BREAST-FEEDING AND WEANING PRACTICES AMONG RURAL AND URBAN MOTHERS OF EMBU DISTRICT, KENYA

By

DAISY RUGURU NYAGA

DEPARTMENT OF BIOLOGICAL SCIENCES

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university or any other award.

Signature........................................Date 28th Sept.

SUPERVISORS APPROVAL

We confirm that the candidate under our supervision carried out the work reported in this thesis.

DR. EPHANTUS KABIRU
DEPARTMENT OF PATHOLOGY
KENYATTA UNIVERSITY
Signature........................................Date 29/09/05

DR. ZIPPORAH NG’ANG’A
DEPARTMENT OF BIOLOGICAL SCIENCES
KENYATTA UNIVERSITY
Signature........................................Date 28th Sept 2005
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LIST OF ABBREVIATIONS

HIV/AIDS: Human Immuno deficiency Virus/Acquired Immune deficiency Syndrome

IEC: Information and Education Campaigns

MCH/FP: Maternal Child Health/ Family Planning

MDG: Millennium Development Goal

MoH: Ministry of Health

PRSP: Poverty Reduction Strategy Paper

SPSS: Statistical Package for Social Sciences

UNDP: United Nations Development Programme

UNICEF: United Nations Children Education Fund

WHO: World Health Organisation
EXPLANATORY DEFINITION OF TERMS

Breast-feeding: The act of feeding an infant from either of the two milk secreting organs on the upper front of a female human body.

Exclusive breast-feeding: The act of feeding an infant on only breast milk, recommended vitamins/minerals and medicinal liquids.

Schedule breast-feeding habit: The act of breast-feeding an infant in a planned time frame.

Demand breast-feeding habit: The act of breast-feeding an infant at any time that they insist or require to have the breast.

Weaning: To accustom an infant to food other than breast milk. This does not mean cessation of breast milk but continued breast-feeding as other food items are introduced into an infant’s diet.

Initial weaning phase: The introduction of commercial liquid formulas or traditionally home made liquids to a completely breast-fed infant.

Second weaning phase: The feeding of semisolids or solid foods to the already initially weaned infant.

Pacifier: A feeding teat that appeases the baby, with perforations that allow liquids to pass through often made from polyvinyl material.
ABSTRACT

Human milk contains essential nutrients required by the new born baby for proper growth and development. Nations worldwide desire that children be exclusively breast-fed for four to six months and that breast-feeding continue into the second year of life with supplementary feeding. The aim of the study was to compare the breast-feeding and weaning practices among mothers in rural and urban areas of Embu District. This was achieved by determining the breast-feeding practices among rural and urban breast-feeding women and establishing the weaning practices among rural and urban mothers. This cross-sectional study was undertaken in Embu District and Runyenjes sub-District Hospitals where a total number of 183 mothers of children aged between 2 weeks and 2 years were interviewed. Data was collected through structured questionnaires and triangulated using unstructured interviews. Mothers from the rural areas were 65% while 35% were from urban areas. The mothers that were breast-feeding at the time of the study were 95.1% while 4.9% were not. Only 14.8% of the mothers practised exclusive breast-feeding for 4-6 months with a majority 10.4% being from the urban area and only 4.4% from the rural area. There was a significant association between residential area and exclusive breast-feeding ($\chi^2=16.138; \text{df}=3; p=0.001$). There was also a significant association between the number of times a mother breast-fed and residential area ($\chi^2=14.158; \text{df}=3; p=0.003$). The mothers that had weaned their children were 85.2%. There was a significant relationship between weaning and mothers area of residence ($\chi^2=23.639; \text{df}=1; p=0.001$). The foods used for weaning were mainly cow milk and water used by 42.9% of the mothers followed by maize porridge with a percentage of 30.8. A comparison of residential area and foods used for weaning revealed a significant relation at ($\chi^2=32.479; \text{df}=6; p=0.001$). The mothers that used pacifier for weaning were 64.1%, 4.6% used bottle and spoon and 1.3% used cup. A comparison of utensil used and residential area revealed that there was no significant relationship ($\chi^2=6.271; \text{df}=3; p=0.099$). This study concludes that weaning and breast-feeding practices differ in the rural and urban areas mainly due to different knowledge and poverty levels and it recommend implementation of measures to combat poverty and public health education among mothers.
CHAPTER 1: INTRODUCTION

1.1 BACKGROUND INFORMATION

Human milk is an adequate source for the nutritional requirements of the newborn. It is an unequalled way of providing ideal food for healthy growth and development of infants since it is rich in fats, proteins, minerals and vitamin (WHO, 2002). It also contains immunological active components like Immunoglobulin A (IgA), Immunoglobulin G (IgG), Immunoglobulin M (IgM) and Immunoglobulin D (IgD) which boosts the guts immune system and protects the mucosal surfaces against entry of pathogenic bacteria and enteroviruses (Nestle’, 2002; Hallberg et al., 2003). Hence as a global public health recommendation, infants should be exclusively breast-fed for the first six months with continuation of breast-feeding with supplementary feeding up to 2 years of life to achieve optimal growth, development and health (WHO, 2002; UNICEF, 2001a).

Globally, it is estimated that $3.6 billion spent on health care could be saved each year largely through the prevention of stomach ailments if exclusive breast-feeding was practised for the first six months (Gillian, 2002). More over, research shows that the four major killer diseases of children: acute lower respiratory infections, diarrhoea dehydration, measles and malaria, which affects children aged between six and 23 months could be largely prevented through exclusive breast-feeding (Betran, 2002).

The United Nations Children’s Fund (UNICEF) recommends that children be breast-fed exclusively for four to six months and that breast-feeding continue to the second year of life (UNICEF, 2001a). However, despite all the benefits of breast-feeding, childhood morbidity, more so malnutrition, is on the rise (UNICEF, 2001a) and is associated with
poor breast-feeding and weaning practices (Nestle’, 2002). This situation has led to a loss of quality of life and places a high demand on hospital resources. It also exerts a huge burden on the economy of Kenya.

1.2 RATIONALE OF THE STUDY

1.2.1 STATEMENT OF THE PROBLEM

Studies indicate that 35% of children in Kenya are moderately to severely stunt compared to 33% in 1998 (UNICEF, 2001b). It is also documented that children aged 12-23 months are most undernourished with 38% from rural areas being moderately to severely stunt compared to 26.6% from urban areas (MICS, 2001). The multiple indicator cluster surveys carried out in 2001 reveal that childhood mortality rates are higher in rural than in urban areas with 73 per 1000 compared to 59 per 1000 in urban areas (MICS, 2001). In addition, acute respiratory infections and diarrhoeal diseases affects 43% of children between 6 and 23 months (UNICEF, 2001a).

Human milk is an adequate source for most essential nutrients and a host of many immunologically active components. Hence the reason why it is recommended that children be exclusively breast-fed for four to six months and that breast-feeding continue with supplementary feeding well into the second year of life (UNICEF, 2001a).

This study therefore investigated the disparity that exists in breast-feeding and weaning practices between mothers in rural compared to those in urban communities.

A review of the related literature revealed that no had been undertaken in this area.
1.3 RESEARCH QUESTION

What are the breast-feeding and weaning practices of mothers in rural and urban areas of Embu District, Kenya.

1.4 NULL HYPOTHESIS

Breast-feeding and weaning practices are not influenced by the residence of the breast-feeding mothers.

1.5 OBJECTIVES OF THE STUDY

1.5.1 GENERAL OBJECTIVE

The general objective was to establish the breast-feeding and weaning practices among mothers living in rural and urban areas of Embu District, Kenya.

1.5.2 SPECIFIC OBJECTIVES

a) To determine the breast-feeding practices among rural and urban breast-feeding women.

b) To find out the weaning practices among rural and urban mothers.
1.6 JUSTIFICATION

There is an increasing concern over the poor nutritional status of children in Kenya. According to UNICEF (2001a), childhood malnutrition has been on the rise over the past years especially in rural areas. This could be due to lack of knowledge by mothers on proper infant feeding practices. It was therefore imperative that the study be carried out to give an insight into the breast-feeding and weaning practices of mothers living in rural and urban areas. The findings of the study will be useful to mother and health practitioners on better infant feeding practices. This will hence facilitate in reduction of child morbidity and mortality rates with the aim of aiding in achieving the Forth Millennium Development Goal (MDG) (UNDP, 2003).

Embu District was sampled because there is no available literature showing that a similar study has been carried out in the area despite the high number of children who suffer malnutrition. However, such a study was carried out in Western Kenya by Onyango et al. (2002)
CHAPTER 2: LITERATURE REVIEW

2.1 GLOBAL PICTURE OF BREAST-FEEDING

The feeding of children during the first two years of life continues to represent a major challenge for health practitioners (June, 2002). Exclusive breast-feeding, the optimal mode of feeding for the first trimester is not always practised. Even under well intentional efforts to promote, protect and support breast-feeding, its prevalence falls sharply to less than 60% worldwide (Nestlé, 2002). According to Heird (1991) insufficiency of maternal milk as a sole nutrition resource functions as an instigating factor in the weaning process. Research conducted over the past 20 years throughout the world in a variety of settings has demonstrated that postnatal growth faltering begins at around 6 months of age, just as infants begin to receive foods to complement the breast milk (Scrimshaw, 2001; Taveras et al., 2004).

