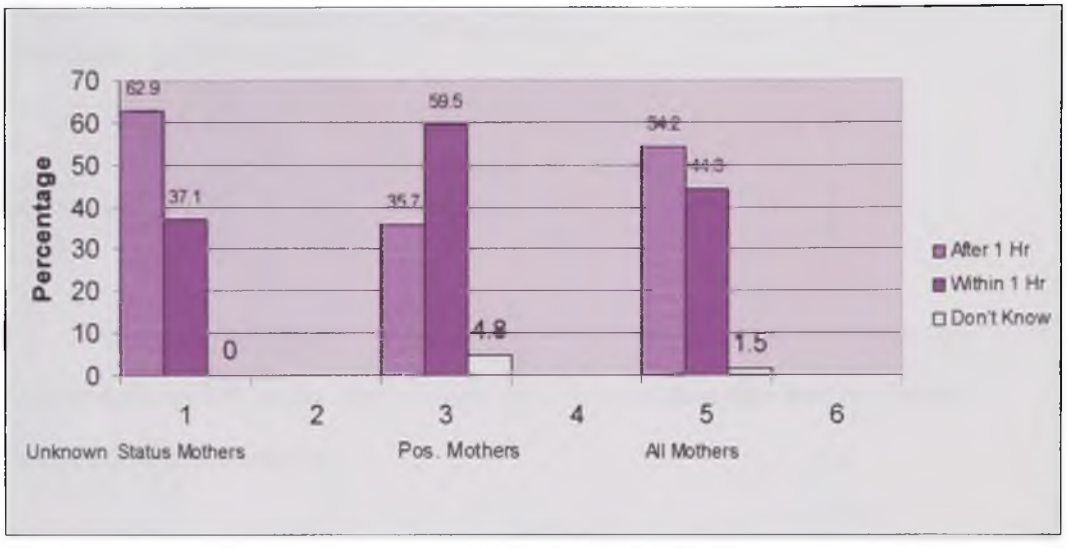


Figure 5.2.3.describes the time children were put to the breast after delivery by both mothers of unknown HIV status and positive mothers. The percentage of children put to the breast immediately (within 1 hour after birth) among HIV positive mothers was higher (60 %) than those among mothers of unknown HIV status (37%).

5.2.4 Infant Fed with Colostrum from Breast

Table 5.2.4: Distribution of Mothers Who Gave Colostrum to Baby within Three Days After Birth

First Liquid	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Yes	69	77.5	35	81.4	104	78.8
No	9	10.1	5	11.6	14	10.6
Don't Know	11	12.4	3	70	14	10.6
Total	89	100	43	100	132	100

The table shows that at least 10 percent of all infants of both positive mothers and those of unknown HIV status have not been fed colostrum from their mothers' breasts within three days after delivery.

5.2.5 Use of Prelacteal Feed.

Table 5.2.5: Use of Prelacteal Feed.

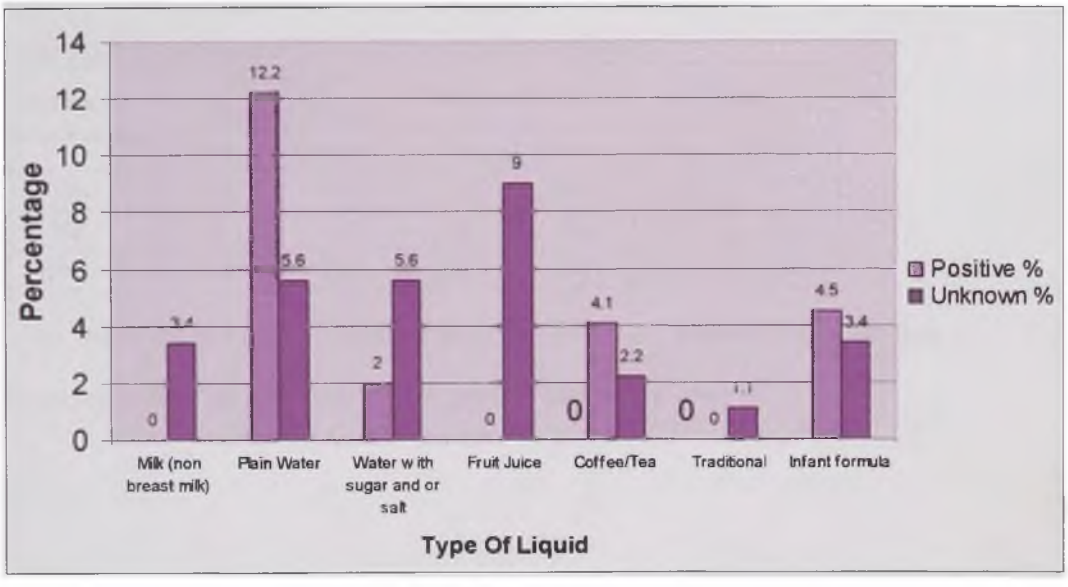
Gave Any Thing To Baby.	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Yes	13	14.8	5	11.3	18	13.7
No	72	81.8	38	86.4	110	83.3
Don't Know	3	3.4	1	2.3	4	3.0
Total	88	100	44	100	132	100

The table shows that 14 percent of all mothers (15 percent of mothers of unknown HIV status and 11 percent of positive mothers) say they give some kind of prelacteal food to baby within three days after delivery before giving breast milk. In effect, a sizeable number of children of both positive mothers and mothers of unknown HIV status may have

been at risk of receiving pathogens that cause diarrhoea and other diseases through these prelacteal feeds.

5.2.6 Type of Prelacteal Feed

Figure 5.2.6. Food Given To Baby during First Three Days before Feeding With Breast Milk



The figure shows the various types of prelacteal feed that children receive during the first three days after birth before breast milk. Besides plain water, the popular liquids that children receive within three days after birth are water with salt and/ or sugar and fruit juice. As high as 12 percent of children of HIV positive mothers and 5.6 percent of children of mothers of unknown status are given plain water prior to breast milk. Similarly, 4.5 percent of children positive mothers and 3.4 percent of children of mothers of unknown status receive infant formula within the first three days after birth. In addition, 4.0 percent of children of positive mothers and 2.2 percent of children of mothers of unknown status

are given tea and/or other infusions. While fruit juice (2.2%), non-breast milk (3.4%) and herbal medicine (1.1%) are given to children of mothers of unknown status, none of the children of positive mothers are fed these liquids.

5.2.7 Current Breastfeeding

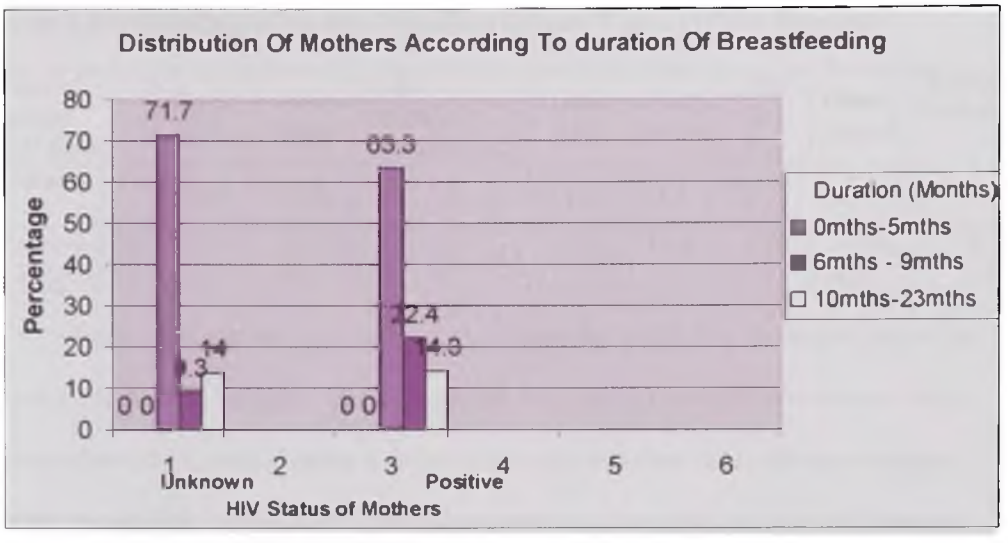
Table 5.2.7: Distribution of Mothers Currently Breastfeeding.

