

**FACTORS ASSOCIATED WITH EXCLUSIVE
BREASTFEEDING AMONG MOTHERS OF CHILDREN
AGED SIX MONTHS AND BELOW ATTENDING
BARINGO COUNTY REFFERAL HOSPITAL, KABARNET**

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AGRICULTURE AND TECHNOLOGY**

2018

**Factors Associated with Exclusive Breastfeeding among Mothers of
Children Aged Six Months and Below Attending Baringo County
Refferal Hospital, Kabarnet**

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**A Thesis Submitted in Partial Fulfillment for the Degree of Master of
Science in Public Health in the Jomo Kenyatta University of
Agriculture and Technology**

2018

DECLARATION

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

Signature Date

Fridah Jebet Limo

This thesis has been submitted for examination with our approval as the University Supervisors.

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DEDICATION

I dedicate this thesis to my friends; Beatrice, Leah and Jacob and family members; Isaac, Winnie, Collins, Dylan and Krystal for their moral and financial support throughout the study period.

ACKNOWLEDGEMENT

First and foremost, I thank the Almighty God for giving me sufficient grace to undertake this study. Secondly, I highly appreciate my supervisors Dr. Mourine Kangogo and Dr. Joseph Mutai for their commitment, constructive comments and support throughout the study.

Thirdly, special gratitude goes to my parents; Mr. David Barbett and Mrs. Irene Tuitoek for their financial, moral and spiritual support all through the study and my siblings for their love and encouragement.

Fourthly, I sincerely appreciate my friends Elvis, for his timely assistance, constructive ideas, data management and analysis. I thank Ochieng, Leah, Beatrice and Nelson for their support at a very early stage of the proposal development and my student colleagues Naomi, Amy, Faith and Njambi for their support and encouragement.

Lastly, my appreciation is extended to the study participants who volunteered to participate in the study, research assistants Ben, Kurui and Titus who ensured that good quality data was collected and Baringo Referral Hospital staff for their cooperation in the study.

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
BMI	Body Mass Index
EBF	Exclusive breastfeeding
FDG	Focus Discussion Groups
HIV	Human Immune-deficiency Virus
IBFAN	International Baby Food Action Network
IBS	International Bible Society
KDHS	Kenya Demographic and Health Survey
Km	Kilometers
MS	Microsoft
SIBB	Suboptimal Infant Breastfeeding Behavior
SPSS	Statistical Package for Social Sciences
UN	United Nations
WHO	World Health Organization

DEFINITION OF TERMS

Lactation amenorrhea:	a biological birth control mechanism in effect during exclusive breastfeeding.
Morbidity:	a state of a disease or symptom.
Mortality:	the number of deaths in a given time or place.
Osteoporosis:	a disease in which the bones turn out to be flimsy and more likely to fracture. Generally bone loses density, which measures the quantity of calcium and minerals in it.
Postpartum:	the period from when a child is delivered to one and half months.
Pre-lacteal feeds:	any food except mother's milk provided to a newborn before initiating breastfeeding.
Weaning:	the process of slowly introducing an infant to other foods or liquids apart from breast milk.

ABSTRACT

Breast milk is the safest and most natural food for an infant and provides complete nutritional needs up to six months of age. It is important for growth and reduces infant morbidity and mortality. Exclusive breastfeeding reduces malnutrition and other health problems. The main objective of this study was to determine factors associated with exclusive breastfeeding among mothers with children aged six months and below attending Baringo referral hospital, Kabarnet-Kenya. This was cross-sectional design was conducted among mothers of children aged six months and below has the study population. Questionnaire was used for data collection method. A sample size of 330 was collected using purposive sampling. Data from the questionnaires were coded and entered into a computer using statistical package for social sciences and analyzed using the same software, fisher's exact test was used to test significance. The results showed that 95.8% of the mothers breastfed their babies with 2.2% exclusively breastfeeding up to six months of age. Delay in the onset of breastfeeding, early use of pre-lacteal feeds was practiced. The findings showed that mothers perceived the following as barriers to exclusive breastfeeding; work demand, insufficient breast milk, insufficient information on exclusive breastfeeding, baby refusing to breastfeed, mother or baby being sick, and distance to the workplace, cultural beliefs, advice from relatives and friends. Fisher's exact test showed that level of education, the number of children of the mother, mode of delivery, ante-natal visits and reason for not breastfeeding exclusively were significant with exclusive breastfeeding at $P \leq 0.05$. Infants should be breastfed within an hour of birth, on demand and up to the first six months of age. This study could help mothers, Ministry of Health and other non-governmental organizations working with child health programs, in likely interventions and supporting the ongoing child survival programs in enhancing exclusive breastfeeding. As mothers attend ante-natal and post-natal clinics, they should be given brochures which are simple and clearly understood addressing concerns on cultural beliefs, negative attitudes and breastfeeding problems. Also, support groups should be formed to educate the illiterate mothers.