In the United States of America, 68% of breast-feeding starts at childbirth and only 31% of women breast-feed for duration of 6 months (Gillian, 2002). Due to the government's provision of infant food formulas, childhood malnutrition in the United States is low (Gillian, 2002). The American Academy of paediatrics reported that the US government spends $600 million per year on food formula for infants, women and children (June, 2002). The "Raiser Permanentle Health Maintenance" revealed that the formula fed baby averaged $1400 more on hospital bills annually than their breast-fed counterparts (Gillian, 2002). In addition, the American Academy of Paediatrics states that US $3.6}
billion could be saved yearly largely through the prevention of ear and stomach ailments if exclusive breast-feeding was practised for the first six months (Paediatrics, 1997).

In Australia, an analysis of the role of social support in influencing breast-feeding in a low social economic area among mothers, fathers and grandfathers indicated lack of support for breast-feeding in comparison to bottle feeding (Intyre et al., 2002).

In Uzbekistan, Kazakhstan, Central Asia, a study carried out on infant feeding practices among 209 women revealed that almost 90% of the mothers in the study samples breast-fed their babies. The study also revealed that by the time the infants were 3 months of age, 12% of the mothers were no longer breast-feeding and that by 6 months, and nearly 30% had ceased breastfeeding (Srimshaw, 2001).

2.2 THE KENYAN PICTURE ON BREAST-FEEDING

According to the Kenya Demographic Health Survey 2003 (MoH, 2003) 96% children aged between 10-11 months are still breast-fed with a decline in breast-feeding prevalence as age increases. This is similar to the UNICEF group four report (2001a) which revealed that 97% of children are breast-fed part time to two years. Moreover, exclusive breast-feeding is rarely practised with only 29% of children aged less than months being exclusively breast-fed and 9% of the children aged four months being exclusively breast-fed (MoH, 2003).

2.3 NUTRITIONAL STATUS OF CHILDREN IN KENYA

Research shows that the alarming rate of child malnutrition is not just due to lack of food but also poor postnatal practices such as lack of exclusive breast-feeding and poor
weaning practices (Nestlé, 2002). According to MICS (2001) children in Kenya aged 12-23 months are most undernourished with 35% of children considered to be moderately to severely stunted. In addition, childhood malnutrition is higher in children in rural than in urban areas with 38% of children from urban areas being moderately to severely stunted compared to 26.6% from urban areas (MICS, 2001). It is also estimated that child mortality rates of children in rural areas are 73 per 1000 compared to 59 per 1000 in urban areas while under five mortality rates are 115 per 1000 and 90 per 1000 respectively (MICS, 2001). Regional comparisons show that the provinces in Kenya with the highest rates of moderate to severe stunting are Eastern 41%, Western 38%, Rift Valley 37% and Central 29% (UNICEF, 2001b).

Due to the findings that poor nutritional status compromises the immune system and makes one susceptible to infections (Nestlé, 2002) the four major killer diseases of children; acute respiratory infections, diarrhoea dehydration, measles and malaria are found to peak among children aged between 6 and 23 months (UNICEF, 2001a; Nestlé, 1989).

Therefore, lack of exclusive breast-feeding for the recommended 6 months is strongly linked to the high incidence of morbidity (Maher, 1992).

2.4 BENEFITS OF BREAST-FEEDING TO THE CHILD

Human milk is an adequate source of most essential nutrients and immunologically active components. It meets most of the nutritional requirements of the new baby. It is easier to digest and does not need to be altered. It contains fat, lactose, proteins, vitamins, minerals and trace elements (Bennett and Brown, 1989). Human milk also contains anti-
inflammatory components such as cytokines, leucocytes, mainly macrophages, granulocytes and lymphocytes (Nestle', 2002; Nestle', 1989). The levels of immune regulatory cytokines such as interferon-\(\mu\) (IFN-\(\mu\)), transforming growth factor -\(\beta\) (TGF-\(\beta\)) and colony stimulating factor (G-CSF) are much higher in human milk than in blood or in cow-based infant formula. Recently these components have been shown to boost the defence mechanism of the gastrointestinal system, which are important to the handling of orally introduced antigens (Nestle', 2002).

Furthermore, breast-fed children have been shown to produce more interferon -\(\mu\) upon Respiratory Syncytial Virus (RSV) infection and upon vaccination against Measles Mumps – Rubella virus (MMR). Breast-fed children are also protected against Otitis media, acute respiratory infections and wheezing bronchitis up to seven years after termination of breast-feeding (June, 2002; Hill, 1996).

Breast-feeding has also been associated with adult intelligence. Mortensen et al. (2002) notes that breast-feeding has a long-term positive effect on cognitive and intellectual development. Similarly, the Copenhagen prenatal cohort and those who participated in the Danish Military Draft Board IQ test outcomes showed an association between breast-feeding up to 9 months and adult intelligence (Mortensen et al., 2002).

According to Nestle' (2002), the gradual introduction of gluten containing food into the infant’s diet while they are still breast-feeding reduces the onset of Celiac disease in early childhood. In addition, breast milk builds defence against allergies and is important in development of immunity to chronic diseases like diabetes and cancers later in life (Nestle’ 2002). Breast milk is also rich in cholesterol and fatty acids, especially two
molecules: docosahexaenoic fatty acid (DHA) and arachidonic acid (AA) which is key players in healthy brain and eye development (Nestle', 2002; Hill, 1996).

A study by Tanaka and Kato (2001) demonstrated that artificial feeding was associated with a higher risk of sudden infant death syndrome than breast-feeding. Breast-feeding has also been shown to strengthen the bond between mother and child through physical and psychological contact (Mortensen et al., 2002).

2.5 BENEFITS OF BREAST-FEEDING TO THE MOTHER

Breast-feeding is associated with a decrease in negative mood and significantly less stress. This is mediated by the hormone oxytocin, which is released in the bloodstream during breast-feeding (Siborboro and Katkin, 2002). It is also responsible for less postpartum bleeding and more rapid uterine involution. Breast-feeding also reduces one’s chances of developing breast cancer (Beral, 2002). A collaborative re-analysis of individual data from 47 epidemiological studies in 30 countries including 50,302 women with breast cancer and 96,973 women without the disease demonstrated that the relative risk of breast cancer decreased by 4.3% for every 12 months of breast feeding (Beral, 2002).

Moreover, breast-feeding acts as a short term method of birth control. According to Bennett and Brown (1989) and Simondo et al.(2001) the production of lactational amenorrhea during breast-feeding causes less menstrual blood loss over the months after delivery and also delays return of one’s menstrual periods, which may help extend the time between pregnancies.
Breast-feeding is also associated with improved bone remineralization postpartum with reduction in hip fractures in the postmenopausal period (Siborboro and Katkin, 2002). It is also beneficial to the mother in that it burns more calories and helps the mother get back to her pre-pregnancy weight more quickly.

The other benefits associated with breast milk are that it is good for the environment since there are no cans, bottles, and boxes to put in garbage (Siborboro and Katkin, 2002)

2.6 WEANING PRACTICES

Weaning refers to when the baby takes anything else besides breast milk by mouth. It occurs when baby stops exclusive breast-feeding and gets nutrition from other sources (Scrimshaw, 2001). The American Academy of paediatrics recommends that weaning should start slowly by cutting the length of time the child is actually on the breast (June, 2002). One can also skip a breast-feeding session and instead give a healthy snack such a milk or soy formula (June, 2002). UNICEF recommends that unless in special cases, weaning starts after six months (Kuan et al., 1999; UNICEF, 2001a).

Scrimshaw (2001) recommends that weaning takes place in two stages. The initial stage is that of introduction of liquid form supplementary foods followed by solid foods. Onyango et al. (2001) revealed that weaning mothers initially gave foods such as fruit juices followed by solid foods such as mashed bananas, fresh vegetables at four to five months. This they related to the advice given by health personnel, that mothers who have insufficient milk supply can use supplements before the child is six months with milk based formula (Onyango et al., 2002).
To give liquid supplements, it is recommended that cup and spoon be used instead of pacifiers so as to maintain high standards of cleanliness (Scrimshaw, 1991). The signs that baby is ready to wean includes the disappearance of baby's tongue-thrust reflex, if the child can sit up and hold head by himself and if he tries to take hold of food when he sees it (Onyango et al., 2002). The best approach to weaning the child is to drop one breast-feeding session each week until the child is eating all solid foods or formula (Packard et al., 1982; Scrimshaw, 2001).

2.7 Breast-feeding and HIV/AIDS

World wide, 24.8 million people are infected with HIV/AIDS (UNAIDS, 2002). Women constitute 58% of the infected populations and 67% of these women will become pregnant at one time in their lives and they may or may not breast-feed (UNAIDS, 2002). Breast-feeding increases the chance of transmitting the virus to the child. For instance, UNAIDS (2002) states that more than 800,000 children under 14 years of age are HIV positive. According to WHO (2002), the children who were infected with the HIV virus either through pregnancy, birth or breast-feeding are 90%.