Currently Breastfeeding.	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Yes	82	93.2	20	44.4	102	76.7
No	6	6.8	25	55.6	31	23.3
Total	88	100	45	100	133	100

While 93 percent of children of negative mothers are breastfeeding at the time of the survey, only 44 percent of children of positive mothers are doing so.

5.2.8 Duration of Breastfeeding

Figure5.2.8 Distribution of Mothers According to Duration of Breastfeeding



The majority (between 60 and 70 percent) of children, irrespective of their mothers' HIV status, breastfeed for at least six (6) months. However, the percentage of children of HIV positive mothers who breastfeed for between six and nine months is more than half (22%) that of children of mothers of unknown HIV status (9%). The percentage of children who breastfeed for ten (10) to twenty-three (23) months is the same (14%) among children of both positive mothers and mothers of unknown status. Specifically 36 percent of children of positive mothers are being breastfed beyond the stipulated 6 month period.

5.2.9 Water and Liquid Food

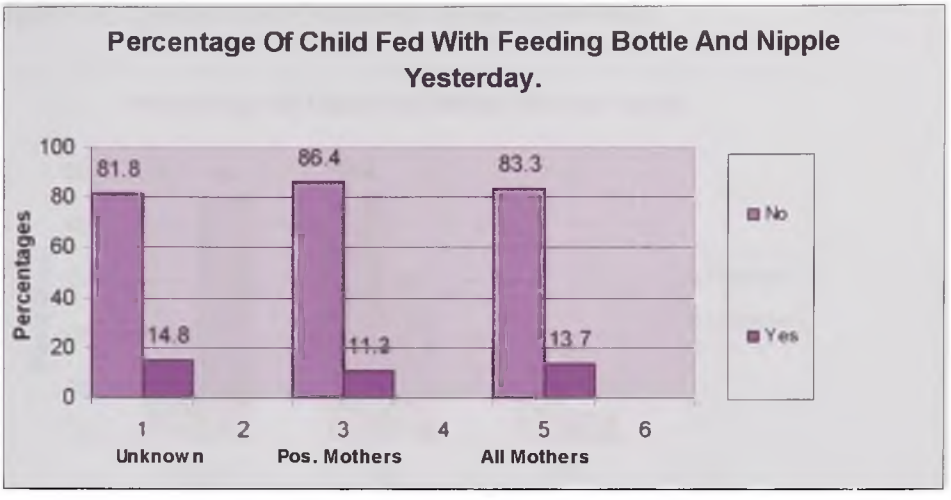
Table 5.2.9: Percentage of Mothers Who Gave Selected Liquid to Baby Yesterday

Type of Liquid/ HIV Status		Breast Milk	Plain Water	Infant Formula (Commercial)	Other Milk	Fruit Juice	Coffee or Tea	Other Liquid	Traditional Medicine
Unknown	%	98.9	25.8	3.4	1.1	3.4	2.2	4.5	1.1
Positive	%	38.8	73.5	10.2	12.2	14.3	8.2	20.4	2.0
Total	%	77.5	42.8	5.8	5.1	7.2	4.3	10.1	1.4

Breast milk and plain water are the most popular liquid food fed babies yesterday during the day and at night. While 99 percent of babies of mothers of unknown status receive breast milk, only 39 percent of babies of positive mothers do so. On the other hand, while 74 percent of babies of HIV positive mothers are given plain water, only 26 percent of babies of mothers of unknown status are given. The use of fruit juice, infant formula and other milk are more popular among HIV positive mothers (10-14 percent) than among mothers of unknown HIV status (1-3 percent). Though the administration of traditional medicine to babies is low (1-2 percent) it is twice as high among babies of positive mothers as among babies of mothers of unknown status.

5.2.10 Use of Feeding Bottle with Nipple

Figure 5.2.10. Percentage of Child Fed with Feeding Bottle and Nipple Yesterday.

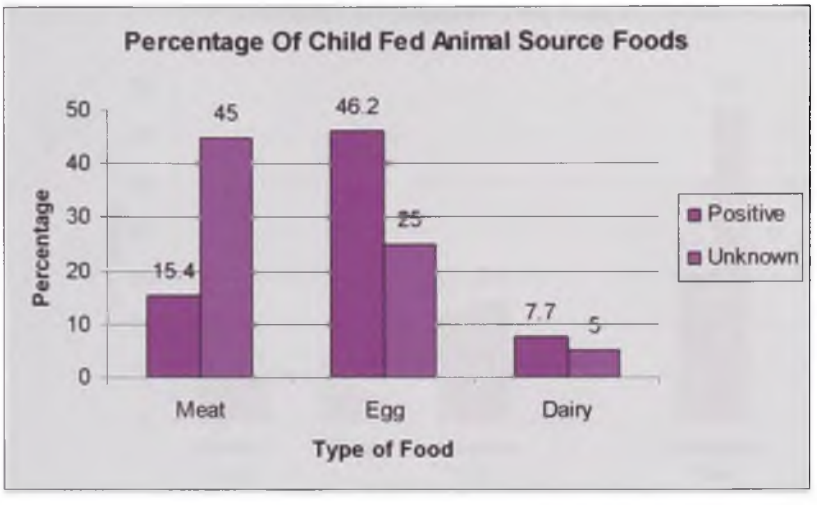


The use of bottle with nipple in feeding children is high among HIV positive mothers. While about 15 percent of children of positive mothers are fed using a bottle with nipple the previous day, only 1 percent of children mothers of unknown status are fed using feeding bottle with nipple.

5.2.11 Complementary Feeding

5.2.12 Animal source foods - Meat, Eggs and Dairy.

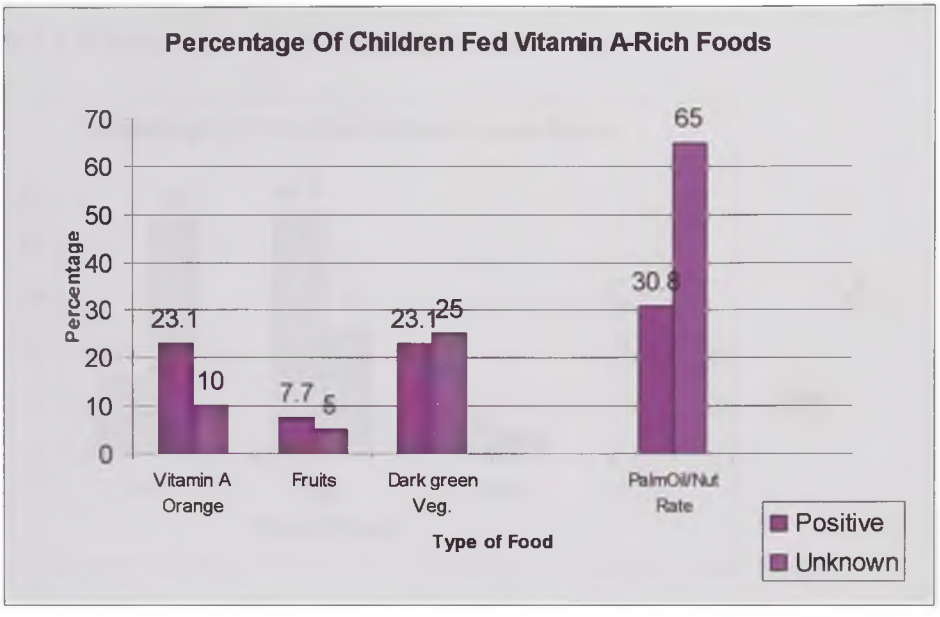
Figure 5.2.12 Percentage Of Child Fed Animal Source Foods.