CHAPTER ONE

INTRODUCTION

1.1 Background

Breast milk is the safest and most common natural food for an infant. It provides complete nutritional needs up to six months of age. When the baby is fed exclusively on breast milk, the method is called exclusive breastfeeding which provides the best nutrition, growth and reduces infant morbidity and mortality (White, 2006). Breast milk also, contributes to continued growth until the introduction of solid foods at six months. A study revealed that over the past couple of decades, there has been an intensification of campaigns for exclusive breastfeeding as the best feeding method for newborns (Pillitteri, 2010).

While breastfeeding rates are no longer declining at the global level, with many countries experiencing significant increases in the last decade, only 39% of children less than six months of age in the developing world are exclusively breastfed and just 58% of 20-23 months old benefit from the practice of continued breastfeeding (Kramer *et al.*, 2012). This is attributed to the implementation of massive programs based on national policies along with global strategies for Newborn and Young Child Feeding, a joint action of the World Health Organization. To enhance these even further, actions entailed initiating breastfeeding at the maternity facilities. In Africa, breastfeeding is the normal and cultural way of feeding infants, resulting in high rates of initiation and longer duration of breastfeeding. However, exclusive breastfeeding tends to decline with increased age in months. According to the International Baby Food Action Network (IBFAN) Africa Regional Office, exclusive breastfeeding at three to four months in 2012 in the region was as follows: Malawi and Eritrea 72%, Botswana 37%, Ghana 43%, Kenya 35% and Lesotho 54% (Liamputtong, 2012).

Kenya has embraced the United Nations World Health Organization approval that mothers living with HIV must exclusively breastfeed their newborns up to six months of age, introducing suitable balanced diet later and continue breastfeeding up to two years of age (Riordan & Wambach, 2010).

There are some local companies which promote exclusive breastfeeding, for example, Safaricom and General Motors which have come up with new guidelines to help mothers to breastfeed at workplaces by providing day care centers and restrooms for babies together with their nannies. Some of these initiatives may appear expensive to the institutions in the short run but they have enormous gains in the long run as a friendly environment that will motivate women to perform better (Noel & Amanda, 2010). The country's campaign for exclusive breastfeeding is effective as per the Kenya Demographic and Health Survey (2009) which reported 32% of babies are exclusively breastfed up to the age of six months, up from just 13% in the year 2003. Areas with rates beyond 50% included; Wajir, Isiolo, Makueni, Tana River and Meru but Mandera and East Pokot achieved below 49% because they rarely caring the practices, insufficient nourishment and traditional challenges among others (Kenya National Bureau of Statistics, 2010).

1.2 Statement of the problem

Breastfeeding has been well promoted among the Public Health and nutritional inventors in many communities especially in rural set-ups, but exclusive breastfeeding is not a norm in many societies. According to KDHS, 2014 report, infant mortality rate in Kenya is 39 deaths per 1000 live births and under five is 52 death per 1000 live births, hence, one in every 26 Kenyan children dies before reaching age one and about one in every 19 Kenyan children does not survive to his or her fifth birthday. In Rift valley, infant mortality rate is 34 deaths per 1000 live births this is attributed to inappropriate breastfeeding practices.

Early introduction of foods is often nutritionally inadequate and unsafe. Malnourished children have increased infection, mainly diarrheal diseases. Those who survive are frequently sick and suffer the life –long consequences of impaired development including rising incidence of overweight, stunted, wasted, underweight and obese growth. According to Kenya Demographic and Health Survey report, the proportion of children with diarrhea in Kenya increased from 49% in 2008-09 KDHS to 58% in 2014 Kenya Demographic and Health Survey. 26% of children under five were stunted, 4% wasted, 11% underweight and 4% obese. Kenya Demographic and Health Survey (2014) indicated that in Baringo County, 30% of the children under five were stunted, 7% wasted, 20% underweight and 2% obese. The proportion were relatively high compared to the national figures.