For HIV-positive mothers therefore, breast-feeding poses much concern for those in the developed and developing nations. Majority of mothers in the developed world can afford and do make use of anti retroviral therapy (Liles, 2001) which reduces the chances of HIV transmission from mother to child. For women in sub-Saharan Africa, the question of whether or not to breast-feed has become highly charged as a result of increasingly influential but uncorroborated studies which indicate that mothers who exclusively breast-feed might run a lower risk of transmitting the HIV virus to their newborn. For
instance, a prospective cohort study by Nduati (2001) revealed that breast-feeding increases HIV transmission rates by 14% with greater mortality rates among breast-feeding mothers. This is contrary with South African Study (Coutsoudis et al., 1999) which revealed that there was no evidence of HIV transmission within 6 months of exclusive breast-feeding because breast milk contains lactoferrin and lysozymes which may destroy HIV germs (Coutsoudis et al., 1999). However, highest transmissions were present with mixed feeding (Coutsoudis et al., 1999). Due to uncertainty of conditions therefore, avoidance of breast-feeding has been proposed (UNAIDS, 2002).

The debate on avoidance of breast-feeding is complicated by poverty and cultural norms and poses ethical questions especially in Africa where formula-fed infants are six times more likely to die than their breast-fed counterparts (Barnett and Whiteside, 2002). This is because in a continent where 2 billion people in Sub-Saharan Africa live below the poverty line (UNDP, 2003) only few parents can afford child formula food which is expensive and costs up to US $2 and hence hard to come by (Meyer, 2004). This results to traditional community practices of feeding infants potions of sugar waters which maybe potentially lethal for infants if mixed with contaminated water. The main policy issue therefore is whether or not HIV-positive mothers with low levels of schooling and income will be able to feed their infants with safe breast substitutes.

The study by Coutsoudis et al. (1999) revealed that exclusive breast-feeding for the first six months reduces chances of HIV transmission by 4.5% than in infants fed on a combination of formula and breast milk. However, according to Taveras et al. (2004) a mother trying to exclusively breast-feed faces another set of obstacles, including maintaining a supply of pumped breast milk for when she is away from her infant as well
as lessons in how to properly attach her infant and maintain breast health so as to reduce the risk of HIV transmission. This hence complicates any attempt to encourage exclusive breast-feeding, especially when mothers must be away from their infants in order to work.

In addition to lack of necessary and sufficient breast substitutes, a new mother who fails to put her baby to the breast may publicly brand herself HIV positive, a stigma that may cut her off from community support. According to Taveras et al. (2004) a research from Malaysia revealed that mothers who did not breast-feed were excluded from women groups and community gatherings.

2.8 THE KENYAN POLICY ON BREAST-FEEDING AND HIV/AIDS

According to MoH (2003) breast-feeding is the best way to feed a child in Kenya if the mother is HIV negative. However, HIV positive mothers are advised to replace breast milk with locally available alternatives. MoH (2003) states that the Kenyan government has committed to developing modalities to make anti retroviral therapy and formula substitutes available to HIV positive mothers.
CHAPTER 3: MATERIALS AND METHODS

3.1 THE STUDY AREA AND DEMOGRAPHY

The study was carried out in Embu Provincial Hospital in Nembure Division and Runyenjes sub-District Hospital in Runyenjes division of Embu District, Kenya (Appendix 1). Embu District covers an area of 729.4 square kilo metres with a total population of 298,773, a projection from the 1999 census (RoK, 2001). It is composed of 5 divisions: Central, Kyeni, Manyatta, Nembure and Runyenjes.

Embu District is one of the seven districts in Eastern Province. It borders Kirinyaga District to the West, Kutui District to the East, Tharaka Nithi to the North and Machakos to the South. It is located between Latitude 00'8" and 00'50" and Longitude 37°3' and 37°9' East.

3.2 STUDY POPULATION

The study population consisted of mothers of children aged between 2 weeks and 2 years from the sampled rural and urban communities obtained from the MCH/FP clinic.

The urban communities consisted of people living in Embu municipality and those in the rural communities consisted of people living in the villages.

3.3 INCLUSION CRITERIA

Mothers of children aged 2 years and below from the sampled rural and urban areas who consented to the study were included.
3.4 EXCLUSION CRITERIA

a) Mothers of children aged 2 years and below but did not consent to the study were excluded.

3.5 STUDY DESIGN

This was a descriptive cross sectional study whereby only a section of the mothers were sampled to participate in the study. The data was obtained by both qualitative and quantitative approaches to data collection. Quantitative data were collected using structured questionnaires (Appendix 2) while qualitative data was obtained using unstructured interviews.

3.6 SAMPLING METHOD

Both the qualitative and quantitative data were collected from the mothers attending the MCH/FP clinics in Runyenjes sub-District Hospital and Embu District Hospital. These hospitals were sampled purposively due to their locations either in urban and rural areas. Mothers of children 2 years and below were sampled conveniently from the well baby clinics and maternal child health clinics of these hospitals. To come up with the samples of mothers, probability proportional to size sampling technique was used.
3.7 SAMPLE SIZE DETERMINATION

Sample size was arrived at by calculation using the standard formula as used by Fisher et al., (1998) as shown below:

\[ N = \frac{Z^2 \cdot p \cdot q \cdot D}{d^2} \]

Where \( N \) = sample size

\( Z \) = standard normal deviate 1.96 which corresponds to 95% confidence interval

\( p \) = proportion of the target population estimated to have particular characteristics

\( q = 1 - p \)

\( d \) = degree of accuracy = 0.05

Thus \( N = \frac{1.96^2 \times 0.5 \times 0.5 \times 0.26}{0.05^2} = 384 \)

But our population was less than 10,000 hence we proceeded to calculate as follows:

\[ N_f = n \left(1 + \frac{n}{N}\right) \]

where \( n = 384 \)  
\( N = \) Assumed sample size  
\( \text{design effect} = 2 \)

Rural sample size \( (N) = 170 \)  
Urban sample size \( (N) = 76 \)

Hence \( 384 \) = 117.83 approx 120  
therefore \( 384 \) = 63.5 approx 64

\[ 1 + \left(\frac{384}{170}\right) \quad 1 + \left(\frac{384}{76}\right) \]

Sample size of \( 120 + 64 = 184 \) was obtained.

The study population was made up of two groups of people, namely mothers in the rural areas and mothers in the urban area. A ratio of 1.875 : 1 was used because a review of the hospitals MCH/FP attendance records revealed that Runyenjes Hospital had a monthly average attendance of 85 breast-feeding mothers while the Embu Hospital had a monthly attendance of 39 breast-feeding mothers. Therefore in two months of data collection, the above calculated sample size was obtained.
3.8 METHODS OF DATA COLLECTION

Data was collected in an interactive process between the respondent and the investigator using pretested structured questionnaires. The questionnaires were pretested in Kiambu District Hospital which were collected from a randomly selected sample of 30 mothers. This was to ensure their reliability and validity. The questionnaires were read out to the respondents and filled since a majority of them were semi-literate. To triangulate the information obtained, unstructured interviews were used. The sampled study population who were willing to participate were asked to get into two groups of 5 (in both the rural and urban areas). During the unstructured interviews, the primary researcher facilitated the groups ensuring that some members did not dominate the group while the assistant researchers took notes while taping the interviews.

3.9 ETHICAL CLEARANCE

Permission to carry out the research was sought from the ethical committee at the Board of Post Graduate Studies, Kenyatta University, Ministry of Education, Science and Technology, the District Officers Office, from the Medical officer of Health of Embu District and from the Medical Superintendent Embu District Hospital.

Participation was voluntary through informed written consent and the information obtained was kept in strict confidence and was only used for the purpose of this study.
3. 10 DATA MANAGEMENT

Analysis of the quantitative data was done using the SPSS version 11.5 statistical package. A variety of analytical skills were used depending on the type of data and the variable to be analysed. Analysis of the structured data begun with descriptive statistics of variables and ensued to analysis between the variables. Independent and dependent variables were compared. Independent variables such as area of residence, age, sex, education, occupation were marched with dependent variables measuring breast-feeding and weaning practices such as the number of breast-feeding years, the foods used for weaning, earliest age for introduction of weaning foods. Differences were compared using Pearson’s chi-square test, contingency co-efficient and by linear association with the level of significance fixed at 0.05 (p=0.05). Tables and graphs were used to show regularities or irregularities in data.

To analyse the qualitative data, quasi statistical analysis as described by Robson (2002) was used where all the taped information was written down and transcribed. After this, the emerging themes were identified in order of the frequency and priority from the respondents. Some of the information obtained from qualitative research was used to form a basis for the survey questions, while additional information obtained from the participatory research exercises was triangulated with the data from the surveys so as to ensure reliability and validity of the results.
CHAPTER 4: RESULTS

4.1 DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION

4.1.1 Comparison between breast-feeding and area of residence for sampled mothers.

Of the 183 mothers sampled, 65% were from the rural area while 35% were from the urban area (Table 4.1). Mothers from the rural areas that were breast-feeding were 61.7% while 33.3% mothers from the urban areas were breast-feeding. There was no significant relationship between a mother's area of residence and breast-feeding ($\chi^2=0.011; \text{df}=1; p=0.916$).