The percentage of children of mothers of unknown status fed any food containing meat was higher (45%) than the percentage of children of positive mothers who ate food containing meat (15%) the previous day and night. This situation is reversed when one considers the use of eggs in complementary feed. A higher percentage of children of positive mothers use egg foods (46%) than children of mothers of unknown status (25%). Similarly, about 8 percent of children of positive mothers are fed with dairy foods while only 5 percent of children of mothers of unknown status are fed such food.

5.2.12 The Use of Vitamin A-Rich Foods.

Figure 5.2.13. Percentage of Children Fed Vitamin A- Rich Foods



Among the vitamin A-rich food sources, palm oil and palm nut foods are most popular among both positive and mothers of unknown status. However, while as much as 65 percent of children of mothers of unknown HIV status are given food from palm oil sources only 31 percent of children of positive mothers receive such food. Readily available and affordable fruits such as oranges, pawpaw and mangoes feature very little in complementary foods for children of all mothers. While oranges are fed to only 23 percent of children of positive mothers, only 10 percent of children of mothers of unknown status take oranges. The performance related to the other fruits is even poorer with less than 10 percent of all children taking them. Interestingly, common and cheap dark leafy vegetables,

5.2.11 Complementary Feeding

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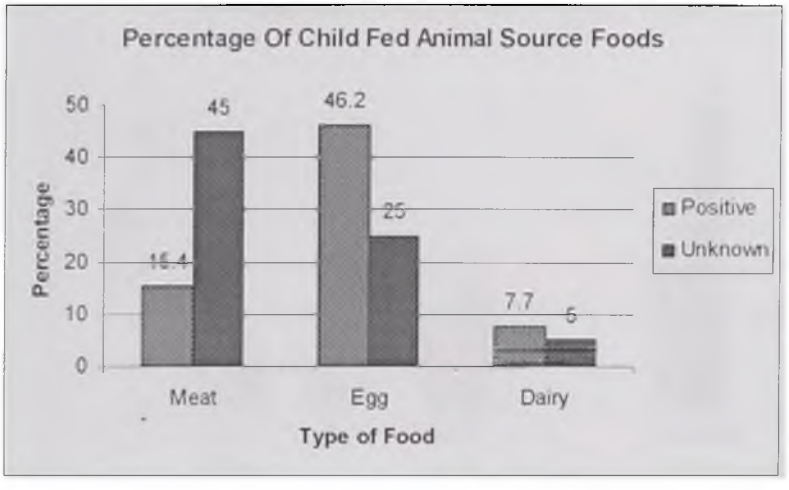

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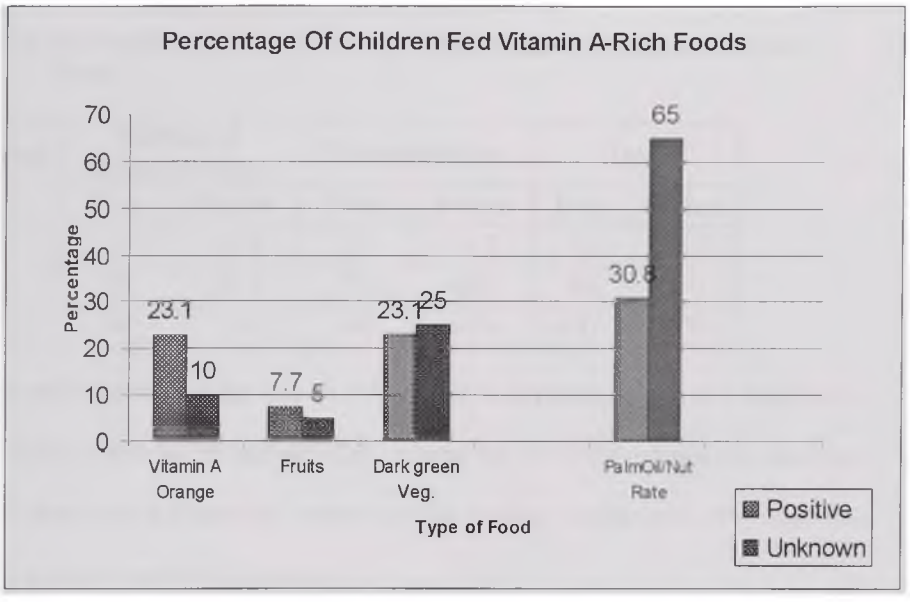

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such as kotonmire, bokoboko and alefu, do not feature in the food of 75pecent of children of women irrespective of sero-status.

5.2.14 Use of Iodized Salt

Table 5.2.14: Distribution of Mothers Who Used Iodized Salt in Preparing Children's Food.

Used Iodized Salt	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Yes	36	40.9	17	34.7	53	38.7
No	56	59.1	32	65.3	84	61.3
Total	88	100	49	100	137	100

The table shows that the use of iodized salt in preparing children's food is low among all mothers with 60-65 percent of all children not receiving iodized salt. However, the use of iodized salt is higher (41 percent) among mothers of unknown HIV status than among HIV positive mothers (35 percent).

5.2.15 Vitamin A

Table 5.2.15: Distribution of Mothers Whose Children Received Vitamin A Dose within Last Six Months.

Received Vit. A	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Yes	50	56.8	45	91.8	95	69.4
No	33	37.5	4	8.2	37	27.0
Don't Know	5	5.7	0	0	5	3.6
Total	88	100	49	100	137	100

In general the table shows that the administration of Vitamin A to children is quite high among all mothers (69%). However, performance is clearly higher among children of HIV positive mothers. As much as 92 percent of children of HIV positive mothers receive Vitamin A as compared to 57 percent of children of mothers of unknown HIV status. It should be noted that as much as 43 percent of children of mothers of unknown HIV status do not received vitamin A as against 8 percent of children of positive mothers.

5.3.0 Factors Influencing the Choice of Infant and Young Child Feeding.

This section discusses the possible relationship between selected background factors of mothers and their choice of infant and young child feeding practices.

5.3.1 Marital Relation and Ever Breastfed

5.3.1: Distribution of Mothers Who Ever Breastfed According To Stability Of Marital Relationships.

Ever Breastfed/ Marriage Stability	Mothers of Unknown Status			Positive Mothers		
	Ever Breastfed			Ever Breastfed		
	Freq.	Total	%	Freq.	Total	%
Yes	64	64	100	27	29	93.1
No	20	21	95.2	15	20	75.0
Total	84	85	98.8	42	49	85.7

From the table above, the percentage of mothers who ever breastfed is high in stable and unstable relationships among both mothers of unknown HIV status and positive mothers. However, greater proportions of mothers in stable relationships have ever breastfed than women in unstable relationships irrespective of sero-status. Among HIV positive mothers, those in stable marriages have a much higher ever breastfed rate (93%) than those in unstable relationships (75%). The difference in ever breastfed rates among mothers of unknown status living in stable and unstable relations is not as large as among the positive mothers. This does not, however, provide sufficient basis for any conclusions about the relationship between marital stability and ever breastfeeding among mothers of a particular sero-status. This is because the influences on mothers of significant others towards ever breastfeeding and the choice of positive mothers not to breastfeed could mask the effect that a stable marital relationship might make.