1.3 Justification

Exclusive breastfeeding practices differ in every community because it is strongly influenced by cultural factors, social factors and beliefs. Millennium Development Goal three aimed at reducing the child mortality by more than half by the year 2015, yet the progress in most developing countries is lacking in accomplishing the goal. Still, an estimation of 5.9 Million children under age five dies from preventable causes. Some of which can be reduced through exclusive breastfeeding. The findings of this study will bring a better understanding on infant nourishment which would be attained by understanding its barriers, practices and other general factors associated with exclusive breastfeeding. This will also help policy and decision makers to take appropriate actions. The information that will be generated in this study could help mothers, Ministry of Health and other non-governmental organizations working with child health programs, in supporting the ongoing child survival programs, bringing about the decline of malnutrition and other health problems by making recommendations to encourage mothers to take appropriate steps in enhancing exclusive breastfeeding.

1.4 Research questions

This study attempts to answer the following research questions;-

1. What is the proportion of exclusive breastfeeding mothers with children aged below six months old?
2. What is the knowledge and practices of mothers regarding exclusive breastfeeding?
3. What are the barriers in exclusive breastfeeding practices among mothers with children below six months?
4. What are the factors associated with exclusive breastfeeding among mothers with children aged six months and below attending Baringo County Referral Hospital, Kabarnet.

1.5 Objectives

1.5.1 Broad objective

To determine factors associated with exclusive breastfeeding among mothers with children aged six months and below attending Baringo County Referral Hospital, Kabarnet.

1.5.2 Specific objectives

This study had four specific objectives as stated below:-

1. To determine the proportion of exclusive breastfeeding among mothers with children aged six months and below attending Baringo County Referral Hospital, Kabarnet.
2. To establish knowledge and practices regarding exclusive breastfeeding of mothers with children aged six months and below attending Baringo County

Referral Hospital, Kabarnet.

3. To determine the barriers to exclusive breastfeeding among mothers of children aged six months and below attending Baringo County Referral Hospital, Kabarnet.
4. To determine factors associated with exclusive breastfeeding among mothers with children aged six months and below attending Baringo County Referral Hospital, Kabarnet.

CHAPTER TWO

LITERATURE REVIEW

2.1 Background

Human beings and primates share some similarities in their reproductive functioning like lactation, reproductive activities and breastfeeding (Cole-Turner, 2009). Breastfeeding is seen as an ancient exercise that is precisely precarious for growth, health and physiology of neonates (Pitchford, 2002). Newborn breastfeeding exists in every society as a routine channeled by customs and medical writings like Ayur vedic and Susruta which suggests that at six months of birth the child should be fed on light and wholesome rice (Ramachandra *et al.*, 2009). Initial holy scriptures like the Bible have some references on breastfeeding, for instance, in chapter 66 verse 11 of Isaiah, ‘for you will nurse and be satisfied at comforting breasts you will drink deeply and delight in her abundance (Bible Society, 2007).

2.2 Exclusive breastfeeding benefits

Exclusive breastfeeding for infants’ months of age strengthens up to six the immune system. Antibodies are passed from the mother to the infant through breast milk, which is important in boosting the normal immune response and resistance from the main childhood diseases caused by poor lifestyles (Wyness *et al.*.,2013).

Formula milk has proteins which are made from cow’s milk and it takes time for babies stomachs to adjust to digesting them, unlike breast milk which is easier to digest and readily available after birth. The combination of nutrients in breast milk is necessary to a child's well-being and cannot be compared with any supplement feeds which do not contain all nutrients. Breast milk offers many health benefits starting at birth then continues throughout the lifetime. Defense from allergies, for instance eczema is another benefit of breastfeeding.

Analysis of studies on allergy and breastfeeding established that breast milk seems to help prevent offspring from evolving allergies, especially among those with genetic allergies (Creasy *et al.*, 2014).

Psychologically breast feeding enhances bonding of the mother and the child, therefore making the child on average, more secure, confident and mature as they grow (Perry *et al.*, 2014).