Table 4.1: Area of residence and breast-feeding

<table>
<thead>
<tr>
<th>Residence</th>
<th>Percentage</th>
<th>Breast-feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Rural</td>
<td>65%</td>
<td>61.7%</td>
</tr>
<tr>
<td>Urban</td>
<td>35%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>95.1%</td>
</tr>
</tbody>
</table>
4.1.2 Comparison between breast-feeding and age of the mothers

The mothers who participated in the study were classified into the age groups of 15-20 years, 21-25 years, 26-30 years, 31-35 years, 36-40 years and 41-45 years. Table 4.2 shows that majority of the breast-feeding mothers fell into the age group of 21-25 years with a breast-feeding percentage of 51.9% and the least mothers were in the age group of 41-45 years with a breast-feeding percentage of 1.1. There was no significant relationship between age of the mother and whether they were breast-feeding or not ($\chi^2=1.875; \text{ df}=5; p=0.866$).

Table 4.2: Age categories for mothers and breast-feeding prevalence

<table>
<thead>
<tr>
<th>Age categories</th>
<th>Percentage of Breast-feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>15-20 years</td>
<td>12.6%</td>
</tr>
<tr>
<td>21-25 years</td>
<td>54.6%</td>
</tr>
<tr>
<td>26-30 years</td>
<td>20.8%</td>
</tr>
<tr>
<td>31-35 years</td>
<td>9.3%</td>
</tr>
<tr>
<td>36-40 years</td>
<td>1.6%</td>
</tr>
<tr>
<td>41-45 years</td>
<td>1.1%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
4.1.3 Comparison between breast-feeding and education level of mothers

The frequency tabulations disclosed that majority 56.5% of the mothers who had attended at least primary education were breast-feeding, 29.5% who had attended at least secondary education were breast-feeding and 8.7% of the ones who had been to college were breast-feeding (Table 4.3). Those who had never been to school and those who had attained university education were not breast-feeding. Chi square results revealed a significant relationship between education level of mother and breast-feeding ($\chi^2=22.011$; df=4; p=0.001).

Table 4.3 showing the influence of mothers' education level on breast-feeding

<table>
<thead>
<tr>
<th>Education level</th>
<th>Breast-feeding</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Never been to school</td>
<td>0.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Primary level</td>
<td>56.5%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Secondary level</td>
<td>29.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>College level</td>
<td>8.7%</td>
<td>1.1%</td>
</tr>
<tr>
<td>University level</td>
<td>0%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total</td>
<td>95.1%</td>
<td>4.9%</td>
</tr>
</tbody>
</table>
4.1.4 Age at which weaning began in relation to their mothers’ education level

Analysis of mothers education level and age at which weaning of child began revealed that majority (60.9%) of the mothers weaned at 2 weeks and below (Table 4.4). Education level did not influence the age at which weaning began ($\chi^2=6.754; \text{df}=7 \ p=0.344$).

Table 4.4 showing age at which weaning began and their mothers’ education level

<table>
<thead>
<tr>
<th>Age when first item was given</th>
<th>Education level</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never been to school</td>
<td>At least primary education</td>
</tr>
<tr>
<td>2 weeks and below</td>
<td>0.6%</td>
<td>31.2%</td>
</tr>
<tr>
<td>3-4 weeks</td>
<td>0%</td>
<td>21.8%</td>
</tr>
<tr>
<td>1-3 months</td>
<td>0%</td>
<td>19%</td>
</tr>
<tr>
<td>Total</td>
<td>0.6%</td>
<td>59.3%</td>
</tr>
</tbody>
</table>
4.1.5 Comparison between breast-feeding and mothers’ occupation

The percentage of casual labourers, farmers, those in salaried employment and small scale business that were breast-feeding are given in Table 4.5. The nature of occupation a mother engaged in did not influence whether they were breast-feeding or not ($\chi^2 = 6.348; \text{ df}=3; \text{ p}= 0.096)$.

**Table 4.5 showing comparison of breast-feeding and mothers’ occupation**

<table>
<thead>
<tr>
<th>Breast-feeding</th>
<th>Casual labourer/home maker</th>
<th>Small scale business</th>
<th>farmer</th>
<th>Salaried employment</th>
<th>Total breast-feeding</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>47.5%</td>
<td>21.9%</td>
<td>23.5%</td>
<td>2.2%</td>
<td>95.1%</td>
<td>0.096</td>
</tr>
<tr>
<td>No</td>
<td>2.2%</td>
<td>2.2%</td>
<td>0.0%</td>
<td>0.5%</td>
<td>4.9%</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>49.7%</td>
<td>24.0%</td>
<td>23.5%</td>
<td>23.5%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
4.1.6 Comparison between mothers' occupation and age when they start weaning their children

The mothers that weaned at 2 weeks and below were: 32.1% casual labourers, 10.3% small scale businesses, 16.0% farmers and 2.6% salaried employment. A majority (60.9%) weaned at 2 weeks and below (Table 4.6). The mother’s occupation did not influence the age when they began weaning their children ($\chi^2 = 9.071; df = 6; p = 0.170$).

Table 4.6 showing mothers' occupation and age when weaning began

<table>
<thead>
<tr>
<th>Age when weaning began</th>
<th>Occupation of mother</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Casual labourer/home maker</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small scale business</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Farmer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salaried Employment</td>
<td></td>
</tr>
<tr>
<td>2 weeks and below</td>
<td>32.1%</td>
<td>10.3%</td>
</tr>
<tr>
<td>3-4 weeks</td>
<td>14.7%</td>
<td>8.3%</td>
</tr>
<tr>
<td>1-3 months</td>
<td>1.9%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Totals</td>
<td>48.7%</td>
<td>21.8%</td>
</tr>
</tbody>
</table>
4.2 BREAST-FEEDING PRACTICES OF THE MOTHERS.

4.2.1 Prevalence of breastfeeding practice

The percentage of mothers that were breast-feeding was 95.1% while 4.9% were not breast-feeding (Table 4.7).

Table 4.7 showing the breast-feeding prevalence

<table>
<thead>
<tr>
<th>Breast-feeding</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>95.1%</td>
</tr>
<tr>
<td>No</td>
<td>4.9%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
4.2.2 Breast-feeding habit

Breast-feeding habit was classified as breast-feeding on schedule and breast-feeding on demand. From the sampled population, 91.4% mothers' breast-fed on demand while 8.6% breast-fed on schedule. Majority of the mothers stated that they tried to maintain the same breast-feeding habit as they did in hospital which was often on schedule. They reported that after 10 to 20 days of experimentation on schedule feeding, they decided to change to demand feeding. One of the participants in unstructured interview stated “he looks at me crying, attracted to my breasts and grasps the breast with greed. I can't bear it...I can't wait for his scheduled feeding time......I feed him immediately”

Figure 4.1 showing the breast-feeding habit of the sampled mothers
4.2.3 Comparison of breast-feeding habit and residential area

A comparison of mothers’ breast-feeding habit and residential area revealed that area of residence influenced the habit of breast-feeding adopted, either on schedule or demand. This is illustrated in Table 4.8 which shows that 64% of mothers from the rural area breast-fed on demand and 1.1% breast-fed on schedule. In the urban area, 27.4% breast-fed on demand and 7.4% breast-fed on schedule ($\chi^2=19.388; \text{df}=2; \text{p}=0.001$).

**Table 4.8 showing a mothers breast-feeding habit and their residential area**

<table>
<thead>
<tr>
<th>AREA</th>
<th>Breast-feeding habit</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Demand</td>
<td>Schedule</td>
</tr>
<tr>
<td>Rural</td>
<td>64%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Urban</td>
<td>27.4%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Total</td>
<td>91.4%</td>
<td>8.6%</td>
</tr>
</tbody>
</table>
4.2.4 Exclusive breast-feeding

Exclusive breast-feeding for the first four to six months was only practised by 14.8% of the sampled mothers (Table 4.9).

Table 4.9 showing the mothers who exclusively breast-fed or not

<table>
<thead>
<tr>
<th>Mode of breast-feeding</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusive breast-feeding</td>
<td>14.8%</td>
</tr>
<tr>
<td>Non-exclusive breast-feeding</td>
<td>80.2%</td>
</tr>
<tr>
<td>Total breast-fed</td>
<td>95%</td>
</tr>
</tbody>
</table>

4.2.5 Comparison of residential area and exclusive breast-feeding.

Of the 14.8% mothers who had practised exclusive breast-feeding, only 4.4% were from the rural area and 10.4% were from the urban area (Table 4.10). There was a significant association between residential area and exclusive breast-feeding ($\chi^2=16.138; \ df=3; p=0.001$). 4.9% of the mothers were not breast-feeding at the time of the study.