5.3.2: Stability of Relationship Marital and Use of Iodized Salt

Table 5.3.2: Distribution Of Mothers Using Iodized Salt According To Stability Of Marital Relationship.

Use of Iodized Salt/ Marriage Stability	Mothers of Unknown Status			Positive Mothers		
	Use of Iodized Salt			Use of Iodized Salt		
	Freq.	Total	%	Freq.	Total	%
Yes	27	64	42.2	11	29	37.9
No	8	21	38.1	6	20	30.0
Total	35	85	41.2	17	49	67.9

From the table, it could be seen that use of Iodized salt among all mothers irrespective of sero-status tend to be higher in those mothers in stable relationship. Among mothers in stable relationships, positive mothers use less iodized salt (38%) than mothers of unknown status (42%)

5.3.3 Stability of Marital Relation and Vitamin A

Table 5.3.3: Distribution of Mothers Whose Children Received Vitamin A According To Stability of Marital Relationship.

Vit. A use / Marriage Stability	Mothers of Unknown Status			Positive Mothers		
	Vitamin A use			Vitamin A use		
	Freq.	Total	%	Freq.	Total	%
Yes	37	64	57.8	27	29	93.1
No	12	21	57.1	18	20	90.0
Total	49	85	57.6	45	49	91.8

The table shows that a slightly higher percentage of children of all mothers in stable relationships irrespective of sero-status, received Vitamin A in the last six months before

the study than children of mothers in unstable relationships. As shown earlier, greater percentage of children of positive mothers received vitamin A irrespective of stability of the relationship their mothers were in.

5.3.4 Marital Stability and Initiation of Breastfeeding

Table 5.3.4 Table 18: Distribution of Mothers According To the Time Breastfeeding Is Initiated After Delivery and the Stability of their Marital Relationships

Time of Breastfeeding Initiation / Marriage Stability	Mothers of Unknown Status			Positive Mothers		
	Within I hr			Within I hr		
	Freq.	Total	%	Freq	Total	%.
Stable	37	53	70	9	15	60
Unstable	27	32	84.4	18	24	75
Total	. 64	85	75.3	27	39	69.2

From the table, initiation of breastfeeding within 1 hour is quite high among all mothers irrespective of sero-status and for both stable and unstable relationships. However, a greater percentage mothers in unstable relationships initiate breastfeeding within an hour than those mothers in stable relationships. On the whole, among all mothers, mothers of unknown status have the greater propensity to put their baby to the breast immediately after birth than positive mothers. This might be due to the fact that more positive mothers are opting not to breastfeed in order to prevent transmitting the virus to their babies.

5.3.5 Age of Mother and Ever Breast Feeding

Table 5 3.5: Percentage Distribution of Mothers Who Ever Breastfed Their current babies According to Age of mother.

Age of Mother (Years)/Ever Breastfeed	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage
15-19	15	18.1	0	0	15	12.3
20-24	29	34.9	11	28.1	40	32.8
25-29	24	29.0	13	33.3	37	30.3
30-34	7	8.4	8	20.5	15	12.3
35-39	8	9.6	6	15.4	14	11.5
40+	0	0	1	2.7	1	0.8
Total	83	100	39	100	122	100

The percentage of all mothers who ever breastfeed their current babies' increases with age to a peak within either 20-24 or 25-29 age groups and from hence decrease progressively with age. While the highest percentage of mothers of unknown status who ever breastfeed is within a younger age group (the 20-24 age group), the highest percentage of positive mothers who ever breastfed is within an older age group (25-29 age group).

5.3.6 Age and Initiation of Breast Feeding.

Table 5.3.6: Age Distribution of Mothers Who Initiated Breastfeeding within an Hour Of Delivery.

Age of mother (Years)	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage
15-19	10	18.5	0	0	10	15.0
20-24	20	37.0	6	46.1	26	38.7
25-29	14	26.0	4	30.8	18	26.9
30-34	3	5.5	2	15.4	5	7.5
35-39	7	13.0	1	7.7	8	11.9
40+	0	0.0	0	0	0	0
Total	54	100	13	100	67	100

Among all mothers, the immediate initiation of breastfeeding after delivery is highest in the 20-24 age group (37-46 percent) and reduces progressively with age of mother. In general, immediate initiation of breastfeeding is more popular among younger mothers than among the older mothers.

5.3.7 Age Distribution of Mothers Whose Babies Received Vitamin A

Table 5.3.7 Age Distribution of Mothers Whose Babies Received Vitamin A

Age of mother (Years)	Mothers of Unknown Status		Positive Mothers		Total	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage
15-19	14	28.0	2	4.8	16	17.4
20-24	16	32.0	9	21.4	25	27.2
25-29	13	26.0	14	33.3	27	29.3
30-34	3	6.0	9	21.4	12	13.0
35-39	4	8.0	7	16.7	11	12.0
40+	0	0	1	2.4	1	1.1
Total	50	100	42	100	92	100

From the table it is observed that for all mothers the percentage of children receiving vitamin A increases with age of mother to a point and declines progressively.

While among mothers of unknown HIV status the highest percentage of babies receiving vitamin A belong to mothers of 20-24 age group, in HIV positive mothers it occurs in the 25-29 age group. Teenage and older mothers (30 years and above) are therefore more likely to default in ensuring that their babies received the vitamin A.

5.3.8 The Influence of Level of Education Attained, Ability to Read Newspaper, Radio and TV on Child Feeding Practices.

The influence of education on infant and young child feeding practices is also a mixed one. Among mothers of unknown HIV status, the immediate initiation of breast-feeding after delivery is highest amongst primary school attendants whilst among positive mothers the practice is highest amongst JSS/Middle attendance. However, in relation to the use of iodized salt, SSS (the highest level of education among respondents) attendants register the highest rates among both positive mothers and mothers of unknown HIV status. The same goes for mothers who ensure that their children receive vitamin A. The mixed influence of education may partly be explained by the low number of respondents among SSS attendants. Therefore, the full effects of education could probably be ascertained in a larger study.

The same mixed influences have been indicated in connection with newspaper, radio and TV on one hand and selected feeding practices on the other. For e.g. while the highest proportion of mothers of unknown HIV status who ever breastfed say they do not listen to radio daily, among positive mothers the highest proportion of mothers who ever breastfed say they listen to radio daily. In addition, the highest proportions of both mothers of unknown HIV status and positive mothers who initiated breast-feeding immediately after

birth are among mothers who say they do not listen to radio daily. For iodized salt, the highest proportions of users among mothers of unknown HIV status are those who listen to radio daily but among positive mothers, the highest users say they do not listen to radio daily. The highest proportions of mothers irrespective of HIV status who ensured that their children received vitamin A are among mothers who say they do not listen to radio regularly. This goes for the influence of television among mothers who have ever breastfed, which indicated a negative relationship. On the other hand, a positive relationship between weekly viewing of television and use of iodized salt among mothers irrespective of HIV status. While the administration of vitamin A is highest among mothers of unknown HIV status who say they watch television weekly, the same is true among HIV positive mothers who say they do not watch television weekly.

5.3.9 Findings of In-Depth Interview of Selected HIV Positive Mothers

All the HIV positive mothers with infant between 0-5 months who were interviewed about their infant feeding practices said they were either practising exclusively breastfeeding from 3 up to 6 months or using baby formula feeds. When asked about why they chose the particular infant feeding practice, all of them answered that they had tested positive and as a result of counseling received had opted for their chosen infant feeding practice.