Table 4.10 showing the relationship between residential area and exclusive breast-feeding

<table>
<thead>
<tr>
<th>Area</th>
<th>Exclusively Breast-fed</th>
<th>Not exclusively Breast-fed</th>
<th>Total breast-fed</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>4.4%</td>
<td>57.3%</td>
<td>61.7%</td>
<td>0.001</td>
</tr>
<tr>
<td>Urban</td>
<td>10.4%</td>
<td>22.9%</td>
<td>33.3%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.8%</td>
<td>80.2%</td>
<td>95.1%</td>
<td></td>
</tr>
</tbody>
</table>
4.2.6 Comparison of residential area and breast-feeding frequency.

The number of times that mothers from both rural and urban areas breast-fed ranged from 5 times and below, 6-10 times, 11-15 times and 15 and above times. Table 4.11 shows that mothers from rural areas breast-fed more times than those from urban areas.

There was a significant association between the number of times a mother breast-fed and their residential area ($\chi^2 = 14.158$; df=3; p=0.003).

Table 4.11 showing residential area and breast-feeding times

<table>
<thead>
<tr>
<th>Area</th>
<th>5 and below</th>
<th>6-10</th>
<th>11-15</th>
<th>15 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td>6.9</td>
<td>21.1</td>
<td>25.1</td>
<td>12</td>
</tr>
<tr>
<td>Urban:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td>8.6</td>
<td>12.6</td>
<td>13.1</td>
<td>0.6</td>
</tr>
</tbody>
</table>
4.2.7 Comparison of residential area and duration of breast-feeding

Breast-feeding duration (both day and night) fell in the range of 5 minutes and below, 6-10 minutes, 11-15 minutes and 15 minutes and above. There was an almost significant relationship between where a mother lived and the number of minutes they spent on breast-feeding. Mothers living in the rural areas spent less time breast-feeding than did mothers from the urban areas. It was also found that mothers from the urban area breast-fed for less number of times but for longer time which was on schedule while mothers from rural areas breast-fed for more number times but for a shorter duration (Table 4.12). ($\chi^2=6.869; \text{df}=3; p=0.056$).

Table 4.12 showing the number of minute’s that mothers spent breast-feeding in both day and night

<table>
<thead>
<tr>
<th>AREA</th>
<th>5 and below</th>
<th>6-10</th>
<th>11-15</th>
<th>15 and above</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural;</td>
<td>30.9%</td>
<td>26.3%</td>
<td>3.4%</td>
<td>2.3%</td>
<td>0.056</td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban;</td>
<td>7%</td>
<td>8.6%</td>
<td>2.9%</td>
<td>17.7%</td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 WEANING PRACTICES OF THE MOTHERS

4.3.1 Comparison of residential area and weaning practices

The mothers who had weaned their children were 85.2%. Among these, 64% were from the rural area while 26.2% were from the urban area (Table 4.13). There was a significant relationship between mothers' residential area and introduction of supplementary food ($\chi^2=23.639; \text{df}=1; \ p=0.001$).

<table>
<thead>
<tr>
<th>AREA</th>
<th>WEANING</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Rural</td>
<td>64%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Urban</td>
<td>26.2%</td>
<td>8.2%</td>
</tr>
</tbody>
</table>

Table 4.13 The number of mothers who had weaned their children and residential area.
4.3.2 Comparison of residential area of the mother and age at which weaning began

The age at which weaning began was classified into four groups; 2 weeks and below, 3-4 weeks, 1-3 months and 4 months and above. Out of the children that had been weaned, 60.9% of the children from both the rural and urban areas were weaned at 2 weeks and below, 32.7% at 3-4 weeks and only 6.4% at between 1 month and 3 months (Table 4.14). Chi square analysis revealed a significant relationship between a mother's residential area and age when weaning began ($\chi^2=9.580; \ df=2; \ p=0.008$).

Table 4.14 Residential area and age at which weaning began

<table>
<thead>
<tr>
<th>AREA</th>
<th>≤ 2 weeks</th>
<th>3-4 weeks</th>
<th>1-3 months</th>
<th>4-6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>48.7%</td>
<td>19.2%</td>
<td>3.2%</td>
<td>0</td>
</tr>
<tr>
<td>Urban</td>
<td>12.2%</td>
<td>13.5%</td>
<td>3.2%</td>
<td>0</td>
</tr>
</tbody>
</table>

To triangulate the findings, a further question was posed in unstructured interviews asking why mothers weaned their children earlier than expected. The results showed that mothers that had begun to wean their children early did so either because the child was not adding weight as they expected or because the child cried often.
4.3.3 Types of foods used during the initial stage of weaning

Using an open ended question, mothers were asked to state the kind of food they used for weaning their children. The mothers explained that they initially gave a soft liquid food followed by solid food stuffs. The initial weaning foods included fruit juice, plain water, water and glucose, cow milk, mashed fruits, infant formula and plain maize flour porridge. Majority of the mothers gave cow milk diluted with water (48.2%) as the initial weaning food. This was followed by maize flour porridge (31%), home made fruit juices (9.7%), Commercial fruit juice (6.5%), water and glucose (5.2%) , infant formula (1.9%) and water and salt (0.6%)(Table 4.15).

Table 4.15 The initial weaning foods used by mothers

<table>
<thead>
<tr>
<th>Type of food</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial fruit juice</td>
<td>6.5</td>
</tr>
<tr>
<td>Cow milk and water</td>
<td>48.2</td>
</tr>
<tr>
<td>Home made crushed fruits</td>
<td>9.7</td>
</tr>
<tr>
<td>Water and glucose(sweet waters)</td>
<td>5.2</td>
</tr>
<tr>
<td>Water and salt(salt waters)</td>
<td>0.6</td>
</tr>
<tr>
<td>Infant formula</td>
<td>1.9</td>
</tr>
<tr>
<td>Maize flour porridge</td>
<td>31</td>
</tr>
</tbody>
</table>
4.3.4 Comparison of residential area and types of food used for initial weaning

An analysis of initial weaning foods and residential area revealed that a mother's area of residence influenced the initial kind of food given to baby (Table 4.16) \( (\chi^2 = 32.479; df = 6; p = 0.001) \)

Table 4.16 showing a comparison of residential area and foods used for initial weaning.

<table>
<thead>
<tr>
<th>Kinds of foods given</th>
<th>Area</th>
<th>Total</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural (%)</td>
<td>urban (%)</td>
<td></td>
</tr>
<tr>
<td>Cow milk and water</td>
<td>(32.7%)</td>
<td>(10.3%)</td>
<td>(42.9%)</td>
</tr>
<tr>
<td>Maize porridge</td>
<td>(24.4%)</td>
<td>(6.4%)</td>
<td>(30.8%)</td>
</tr>
<tr>
<td>Water + glucose</td>
<td>(5.1%)</td>
<td>(0%)</td>
<td>(5.1%)</td>
</tr>
<tr>
<td>Water + salt</td>
<td>(0.6%)</td>
<td>(0%)</td>
<td>(0.6%)</td>
</tr>
<tr>
<td>Home made fruit</td>
<td>(1.9%)</td>
<td>(7.7%)</td>
<td>(9.6%)</td>
</tr>
<tr>
<td>juice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial fruit</td>
<td>(6.4%)</td>
<td>(2.6%)</td>
<td>(9%)</td>
</tr>
<tr>
<td>juice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant formula</td>
<td>(0%)</td>
<td>(1.9%)</td>
<td>(1.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>(71.2%)</td>
<td>(28.8%)</td>
<td>(100%)</td>
</tr>
</tbody>
</table>
4.3.5. The foods given to children in the previous week\(^1\).

The study indicated that the weaned children were given different combinations of foods in the previous weeks: 1.1% were given milk and milk-based formula, 15.8% were given cereals (wheat, maize corn rice, sorghum or millet), 6% were given mashed green bananas, 0.5% were given vegetables and tubers, 1.1% were given pumpkin and sorghum, 3.8% were given mashed green bananas, fruits, vegetables and tubers, 1.6% were given milk, cereals and vegetables, 1.1% were given milk, pumpkin and mashed green bananas, 0.5% were given milk, animal protein, vegetables and fruits, 22.4% were given cereals, potatoes, mashed green bananas, 26.8% were given milk, mashed green bananas, vegetables and cereals, 4.4% beans, animal protein, potatoes, mashed green bananas, 14.8% had not been weaned (Table 4.17).

**Table 4.17 Showing the foods that children were given the previous week**

<table>
<thead>
<tr>
<th>Food given</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk and milk based formula</td>
<td>1.1</td>
</tr>
<tr>
<td>Cereals(wheat, maize, corn, rice, sorghum, millet)</td>
<td>15.8</td>
</tr>
<tr>
<td>Mashed green bananas</td>
<td>6.0</td>
</tr>
<tr>
<td>Vegetables and tubers</td>
<td>0.5</td>
</tr>
<tr>
<td>Pumpkin and sorghum</td>
<td>1.1</td>
</tr>
<tr>
<td>Mashed green bananas, fruits, vegetables, tubers</td>
<td>3.8</td>
</tr>
<tr>
<td>Milk, cereals and vegetables</td>
<td>1.6</td>
</tr>
<tr>
<td>Milk, pumpkin and mashed green bananas</td>
<td>1.1</td>
</tr>
<tr>
<td>Milk, animal protein, vegetables and fruits</td>
<td>0.5</td>
</tr>
<tr>
<td>Cereals, potatoes, mashed green bananas</td>
<td>22.4</td>
</tr>
<tr>
<td>Milk, mashed green bananas, vegetables, and lentils</td>
<td>26.8</td>
</tr>
<tr>
<td>Beans, animals protein, potatoes, mashed bananas</td>
<td>4.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>85.2</strong></td>
</tr>
</tbody>
</table>

27 (14.8%) of the children were exclusively breast-feeding and therefore had not been weaned therefore don’t appear in the table above.

\(^1\) Foods given in the previous week was used to represent the regular foods given to children.
4.3.6 Comparison of types of foods that children were given the previous week and residential area

Majority (21.8%) of the children from the rural areas were given cereals, mashed bananas and potatoes while most (19.9%) from the urban area were fed on cow milk, mashed bananas, vegetables and lentils (Table 4.18). There was a significant relationship between a mother’s residential area and the food that they gave to their children in the previous weeks ($\chi^2=33.753; \ df=11; \ p=0.001$).

Table 4.18 showing a comparison of the types of foods given to children in the previous week and residential area.

<table>
<thead>
<tr>
<th>Food given</th>
<th>AREA</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>Milk and milk based formula</td>
<td>(0.6%)</td>
<td>(0.6%)</td>
</tr>
<tr>
<td>Cereals (wheat, maize, rice, sorghum, millet)</td>
<td>(12.8%)</td>
<td>(5.8%)</td>
</tr>
<tr>
<td>Mashed green bananas,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables and tubers</td>
<td>(5.1%)</td>
<td>(1.9)</td>
</tr>
<tr>
<td>Pumpkin and sorghum</td>
<td>(0.6%)</td>
<td>(0%)</td>
</tr>
<tr>
<td>Mashed green bananas, fruits, vegetables, tubers</td>
<td>(0%)</td>
<td>(1.3%)</td>
</tr>
<tr>
<td>Milk, cereals and vegetables</td>
<td>(4.5%)</td>
<td>(0%)</td>
</tr>
<tr>
<td>Milk, pumpkin and mashed green bananas</td>
<td>(0.6%)</td>
<td>(1.3%)</td>
</tr>
<tr>
<td>Milk, animal protein, vegetables and fruits</td>
<td>(1.3%)</td>
<td>(0%)</td>
</tr>
<tr>
<td>Cereals, potatoes, mashed green bananas</td>
<td>(0.6%)</td>
<td>(0%)</td>
</tr>
<tr>
<td>Cow Milk, mashed green bananas, liver, vegetables, and lentils</td>
<td>(21.8%)</td>
<td>(4.5%)</td>
</tr>
<tr>
<td>Beans, animals protein, potatoes, mashed bananas</td>
<td>(11.5%)</td>
<td>(19.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>(62.2%)</td>
<td>(37.8%)</td>
</tr>
</tbody>
</table>
4.3.7 Comparison of utensils used for weaning and residential area

The utensils that mothers used for weaning their children were identified as feeding bottle and pacifier, feeding bottle and spoon and by cup. In the rural area, 64.1% of the mothers used pacifier and bottle, 4.6 used bottle and spoon while 1.3 used cup. From the urban area, 23.5% used pacifier and bottle, 5.2% used bottle and spoon while none used feeding cup. There was no significant association between mothers’ area of residence and the utensil that was used for weaning (Table 4.19) ($\chi^2=6.271; \text{ df}=3; p=0.099$).

Table 4.19 showing comparison of the utensils used for weaning the child and residential area

<table>
<thead>
<tr>
<th>AREA</th>
<th>UTENSILS USED FOR WEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pacifier and bottle</td>
</tr>
<tr>
<td>Rural</td>
<td>64.1%</td>
</tr>
<tr>
<td>Urban</td>
<td>23.5%</td>
</tr>
</tbody>
</table>
CHAPTER 5: DISCUSSION

5.1 Demographic characteristics of the study population

Majority of the respondents who participated in the study were from the rural area. This may be attributed to the findings that Embu District is an agricultural rural district with the majority of people residing in the rural areas. According to the population and housing census (RoK, 2001), 82% of the dwellers in Embu lived in the agricultural rural areas. This therefore explains a larger sample size from the rural than urban areas.

Majority of the breast-feeding mothers who participated in the study fell in the age group of 21-25 years with a percentage of 54.6%. This may be attributed to the findings from the Kenya Demographic Health Survey (MoH, 2003) that most girls get married at this age. It may also be argued that fertility rate and therefore child birth rate and breast-feeding are expected to be highest in this age group. This is supported by findings by Chilman and Thomas (2000) who reported that women ovulate their healthiest eggs during their early twenties and their early thirties. When the eggs are young, there is limited chance of chromosome duplication or chromosome injuries which may result into chromosome abnormal embryos that result into miscarriage or birth defects such as Downs syndrome. On the other hand, this explains why the least number of breast-feeding mothers fell in the age group of 41-45 years with a percentage of 1.1%. At this age, the remaining eggs are of lower quality and with very low fertility potential for ovulation or ovulation induction. It is then expected that there will be less conceptions and child births and breast-feeding mothers in the age group of 41-45 years.
Moreover, societal expectation and cultural norms in the African culture are that women bear children by their mid-twenties. By the time a girl is 22 years, the significant others in one's life such as aunts and elder sisters begin to send signals suggesting that one is ripe for marriage and child birth. Similarly, a research carried out by Onyango (2000) found that the Kenyan culture expects that every girl becomes a mother before the age of 30 years. This is backed by the housing and population census report (RoK, 2001) which reveals that most Kenyan women are mothers by this age.

Only one mother (0.5%) in the sampled population had not attained primary level education while those who had attained at least primary level education dominated the group with a percentage of 59%, those with up to secondary education were only 30.5% and those with at least college education were even fewer, 9.8%. There was a significant relationship between breast-feeding and education at p=0.001, where 99.4% of the mothers who had been to school were breast-feeding and none of the ones who had never been to school were breast-feeding. Education is a factor which influences whether a mother maintains the act of breast-feeding or not. In school, students learn home science and biological sciences which have content on human growth and development, modes of infant feeding and breast-feeding. This means that mothers who have been to school will breast-feed their children because they have learnt that it is a method of infant feeding. On the other hand, only 14.4% of these educated mothers practised exclusive breast-feeding, with majority 60.9% mothers weaning their children before the age of 2 weeks and below. This may be attributed to lack of knowledge by mothers on the benefits of exclusive breast-feeding.
A mother’s occupation was not a factor determining whether they maintained the practice of breast-feeding or not. This may be because despite the nature of the job a mother engaged in, breast-feeding was regarded as a means of infant feeding. Therefore, as long as children were in the age brackets of 2 years and below, they got breast-fed.

5.2 BREAST-FEEDING PRACTICES OF THE MOTHERS

The mothers that were breast-feeding were 95.1% while 4.9% were not breast-feeding. This could be because the children sampled were not more than two years old. This is attributable to the norm in Africa that women breast-feed their children until they can walk steadily, which is often after two years and above. Mothers who fail to breast-feed are seen to break the traditional customs and may be excluded from women groups and other community gatherings. This is similar to Onyango et al. (2001) study in the western Kenya region and the Kenyan Demographic Health Survey (MoH, 2003) which found that most women stopped breast-feeding their children after two years. Additionally, a study carried out in India by Bhardwaj et al. (1991) revealed that 91.5% of mothers breast-fed with supplementary feeding for up to two years. On the other hand, studies carried out in Canada such as one by Taveras et al. (2002) demonstrated that 57.4% stopped breast-feeding at twelve weeks post partum and those carried out in Europe such as by Taveras et al. (2002) revealed that 85% stop breast-feeding by 12 months post partum.

The difference in breast-feeding rates between the supposed developing and developed countries could be related to cultural factors where, for example, in Kenya and Uganda the cultural norms require a mother to breast-feed for as long as possible and women who
fail to breast-feed are excluded from community groups and other social gathering (Onyango et al., 2001). On the other hand, in the developing countries such as the United States of America, majority of mothers discontinue breast-feeding as the practice is shunned because it is not seen to be “style” or mothers have to resume work for economic benefits (Wolf, 2003).