Many of the mothers who were adopting exclusive breastfeeding said they chose that option because they did not have the money to sustain the purchase of formula food.

When asked whether they used any other liquid or solid food in addition to either breastfeeding or formula feeding, all the respondents interviewed replied that they were

adopting either exclusive formula feeding or exclusive breastfeeding. They explained the negative consequences of mixed feeding on the health of the infant as diarrhoea and transmission of HIV to the child and said they were avoiding mix feeding to prevent these consequences.

On the difficulties experienced in connection with their chosen infant feeding practice, the mothers adopting infant formula feeding all replied that the major difficulty was with getting money to buy the infant formula.

When asked about whether they had disclosed their sero-status to any one, two-thirds of the positive mothers interviewed said they did not. The reasons given by those who did not disclose their status was either that their husbands were drunks and would beat them and /or throw them out of the marital homes if they knew the truth about their sero-status.

The mothers who disclosed their sero-status did so to their husbands or parents, particularly mothers or both. Still some disclosed their positive status to a sister or some close female friend.

When asked about what support they were receiving from those they had revealed their status to, many of the mothers said their husbands and or their mothers were assisting in either buying the infant formula or were regularly reminding them of the feeding times and formula mixing methods. Others said their mothers were very sympathetic and provided emotional and moral support.

When asked whether they experienced any form of discrimination from the people to whom they disclosed their status, all the mothers replied in the negative. Some added, "We are a family, we are very close" Others replied, "my family is very loving"

A few mothers revealed that their husbands do not believe that they (the mothers) are positive even after showing them the test result. One mother said her husband was still living in denial because she was not sick. When asked further whether this disbelieving husband adopted any safe sex practice such as condom use, the mother in question said he did not.

When asked about whether they had any regrets about having disclosed their sero-positive status, almost all of the mothers (who did disclose their status) said they had no regrets. They thought it was necessary to disclose their status to very close relatives so that when their health status begun to deteriorate as the AIDS set in they would have ready assistance.

On whether they would advice others to disclose their status to their close relatives, the answer was conditional; that is, they would advise disclosure depending on the nature of the relationship those others had with their relations.

When asked about whether they adopt any particular strategies or mechanisms to prevent others from knowing their sero-status, some of the women said they tell people they have breast problems. Others said they usually apply medication to their breasts to deceive people. Still others said they did not care if people knew their status or not and that their greatest worry was about how to ensure that the child did not have the HIV. One mother who had a caesarian operation and was separated from her baby for some time said she used to tell people she was not breastfeeding because after the period of separation from the baby, she just opted for formula feeding upon being united with her baby. Some mothers said they did not adopt any special strategies but behaved normally.

Those using infant formula planned to shift to supplementary feeding from 4-5 months because of difficulty in buying the infant formula.

When asked about their experiences upon first learning of their positive test result, all the positive mothers said it was difficult at first but with counseling they had accepted their status and were taking steps to maintain their health and that of their babies. One mother said she had contemplated abortion at first but upon receiving counseling on PMTCT she decided to have the baby.

Finally when asked about what assistance they would require in order to sustain their chosen infant and young child feeding practices, many of the mothers said they needed money to add to their trading capital to continue their trade and earn regular incomes to sustain them.

From these interviews one would get the impression that the issue of stigma was not a very straightforward one. Though cases of stigmatization of sero-positive people especially mothers did not seem to be a daily experience in the area, the mothers were very sensitive and took steps to prevent others from knowing their status including even spouses and close relatives. However, the fear of stigmatization did not seem to be critical in determining the choice and maintenance of infant and young child feeding practices among HIV positive mothers.

Chapter 6.

6.0 Discussion of Findings/Conclusions/ Implications

6.1 Findings on Background characteristics

The homogenous socio-demographic and cultural backgrounds of respondents are of strategic importance. Traditional and religious leaders have enormous influence in such social settings and could be of great assistant in policy change, advocacy, and behavioral change communication. Programme managers dealing with child nutrition within the context of HIV/AIDS in the project area and similar settings all over the country need to work closely with the chiefs, queen mothers, religious leaders etc to bring about the desired changes in infant and young child nutrition. Strong community mobilization and advocacy will help reduce stigma, break the silence surrounding HIV/AIDS and improve social support (including that of males) to women during and after the antenatal period.

In addition, one would want to believe that the common socio-cultural norms, attitudes and practices might provide certain information that may be useful for the development of appropriate policies, advocacy, BCC programmes and messages on child nutrition. This calls for an in-depth ethnographic study through close collaboration between credible research institutions, health providers, local government administrators and the community leaders and members.

The combination of high level of poverty and low education among the respondents is frightening, to say the least, and poses the greatest obstacle ever to controlling the pandemic. This should attract relevant policy and programme interventions. This is because poverty and ignorance are at the root of many social development problems particularly

those related to health behavior including HIV/AIDS risks. The HIV pandemic, for example, has at its root the twin evils of poverty and illiteracy. Poverty drives many women toward unhealthy sexual practices, which leads to HIV and other sexually transmitted diseases. Also, poor mothers are unable to support, on sustainable basis, the recommended infant and young child feeding practices due to inability to afford the needed foods. Effective and sustainable programmes on improving income generation particularly among women and enhancing girl child education will help deal with these root causes of risky health behaviour.

6.2 Findings on Infant Feeding Practices

It is encouraging to note that breastfeeding is highly popular among women irrespective of HIV status as shown by the high ever breastfed (86%) and currently breastfeeding levels (93% among mothers of unknown HIV status). This ensures that mothers and children are able to take advantage of the benefits of breastfeeding as documented in the literature review. (Golding et.al., 1997, American Academy of Pediatricians., 1997). As we commend the health providers and relevant partners in the study area for this achievement, there is the need to reinforce and strengthen this commendable practice through intensifying health education.

The high performance of HIV positive mothers in putting their babies to the breast immediately after birth is one reflection of the good results that intensive attention from health providers and educators could yield. It is probable that the reason why positive mothers performed better than their mothers of unknown HIV status on this parameter (60% against 37%) may be because positive mothers received greater attention through

PMTCT and the related supervised deliveries that they entail. This gives an indication that supervised deliveries bring added advantages to the mother and child, which may not be available within the context of non-supervised deliveries.

The high proportions (10%) of both mothers of unknown HIV status and positive mothers who do not give their infants colostrum from their breast within the first three days after delivery and the high use of other fluids and/or solids for feeding infants in the first few days after delivery (prelacteal feeds) (15% children of all mothers) are threats to reaping the full benefits of breastfeeding by mother and child in the project area. Many mothers may be adopting these practices out of ignorance believing that the colostrum is dirty and also that the baby needs water to survive.

As contained in the literature review, breast milk contains the most natural, affordable and best way of feeding an infant. It contains all the nutrients and water, in the right proportions, needed by the infant from birth to 6 months of age.

Health workers, therefore, need to intensify their education and focus on messages highlighting the antiviral/antibacterial benefits of mothers' colostrum and the fact that the breast milk contains enough water for the needs of the child. This is important within the context of HIV especially. The literature review has documented studies with findings that prove that the risk of vertical transmission is greatly enhanced with the adoption of early mixed feeding (use of breast milk with other foods and juices) (Coutsoudis et al., 1999) Mixed feeding increases the risk of mother to child transmission of the virus through increase diarrhoea, mucosa inflammation, and other illnesses.

Of all prelacteal feeds, the administration of traditional medicines to infants within three days of delivery is the most disturbing. All health workers and community leaders should emphasize messages on the harmful effects of administering herbal medicines.

The high rate of breast feeding for at least six months among both positive and mothers of unknown HIV status (63% and 72%) is commendable and a major factor in the promotion of infant health. However, the high proportions of HIV positive mothers (36%) that continues to breastfeed for six to nine months and beyond is clearly in contravention of the recommended practice.

As captured in the literature review, studies have shown that prolong breast-feeding particularly beyond six months among HIV positive mothers increases the risk of mother to child of the HIV. (Taha et al., 1998; Leroy et al., 1998). The MOH guidelines on breastfeeding within the context of HIV are appropriate and only need to be strictly followed in educating mothers.

The high levels of use of feeding bottle and nipple among HIV positive mothers (15%) have also been indicated by the findings. This practice is risky as it introduces pathogens into children. Within the high poverty settings of the study area and Africa in general, the use of feeding bottle and nipple is particularly not advisable since the mothers are incapable of providing the fuel for adequate sterilization the bottles on a sustainable basis and providing the quality of water needed to safely sustain the use of bottle-feeding. It is noted that this practice sometimes results from the blind adoption of what is considered "fashionable" among mothers, especially the low educated ones. Considerable education had been done in Ghana on this issue but this finding suggests that health workers and

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other development workers need to go back to the drawing board in order to reverse the situation.

The study also indicated that HIV positive mothers are clearly ahead of mothers of unknown HIV status in adopting the right combination of food groups in the preparation of complementary feeding to ensure high diversity of nutrients in infant and young child feeding. However, what is surprising is the low use of readily available, affordable and highly nutritious food items by all women irrespective of sero-status. This includes oranges, sweet potatoes, vitamin A–rich dark green leafy vegetables (Kontomire, bokoboko, alefu etc) and other fruits. It should be noted that the project area is one of the leading districts in the production of mangoes and plantations of the fruit are springing up rapidly.

It is therefore, clear that this lapse cannot be explained away as a result of poverty. It may be clearly an issue of lack of sufficient education on the issue of the benefits of food diversity during childhood and or the blind extension to young children of traditional adult foods in oblivion of the special needs of children.

In spite of the high level of education in public campaign on the use of iodized salt, the findings show 60% and 65% percent of mothers of unknown HIV status and HIV positively mothers respectively do not use iodized salt in preparing food. As indicated in the literature, it has been proven that iodine deficiency is a major cause of several childhood illnesses including mental deficiencies and learning disabilities. To be awakened to the fact that as many as 60 to 65% of Ghanaian children are denied this simple, low cost, and user-friendly technology with a huge health dividend should receive more attention than it is currently given by public health programmes. There is the need to focus more

attention on educating mothers and the general public on the benefits of iodized salt for children and adults.

Findings on vitamin A supplementation for children also show that positive mothers are performing highly as opposed to mothers of unknown HIV status (92% as against 57%). The attention should in this case be on children of mothers of unknown HIV status to ensure that the over 40% of children of mothers of unknown HIV status that today go without this essential service in the project area are captured.

6.3 Factors influencing the choice of Infant and Young Child feeding

The positive influence of stable marital relationship on several feeding practices among women has been indicated by the findings. This is clearly shown in relation to the high rate of ever breastfed children of mothers in stable relationship, the high adoption of high diversity food by positive mothers in stable relationship and the high adoption of iodized salt by women in stable relationships. However, the influence of stable marital relationships is not clearly shown in the number of children who receive vitamin A. The very high levels of marital instability (30% and 40% for mothers of unknown HIV status and positive mothers respectively) found among respondents should therefore be a matter for serious policy and programme interventions. This is because besides the positive effects of marital stability on child nutrition and health, all mothers, particularly sero-positive ones, derive immense benefits if they have supportive husbands. This includes support in sustaining recommended infant feeding practices, adherence to ART and other drugs and the breaking of silence and stigma. This issue of high marital instability, therefore, requires research, policy and programme interventions. A comprehensive ethnographic research

should be conducted in collaboration with all stakeholders (community leaders and members, policy makers and programme managers) to provide evidence-based information and recommendations for policy and programme interventions.

The findings show an interesting phenomenon related to women who have ever breastfed. While the highest proportion of ever breastfed mothers of unknown HIV status lies within a younger age group (20 – 24 years), the highest proportion of ever breastfed positive mothers are older (20 – 29 years). This may be difficult to explain. However, it looks like generally, HIV positive women may be older on the average than mothers of unknown HIV status due to the nature and progress of HIV and AIDS.

The influence of age of mother on breast-feeding practices also varies and no specific conclusion could be made in relation to the influence of age. For example, whilst mothers within the ages of (20 – 24 years) have the highest proportions of all mothers who initiated breast-feeding immediately after birth. This is not so in relation to the administration of vitamin A to their babies. Whereas the highest proportion of mothers of unknown HIV status who ensured the administration of vitamin A to their babies lies between 20 – 24 years age group, among positive mothers, the highest proportions lies within 20 – 29 years age group. One trend that seems to be established concerning age, however, is that the younger and the older reproductive ages (of 15 – 19 years and 30+ years respectively), are worse off in the adoption of good feeding practice than those within the middle reproductive ages of 20 – 29 years. This, therefore, points to the fact that education should focus on the younger and older ages of mothers as special target audiences for the improvement of child nutrition practices.

The influence of education on infant and young child feeding practices is also a mixed one. Among mothers of unknown HIV status, the immediate initiation of breast-feeding after delivery is highest among primary school attendants whilst among positive mothers the practice is highest amongst JSS/Middle attendance. However, in relation to the use of iodized salt, SSS (the highest level of education among respondents) attendants register the highest rates between both positive and mothers of unknown HIV status. The same goes for mothers who ensure that their children receive vitamin A. The mixed influence of education may partly be explained by the low number of respondents among SSS attendants. In view of the widely documented beneficial effects of education, particularly of females, on various health practices, one need to take these mixed influences of education on child feeding practices with some caution. A larger study is probably required to ascertain the real levels of influence (and nature of relationship) of education and related background factors of mothers on infant and young child feeding.

The same mixed influences/relationships have been indicated in connection with newspaper, radio and TV on one hand and selected feeding practices on the other. For example, while the highest proportion of mothers of unknown HIV status who ever breastfed say they do not listen to radio daily, among positive mothers the highest proportion of mothers who ever breastfed say they listen to radio daily. In addition, the highest proportions of both mothers of unknown HIV status and positive mothers who initiated breast-feeding immediately after birth are among mothers who say they do not listen to radio daily. For iodized salt, the highest proportions of users among mothers of unknown HIV status are those who listen to radio daily but among positive mothers, the highest users say they do not listen to radio daily. The highest proportions of mothers

irrespective of HIV status who ensured that their children received vitamin A are among mothers who say they do not listen to radio regularly. This same negative relationship exists between ever breastfeeding levels and weekly viewing of TV among mothers irrespective of mothers' HIV status. On the other hand, there is a positive relationship between weekly viewing of television and use of iodized salt among mothers irrespective of HIV status. While the administration of vitamin- A is highest among mothers of unknown HIV status who say they watch television weekly, the same is true among HIV positive mothers who say they do not watch television weekly.

Despite these mixed relationships and influences between the media habits and young child feeding practices of mothers, the strategic role of the mass media, particularly radio and TV in the context of high illiteracy and ignorance, cannot simply be ignored. Media habits of mothers and their effects on the choice of feeding practices and other health related behaviours of mothers need a more focused attention in the future.

6.4 Recommendations

In view of the findings, several recommendations need to be made towards improving infant and young child feeding among mothers particularly HIV positive mothers in the study area in particular and Ghana in general.