A comparison of breast-feeding practices among mothers living in rural and urban areas revealed that the area of residence did not influence whether a mother maintained the practise of breast-feeding or not. This could be attributed to the fact that the study was conducted in the same district which shares a similar culture that supports and promotes continued breast-feeding. Older women, including mothers in law, biological mothers, aunties and significant others in the mothers’ life in Embu District may encourage their daughters to continually breast-feed. They go ahead to prepare fermented glue comprising of millet and sorghum for the breast-feeding mothers which they believe increases a mother’s milk supply. Fathers and uncles also encourage their children to breast-feed and will stay away from a breast-feeding daughter so as to give them their privacy. On the other hand, these findings could be attributed to the fact that these mothers have access to similar kind of health promotion information from the post and ante natal clinics and the mass media. This is because the health workers receive health training using a Kenyan standardised curriculum while the mass media broadcasts are the same in rural and urban areas. For example, the Ministry of Health (MoH) posters on diarrhoeal and breast-feeding are similar the country over (MoH, 2002).
Breast-feeding habit was either on schedule or on demand where 91.4% mothers' breast-fed on demand while those that breast-fed on schedule were 8.6%. The findings that most mothers breast-feed on demand could be attributed to the fact that the majority of mothers are home makers/ casual labourers as earlier discussed and have therefore no fixed work time frames. They are always with their infants and can breast-fed whenever they wanted. A mother that is washing clothes in her home for example, will take breaks and breast-feed and will even go ahead and breast-feed before starting another chore. The mothers working in the fields carry their children to their place of work and breast-feed any time the child cries or is jittery with the aim of soothing the baby. A similar study carried out by Semenora (2001) revealed that most home makers breast-feed on demand which they argue is more natural and traditional, natural in the sense that the child gets the breast when they require it and traditional in that their great grand mothers used the same feeding method. The challenge on this mode of breast-feeding though is maintenance of high cleanliness levels where neither soap nor water is available to clean hands before breast-feeding. For example, Onyango et al. (2001) argues that mothers working in the fields barely wash hands before breast-feeding and this could be associated with the incidence of diarrhoeal diseases among some breast-feeding children.

A comparative analysis between breast-feeding habit and residential area revealed that a mothers area of residence influenced the breast-feeding habit adopted, either on schedule or demand with a level of significance at \( p=0.001 \). This, it can be argued, may be due to the findings that majority of the mothers from the urban area breast-feed on schedule because they are on salaried employment or on small-scale enterprise as this research
showed and therefore left their children behind when they were out working but came back home at scheduled times to feed their babies. To maintain the act of suckling for the child, these mothers effectively introduced the child to pacifiers were often a source of comfort for the child because they may be as soothing as breast nipples. When a mother was with the child they breast-feed, and when they were away, pacifiers were used as a feeding method that successfully increased the interval between feeds. On the other hand, mothers in the rural area breast-feed on demand because they spent most of their time with their child and breast-fed whenever the child wanted. Any time a child cries or wakes up, they got breast-fed or as the mother was taking a rest, they got on and breast-feed. These findings are consistent with findings from a research carried out by Taveras et al. (2002) which revealed that majority of working mothers breast-fed on schedule due to fixed time frames.

Exclusive breast-feeding for the first four to six months was not usually practised in Embu District. As the research revealed, only 14.8% of the mothers had exclusively breast-fed their children for 4-6 months. These findings are similar to a study carried out by UNICEF (2001b) and MoH (2003) which indicated that exclusive breast-feeding was rarely practised in Kenya. This may be attributed to the findings that exclusive breast-feeding is difficult on the part of the mother as it is demanding and exhausting especially for those that lack enough to feed on. A mother who does not feed well will have insufficient milk supply such that if the child does not get enough milk from the mother they get hungry faster and cry often and the solution may be weaning. Children who fail to gain weight as expected may also result into being weaned with the assumption that
they will gain additional weight after supplementary feeding. Moreover, mothers may stop to exclusively breast-feed if they experience breast problems such as mastitis.

Of the 27 mothers who had practised exclusive breast-feeding, only 4.4% were from the rural area while 0.4% mothers were from the urban area. It therefore could be argued that residential area is a significant factor influencing exclusive breast-feeding at $p=0.001$. This could be associated to the findings from this research that majority of the urban mothers had received education up to college level and may be more knowledgeable on the benefits of exclusive breast-feeding than the rural women. Given the higher education level of these women, they may also have had access to literature which promotes exclusive breast-feeding and one that even emphasises on the numerous advantages of exclusive breast-feeding. More over, the Poverty Reduction Strategy Paper (PRSP) 2000-2003 (RoK, 2003) reports that urban food poverty in Eastern Province is 38% compared to 51% rural food poverty. With reference to Marques et al. (2001) findings that exclusive breast-feeding becomes difficult if a mothers lacks adequate food to eat, then it is likely that most of the mothers in the rural areas may fail to sustain exclusive breast-feeding because they lack enough to eat which translates to infants lacking enough milk to suckle and therefore weaning occurs.

Mothers from rural areas breast-fed their children more times than those from the urban areas. There was a significant relationship between residential area and the number of times a mother breast-fed. This was probably because rural mothers spent more time with their children than the ones living in the urban areas. Urban mothers work away from home or in settings not conducive to be with the baby. For example, it is easier to be with
an infant in a farming field than in a classroom (Mabila, 1996). This could therefore be the reason why majority of the mothers living in the urban areas breast-fed on schedule because they were home at fixed time and breast-feed only at this time. For example, one urban woman stated that:

"My child breast-feeds in the mornings and evenings only because it is the only free time that I have with the child."

Breast-feeding duration fell in the range of 5 minutes and below, 6-10 minutes, 11-15 minutes and 15 minutes and 15 minutes and above. Residential area may be a factor that influences the length of time a mother spends breast-feeding, where the longer the time a mother breast-fed, the less the number of breast-feeding sessions. Mothers living in the rural areas spent less time breast-feeding than did mothers from the urban areas. This, it can be argued, was due to the findings that mothers from the urban areas breast-fed for less number of sessions but for a longer time which was mainly on schedule while mothers from rural areas breast-fed for more number times but for a shorter duration which was on demand. These could be because a major benefit of breast-feeding is building a bond between mother and child; therefore mothers try to spend as more breast-feeding time as possible with the infant.

5.3 Weaning practices of the mothers

Of the sampled 183 children, a total of 156 had been weaned. Of these, 111 were from the rural area and 45 were from the urban areas. The children that were weaned at 2
weeks and below were 60.9%, 32.7% were weaned at 3-4 weeks and 6.4% were weaned at 1-3 months. Early weaning of children was associated to children crying often due to hunger or not gaining weight as expected. This was consistent with earlier findings in this study that exclusive breast-feeding became impossible due to children getting hungry and crying after breast-feeding or not adding weight as expected. It has been argued that this may occur where the mother does not produce adequate milk for the infants needs’. Similarly, a study carried out by Taveras et al. (2002) revealed that 53% of the mothers who had introduced supplementary feeding before the age of four months did so because the child had not added weight as required, often because they did not produce enough milk to sustain the food needs of the child.

Mothers stated that they weaned their children in two phases. The initial weaning stage was done using liquid foods followed by solid foods. The foods mainly used were cow milk diluted with water with a percentage of 42.9%, maize flour porridge of 30.8% and crushed fruits 9.6%. Residential area was a factor that influenced the kind of foods used in the initial weaning stage at \( p=0.001 \).

Of the 42.9% mothers who gave cow milk and water, 32.7% were from the rural area while only 10.3% were from the urban area. Cow milk is a rich source in protein, carbohydrates, vitamin A, calcium, phosphorous, vitamin B12, riboflavin and folate essential for the child (Grillenberger et al., 2003) and its consumption in children aged 6 months and over has been associated with increased lean body mass (ibid). However, Meyer (2004) argues that cow milk protein consumed by infants below the age of 2
months is indigestible by the infants' kidneys and many times goes to waste. This could partly explain the poor nutritional status of rural children in Embu District.

The act of diluting cow milk with water so as to lower its concentration with the aim of making it digestible for the baby is questionable. According to Onyango et al., (2002) diluted cow milk has been found to be the major cause of malnutrition in children. This is because the milk becomes too watery and barely contains enough nutrients to meet the Childs nutritional needs as the child may consume more of water.

In addition, diluting cow milk with water may cause diarrhoeal diseases. In a District where only 42% of the rural population have access to treated piped water (RoK, 2004) compared to 72% of the urban population, the act of diluting milk with water may be a major cause of morbidity as mothers may use the water untreated as resources for boiling and disinfecting it may be lacking considering the poverty levels (RoK, 2003). A similar research conducted in a congested Chicago immigrant neighbourhood in 1901 (Wolf, 2003) demonstrated that infants fed on diluted cow milk died at high rates due to diarrhoea and this was associated with dirty untreated water.

The findings that 28.8% of the mothers with a majority (24.4%) from rural areas and only 6.4% from urban area fed their children on maize flour porridge may be a factor explaining the high malnutrition status among children in Embu District especially from the rural areas. This is because maize flour is rich in carbohydrates and Vitamin B 12 but contains proteins in negligible levels (Grillenberger et al., 2003)
The findings that majority of urban dwellers (7.7%) fed their children on mashed fruits than the rural dwellers (1.9%) partly explains why urban children are in better health status than the rural children. Fruits are rich in vitamins, sucrose and other micro nutrients (Onyango, 2000), which are often deficient in many children who suffer malnutrition. There is therefore need to educate mothers on the benefits of feeding children on diets containing fruits.