These recommendations are as follows:

1) The PMTCT Programme Managers in the study area and elsewhere in the country should take advantage of the large influence of traditional and religious leaders in the communities by mobilizing them to undertake an effective community mobilization and advocacy programme. This would create stronger social support basis and enabling environment for the successful implementation of the PMTCT and related child nutrition programmes.
2) Traditional/community leaders and religious leaders should redouble efforts at promoting faithfulness and stability in marriages as a means of building congenial family environment to support the health and education of family members particularly children.
3) Health Programme Managers and policy makers, particularly in the district assembly levels, should work together in commissioning credible research institutions to conduct ethnographic studies among communities being targeted for PMTCT and child nutrition programmes in order to come out with relevant information on cultural norms, beliefs, attitudes and practices that may inform policy making, evidence-based programming and message development in PMTCT and child nutrition activities.

4) In collaboration with appropriate governmental organizations and non-governmental and community based organizations, District Assemblies should spearhead efforts to put in place realistic and sustainable programmes on improving income generation particularly among women so as to tackle the health related impact of extreme poverty.
5) All stakeholders (Ministry of Education/GES, District Assemblies, community leaders and parents) should increase their efforts in improving girl-child education since educated mothers are better placed to adopt healthier child-feeding practices. These efforts should focus on increasing enrolment and retention of girls in school and ensuring high results. In spite of the huge resource requirements in support of this recommendation, the benefits and multiplier effects of female education in all aspects of maternal and child health and entire human development should be incentive enough to give the issue the needed priority.
6) The MOH/GHS and other health service providers in the country should pool their efforts to ensure increase in the rate of supervised deliveries and other emergency obstetric care for mothers to ensure that mother and child have the best services.
7) Efforts should be made by DHMT to intensify in-service training for health providers to be able to ensure high quality services and information to their clients particularly those within the PMTCT programme.
8) The GHS should make more efforts to provide counselors on the PMTCT programme the necessary logistics and motivation to ensure consistent clients follow-up and more efficiency and effectiveness in their work with PMTCT clients.
9) The GHS, particularly the public health outfits at the district level should undertake periodic BCC campaigns targeted at males and mothers to ensure maternal and child

health practices, particularly those dealing with child nutrition within the context of HIV/AIDS, are improved and general social support to mothers is enhanced.

10) Key national campaign issues such as campaign on the use of iodized salt, vitamin A supplementation for children, breast feeding, and the use of feeding bottle and nipple, etc should be repackaged and re-launched to ensure stronger results and prevent loss of programme gains made over the last five years or so. This will require action and from the MOH/GHS, relevant industry, MOE/GES, and the mass media establishments. The FM and other community radios should be mobilized as key partners.

6.5 Areas of Future Research

This study has opened up several new research possibilities that may be pursued by the PI or any other interested scholar, granting the availability of needed resources. The issues are as follows:

1. The replication of this study to investigate on a more comprehensive bases the infant and young child feeding among mothers in all districts where the PMTCT programme is being taken to scale nationwide. This will help establish baseline information and data for monitoring and evaluation of the new PMTCT programmes throughout the country.

2. A more comprehensive study to investigate the possible relationships that might exist between infant feeding and young child practices among either positive or negative and/ or all mothers one hand, and the health outcomes of their children.

3. A comprehensive study on the influence of mothers' education and other selected background factors and mothers' child nutrition practices.

4. A study on how the media habits of mothers affect their infant and young child feeding practices.

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Appendix 1

SUMMARY OF KEY FINDINGS

Findings	Key Findings: Mothers of Unknown HIV Status	Key Findings: Positive Mothers
1. Children Currently Breastfed (0-23 months)	93.0%	44.0%
2. Children Ever Breastfed (0-23 months)	99.9%	85.7%
3. Initiation of Breastfeeding Immediately after birth.	37.0%	60.0%
4. Prelacteal Feeds Rate (Percentage of infants who were fed with liquids or solids in the first few days after delivery prior to breastfeeding)	15.0%	11.0%
4. Percentage of Children Breastfed for at least six months.	72.0%	63.0%
5. Percentage of Children Breastfed for 6-9 months and beyond	23.3%	37.0%
6. Percentage of Children fed using Feeding Bottle with Nipple	1.3%	15.0%
7. Percentage of Children whose Mothers Use iodized salt in food preparation	40.0%	35.0%
8. Percentage of Children who had Vitamin A	57.0%	92.0%

9. Frequency of Feeding. (Percentage of Children who were fed 2 or more times yesterday during the day and night)	95.0%	100%
10. Use of animal source foods (Meat, Poultry, Fish) Percentage of Children 6-23months Fed from animal sources	45.0%	15.4%
11. Percentage of Children 6-23months who had food from Egg sources	25.0%	46.2%
12. Percentage of Children 6-23months who had food containing Dairy Products	5.0%	7.7%
13. Percentage of Children who Had food from Vitamin A-rich orange / Yellow Vegetables	10.0%	23.1%
14. Percentage of Children fed with other Vitamin A Fruits	5.0%	7.7%
15. Percentage of Children fed with Dark Green Vegetables	25.0%	23.1%
16. Percentage of Children fed from Palm Oil / Nut sources	65.0%	30.8%

Appendix 2

BREASTFEEDING AND INFANT CHILD FEEDING (A)

RESEARCH ASSISTANT	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME_____	NAME_____		
DATE_____	DATE_____		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES
100	RECORD THE TIME	HOUR…… MINUTES……
102	First I would like to ask some questions about you and your household. Where do you currently live?	NAME OF PLACE OF RESIDENCE…… CITY……1 TOWN……2 VILLAGE……3
103	How long have you been living continuously in (NAME OF CURRENT PLACE OF RESIDENCE)? IF LESS THAN ONE YEAR ENTER '00'	YEARS…… ALWAYS (SINCE BIRTH)…… …95 VISITOR…… ……96
104	In what month and year were you born?	MONTH…… DON'T KNOW MONTH…… YEAR……19 DON'T KNOW YEAR……98
105	How old were you at your last birthday? COMPARE AND CORRECT 104 AND/OR 105 IF INCONSISTENT.	AGE IN COMPLETE YEARS……
106	Have you ever attended school?	YES……1 NO……2

107	What is the highest level of school you attended: Primary, Middle/JSS, Secondary/SSS, or higher?	PRIMARY.....1 MIDDLE/JSS.....2 SECONDARY/SSS.....3 HIGHER.....4
108	What is the highest grade you completed at that level?	GRADE.....
109	Can you read and understand a letter or newspaper easily, with difficulty, or not at all?	EASILY..... WITH DIFFICULTY..... NOT AT ALL.....
110	Do you usually read a newspaper or magazine at least once a week?	YES..... NO.....
111	Do you usually listen to a radio every day?	YES..... NO.....
112	Do you usually watch television at least once a week?	YES..... NO.....
113	What is your religion?	CATHOLIC.....01 ANGLICAN.....02 METHODIST.....03 PRESBYTERIAN.....04 PENTECOSTAL .....05 OTHER CHRISTIAN.....06 MOSLEM.....07 TRADITIONALIST.....08 NO RELIGION.....09 OTHER_____96 (SPECIFY)

114	To which ethnic group do you belong?	ASANTE……01 AKWAPIN……02 FANTE……03 OTHER AKAN……04 GA/ADANGBE……05 EWE……06 GUAN……07 MOLE-DAGBANI……08 GRUSSI……09 GRUMA……10 HAUSA……11 OTHER_____96 (SPECITY)
115	What is your occupation, that is, what kind of work do you mainly do?	STATE_____
116	How much do you usually earn for this work PER MONTH? PROBE: Is this by the day,by the month, or by the Month?	Less than ₵100,000……1 ₵100,000 –₵ 499,999…… …2 ₵500,000 –₵999,999……3 ₵1mn- ₵4.9mn……4 ₵5mn +……5 OTHERS_____9999996 (SPECIFY)
117	Do you have any sons or daughters whom you have given birth to who are living with you?	YES……1 NO……2
118	How many sons live with you? And how many daughters live with you? IF NONE, RECORD '00'.	SONS AT HOME…… DAUGHTERS AT HOME……

119	Do you have any sons or daughters whom you have given birth to who are alive but do not live with you? IF NONE, RECORD '00'	SONS ELSEWHERE…… DAUGHTERS ESLESWHERE……
120	Have you ever given birth to a boy or girl who was born alive but later died? IF NO, PROBE: Any baby who cried or showed signs of life but survived only a few hours or days?	YES……1 NO……2
121	How many boys have died? And how many girls have died? IF NONE, RECORD '00'	BOYS DEAD…… GIRLS DEAD……
122	SUM ANSWERES TO M19, M20, M22, AND ENTER TOTAL	TOTAL……
123	Just to make sure that I have this right: you have had in TOTAL_____ children during your life. Is that correct? YES NO PROBE AND CORRECT M19-M23	

BREASTFEEDING AND INFANT/CHILD NUTRITION (B)

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
124.	In what year and month and year was your last child born?	MONTH…….. YEAR……	
125	SEX OF CHILD	MALE = 1 FEMALE = 2	
126	Did you ever breastfeed (NAME)?	Yes……1 No……2	133
127	How long after birth did you first put (NAME) to the breast?	IMMIDIATELY WITHIN FIRST HOUR AFTER BIRTH……1 AFTER THE FIRST HOUR……0 DON'T REMEMBER/DON'T KNOW….8	
128	During the first three days after delivery, did you give (NAME) the liquid that came out from your breasts?	YES……1 NO……0 DON'T KNOW……8	
129	During the first three days after delivery, did you give (NAME) anything else to eat or drink before feeding him/her breastmilk?	YES……1 NO……0 DON'T KNOW……8	131 131
130	What did you give (NAME)? Anything else? **DO NOT READ THE LIST** RECORD ALL MENTIONED BY CIRCLING LETTER FOR EACH ONE MENTIONED	MILK (OTHER THAN BREASTMILK)…A PLAIN WATER……B WATER WITH SUGAR AND OR/SALT…C FRUIT JUICE……D TEA/INFUSIONS……E LIQUID OR SEMI-LIQUID TRADITIONAL MEDICINE……F INFANT FORMULA……G OTHER (SPECIFY)_____……X	
131	Are you currently breastfeeding (NAME)?	YES……1 NO……0	133
132	For how long did you breastfeed (NAME)? IF LESS THAN ONE MONTH RECORD '00' MONTHS.	MONTHS……	

133	Now I would like to ask you about the types of liquids (NAME) drank yesterday during the day and at night. Did (NAME) drink any of the following liquids yesterday during the day or at night? READ THE LIST OF LIQUIDS (A THROUGH H, STARTING WITH "BREASTMILK"). PLACE A CHECK MARK IN THE BOX IF CHILD DRANK LIQUID IN QUESTION		
A	Breastmilk?	A.....	
B	Plain water?	B.....	
C	Commercially produced infant formula?	C.....	
D	Any other milk such as tinned, powdered, or fresh animal milk?	D.....	
E	Fruit juice?	E.....	
F	Coffee or tea	F.....	
G	Any other liquids such as sugar water, minerals, light soup.	G.....	
H	Liquid or semi-liquid traditional medicine?	H.....	
134	Did (NAME) drink anything from a bottle with a nipple yesterday or last night?	YES.....1 NO.....0 DON'T KNOW.....8	
135	Now I would like to ask you about the type of foods (NAME) ate yesterday during the day and at night. Did (NAME) eat any of the following foods yesterday during the day or at night? READ THE LIST OF FOODS. CHECK MARK IN THE BOX IF CHILD ATE THE FOOD IN QUESTION		

A	Any foods made from grain (for example, made with millet, sorghum, maize, rice, wheat, or other local grains.	A.....	
B	Orange-flesh squash, carrots, or yellow /orange- fleshed sweet potatoes?	B.....	
C	Any other food made from roots or tubers (for example potatoes, yams, cassava, coco yam or other local roots/tubers)?	C.....	
D	Any dark green leafy vegetables (for example cassava leaves, beans leaves, kotomire, alefu, spinach, pepper leaves, or other dark green leaves)?	D.....	
E	Ripe mango, ripe pawpaw (or other local vitamin A-rich fruits)?	E.....	
F	Any other fruit and vegetables (for example, pear, pineapple, bananas, avocadoes, tomatoes, onions, apples, oranges, others)?	F.....	
G	Any beef, pork, lamb, goat, rabbit (or wild game meat such as antelope/deer)	G.....	
H	Any chicken, duck, or other birds (for example, pigeon, guinea hen, others)?	H.....	
I	Any fresh or dried fish, or shellfish?	I.....	
J	Any eggs?	J.....	
K	Any foods made from beans or lentils (for example, made with cowpeas, beans, red beans, black beans, soyabeans, bambara beans or others)?	K.....	
L	Any groundnuts/peanuts, or any other nuts?	L.....	
M	Any cheese or yogurt?	M.....	
N	Any food made with oil, fat, or butter?	N.....	
O	Organ meats (for example liver, kidney, others)	O.....	
P	Snails, other small protein food	P.....	
Q	Foods made with red palm oil, palm nut, palm nut pulp soup	Q.....	
136	How many times did (NAME) eat solid, semi-solid, or soft foods other than liquids	NUMBER OF TIMES.....	

	yesterday during the day and at night? IF CAREGIVER ANSWERS SEVEN OR MORE TIMES RECORD "7" ADAPT THIS QUESTION TO USE LOCAL WORDS FOR THE SEMI-SOLID FOODS THAT ARE GIVEN. INCLUDE MASHED OF PUREED FOOD, ALONG WITH PORRIDGES PAPS, THICK GRUELS, STEWS ETC. SOLID FOODS- FOR EXAMPLE, FAMILY FOODS, BANANAS, MANGOES, POTATOES, BREAD- SHOULD ALSO BE INCLUDED. WE WANT TO FIND OUT HOW MANY TIMES THE CHILD ATE ENOUGH TO BE FULL.SMALL SNACKS AND SMALL FEEDS SUCH AS ONE OR TWO BITES OF MOTHER'S OR SISTER'S FOOD SHOULD NOT BE COUNED LIQUIDS DO NOT COUNT FOR THIS QUESTIONS. DO NOT INCLUDE THIN SOUPS OR BOTH, WATERY GRUELS, OR ANY OTHER LIQUID. USE PROBING QUESTIONS TO HELP THE RESTPONDENT REMEMBER ALL THE TIMES THE CHILD ATE YESTERDAY.	DON'T KNOW……8	
137	What type of salt do you use for cooking? CAN SHOW SAMPLE TO MOTHER	FORTIFIED……1 NOT FORTIFIED……0	
138	Did (NAME) receive a vitamin A dose like this during the last 6 months?	YES……1 NO……0 DON'T KNOW……8	

Adapted from Arimond M. Ruel M.T. Generating Indicators of Appropriate Feeding of Children 6 through 23 Months from the KPC 2000+ 2003. food and nutrition Technical Assistance Project (FANTA) Washington DC