In the second phase of weaning, the majority of the mothers from the rural areas with a percentage of 21.8% fed their children on cereals, mashed green bananas and potatoes while the majority from the urban areas with a percentage of 19.9% used cow milk, vegetables, mashed bananas and lentils. The foods fed on most children from the rural area were of low protein to high calorie level, mainly cereals and starches unlike those from the urban area. Although 64% of the children from the rural area were still breast-feeding and consumed breast milk rich in proteins, fats and vitamin A, their diet lacked animal protein that’s rich in iron, heme, riboflavin, vitamin B12, niacin and Vitamin B6. Such a diet has, being from plant source has a low bio-availability of Iron and Zinc (Grillenberger et al., 2003, Gibson et al., 2003, Serena 2002). Zinc is known to promote protein synthesis which increases muscle protein and essentially muscle mass. This therefore explains higher malnutrition and stunting in rural areas where children consumed an animal protein deficient diet, but plant source starches (Malcolm, 1970). It would therefore be imperative to encourage a diet that is inclusive of animal protein and vegetables in such a setting.
Moreover, intake of food with low bioavailability of iron, zinc, vitamin A, Vitamin B12 and calcium as these consumed by majority of children from the rural areas predisposes children to illnesses. These is because of the findings that these micro nutrients have a critical role in immune competence and therefore deficiencies to these nutrients have been associated with high prevalence of morbidity and stunting (Gibson et al., 2003, Hallberg et al., 2003).

The utensils used for weaning the children were feeding bottle and pacifier, bottle and spoon and cup. There was no significant association between residential area and utensil used ($p=0.09$). The majority use of pacifier could be attributed to the findings that few mothers practised exclusive breast-feeding such that the use of pacifier was to get the infant off the breast, increase maternal-infant distance and increase the interval between feeds. This is because as Scrimshaw (1991) noted, pacifiers use is related to a shorter duration of exclusive breast-feeding as they have been found to be as soothing as the breast when feeding and are comfortable for the baby. On the hand, it would be argued that mothers who used bottle and cup and spoon for feeding may be the ones who tried to maintain exclusive breast-feeding.
CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS.

6.1: CONCLUSIONS

a) Breast-feeding and weaning practices between mothers in rural and urban areas differed mainly due to educational level. Poverty was a major factor that contributed to poor weaning and breast-feeding practices in these districts, either due to lack of education which results with low knowledge levels on feeding practices or food poverty which renders mothers and children into food deficiency.

b) Pacifier use was an effective weaning mechanism used by mothers who had difficulties in exclusive breast-feeding or who aimed to increase maternal infant distance.

c) Identification of risk factors for early introduction of poor weaning diets (as the one in this research) offers potential avenues for future intervention, including improvement of breast-feeding support in antenatal and maternity services.

6.2 RECOMMENDATIONS

a) Public health education on benefits of breast-feeding to the child and the mother.

b) Programmes to improve toddler nutrition should encourage continued breast-feeding in the second year but complementary interventions, such as balanced diet supplementation and the promotion of fortified food, are required for all toddlers who receive weaning diets similar to that described in this study.

c) Government and household efforts are needed to combat food poverty and to assist households in raising small food animals and promoting their consumption in rural subsistence settings. Their consumption will provide bio-availability of
Zinc and Iron from plant sources necessary for optimal growth, health and cognitive development of young children.

Recommendations for research

a) A research into mothers’ awareness of benefits of breast-feeding into two years and more so exclusive breast-feeding.

b) Research into the type of foods consumed by breast-feeding mothers.
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APPENDIX I: MAP OF EMBU DISTRICT
APPENDIX 2: RESEARCH INSTRUMENT

Questionnaire

Introduction code number

The purpose of this study is to establish the breast-feeding and weaning practices among mothers in rural and urban communities. This will be achieved if you are honest with the information you give, which will be confidential and used for the purposes of this study.

Demographic data

1. Area
   1. Rural ( ) 2. urban ( )

2. Age of mother in years
   1. 15-30 ( ) 2. 30-45 ( ) 3. 45-60 ( )

3. Age of child in weeks ( )

4. Sex of child
   1. male ( ) 2. female ( )

5. highest level of education for mother
   1) Never been to school ( ) 2) Primary ( )
   3) Secondary ( ) 4) University ( )
   5) college ( )

6. what is mother's occupation?
   1). casual labourers 2). farmers
   3). small scale enterprise 4). Salaried employment

BREAST-FEEDING PRACTICES

7. Do you breast-feed your child
   1). yes ( ) 2). no ( )
8. How is the child breast-fed?

1) on demand ( )
2) on schedule ( )

9. How many times is the child breast-fed?

1) 2 times
2) 3 times
3) 4 ( )
4) 5 ( )
5) 6 ( )
6) 7 ( )
7) 8 ( )
8) 9 ( )
9) 10 times ( )
10) 11 times ( )
11) 12 times ( )
12) 13 ( )

13) 14 times ( )
14) 15 times ( )
15) More than 15 times

10. How many times do you breast-feed the child per day in relation to the child ages?

1) 2 weeks and below
   1.3 minutes ( )
   2.5 minutes ( )
   3.7 minutes ( )
   4.8 minutes ( )
   5.10 minutes ( )
   6.12 minutes ( )
   7.14 min ( )
   8.15 min ( )
   9. More than 15 min ( )

2) 1-4 months
   1.3 minutes ( )
   2.5 minutes ( )
   3.7 minutes ( )
   4.8 minutes ( )
   5.10 minutes ( )
   6.12 minutes ( )
   7.14 min ( )
   8.15 min ( )
   9. More than 15 min ( )

3) 5-8 months
   1.3 minutes ( )
   2.5 minutes ( )
   3.7 minutes ( )
   4.8 minutes ( )
   5.10 minutes ( )
   6.12 minutes ( )
   7.14 min ( )
   8.15 min ( )
   9. More than 15 min ( )

4) 8-12 months
   1.3 minutes ( )
   2.5 minutes ( )
   3.7 minutes ( )
   4.8 minutes ( )
   5.10 minutes ( )
   6.12 minutes ( )
   7.14 min ( )
   8.15 min ( )
   9. More than 15 min ( )

5) 12 months and above
   1.3 minutes ( )
   2.5 minutes ( )
   3.7 minutes ( )
   4.8 minutes ( )
   5.10 minutes ( )
   6.12 minutes ( )
   7.14 min ( )
   8.15 min ( )
   9. More than 15 min ( )

11. Do you ever extract milk for the baby

1) yes ( )
2) no ( )
12. Why don't you extract milk for the baby?

1. For those who don’t extract milk ( )
2. Always with the baby ( )
3. Considers is unhygienic ( )
4. Never thought of it ( )
5. Baby has never been unwell ( )
6. Leaves baby with other cow milk
7. Goes to farm with the baby

13. What piece of implement do you use to feed the baby?

1. Feeding bottle ( )
2. cup ( )
3. Cup and spoon ( )
4. Pacifier ( )

14. How do you store the extracted milk?

1. Don’t extract milk ( )
2. in bottle in the cup board ( )
3. In bottle soaked in water ( )
4. in refrigerator ( )

WEANING PRACTICES

15. Have you given your child anything else besides breast milk?

1. Yes ( ) go to 22 2. no ( )

16. At what age did you give the first food item?

1). 1 week ( )
2). 2 weeks
3). 1 month ( )
4). 2 months ( )
5). 3 months
6). 4 months ( )
7). 5 months ( )
8). 6 months ( )

17. What did you give?

1). commercial fruit juice ( )
2). maize flour porridge ( )
3). water and glucose ( )
4). Water and salt ( )
5). home made crushed fruits juice ( )
6). Cow milk ( )
7). Infant formula ( )

18. Were you still breast-feeding?

1). Yes ( )
2). No ( )
19. If other supplements are given, which of the following were used last week?

1. Has not given any food item ( )
2. Cereals (wheat, maize, corn, rice, sorghum, millet) ( )
3. Mashed green bananas ( )
4. Fruits, tubers and other vegetables ( )
5. Cereals (wheat, maize, rice, sorghum, millet) and mashed green bananas ( )
6. Pumpkin and cereals (wheat, maize, rice, sorghum, millet) ( )
7. Mashed green bananas and vegetables, tubers and fruits ( )
8. Milk and milk based formula, cereals and vegetables, tubers and fruits ( )
9. Milk and milk based formula, pumpkin and mashed green bananas ( )
10. Milk and milk based formula, pumpkin and other vegetables, tubers and fruits ( )
11. Cereals (wheat, maize, rice, sorghum, millet), potatoes and green bananas ( )
12. Cereals (wheat, maize, rice, sorghum, millet) potatoes and other vegetables, fruits and tubers ( )
13. Milk, mashed green bananas, vegetables, fruits and tubers and cereals (wheat, maize, corn, rice, millet, sorghum) ( )
14. Cereals, animal proteins (egg, meat, fish, and pork, chicken), potatoes, mashed green bananas, vegetables, fruits and tubers ( )

20. What do you use to feed the child?

1. Pacifier and bottle ( )
2. Bottle and spoon ( )
3. by cup