In HIV-infected women, exclusive breastfeeding is helpful in reducing postnatal mother to child HIV transmissions. This was established in a research study of five hundred and forty-three HIV- infected breastfeeding mothers in South Africa (Coutsoudis *et al.*, 2005). After consideration of confounders, they found a significantly low risk of vertical HIV transmission in children who were exclusively breastfed for six months as compared to those who were weaned preceding six months. Mixed feeding was associated with the highest risk of infant morbidity and mortality mainly from respiratory and diarrhea infection (Lawrence, 2010). In concurrence with a study in Uganda, a resource-poor country, where the negative impact of HIV/AIDS is high, exclusive breastfeeding for the first six months had greater benefit than mixed feeding or formula feeding for the prevention of mother to child transmission of HIV (Ssenyonga *et al.*, 2004).

Mothers who exclusively breastfeed their infants similarly have an advantage of long lactation amenorrhea and are less expected to develop osteoporosis late in life (Cadwel & Turner-Maffel, 2014). Though mothers may have a decline of mineral density for the period of breastfeeding, it is replenished and added later in lactation. There is also reduced threat to breast, uterine and ovarian cancer (Falvo, 2014).

In contrast, a study in Nigeria showed that exclusive breastfeeding was considered dangerous to the infant since the baby has an obligatory requirement for supplementary water to quench its thirst. Colostrum was discarded because it is dirty like pus and

therefore potentially harmful to the infant. Also, expressed breast milk was suspected to be contaminated, poisoned or bewitched (Boyle, 2014).

Another study in Brazil found out that most of the mothers provided their children with water because they thought that the milk was insufficient. Breast milk was not believed to satisfy the needs of the child which was probably due to the misconception of mothers (Brunken *et al.*, 2006).

2.3 Factors Associated with Exclusive Breastfeeding

2.3.1. Socio-cultural factors

Conditions of EBF are those which influence variations in the practice, for example encouraging or hindering it. In rural societies in Africa breastfeeding seems to be the norm, therefore, whether to breastfeed or not, rarely arises as women are expected and required by the traditional practices of those cultures to do so (Black *et al.*, 2010). The act of breastfeeding experiences support from grandmothers not only by new mothers but also during breastfeeding (Black *et al.*, 2010). The guidance of grandmothers on infant feeding is important since they play the role of the leaders (Grassley, 2008).

Traditional beliefs in some cultures point out that a mother should not breastfeed at all if one has lost a child who is still breastfeeding; it is believed that the breast milk had been poisoned by the dead spirits. Others viewed that, a mother should discontinue breastfeeding if, she is widowed and her baby starts teething in the upper jaw instead of the lower jaw (Albertus, 2013). In the industrialized countries, women's breastfeeding choices are influenced by their partner's awareness and parents taking part in breastfeeding campaign (Andrews & Boyle, 2008). Socio-cultural factors that affect exclusive breastfeeding negatively in a diverse community should be identified so that they can be addressed during the promotion of the practices.

2.3.2 Biological factors

Genetic features are beyond women's control like milk deficiency, breast growth, nipple problems and the effectiveness of postpartum discharge and child breastfeeding. Delayed onset of lactation undermines the maternal capacity to establish EBF in the first week and later. Risk factors for delayed onset of lactation include maternal obesity, short preceding birth interval and greater maternal age (Burrow *et al.*, 2008). Maternal obesity has been linked to impaired lactogenesis in both animal and human studies but the mechanisms for this relationship are unclear (Rasmussen *et al.*, 2001).

A study in California found that women with a body mass index greater than twenty-seven kg/m² were two and half times more likely to have delayed onset of lactation than women with a lower BMI, and their infants were three times more likely to have suboptimal infant breastfeeding behavior on day seven though not on day zero or three. Women in the study with a higher BMI differed in many ways from those with lower BMI. Behavioral factors, for example, age, education or use of non-breast milk fluids could not be completely ruled out but when these variables were included in the analyses the relative risk associated with high BMI did not decrease (Dewey *et al.*, 2003). Flat or inverted nipples were associated with suboptimal infant breastfeeding behavior up to day seven with delayed onset of lactation. This implies that a woman with flat or inverted nipples should receive special assistance until the infant is able to handle on effectively. The effect of the early use of non-breast milk fluids or pacifiers on breastfeeding success has been controversial (Dewey *et al.*, 2003).

The possibility of reverse causation for example, infants doing poorly at the breastfeeding are more likely to be offered supplements and potentially confounding variables such as lower motivation to breastfeed exclusively among women who use supplements or pacifiers. It has therefore been difficult to determine the causal pathway underlying the inverse associations (Kramer *et al.*, 2001).

2.3.3 Economic factors

A large number of women in the developing countries are being relied on for economic support, to some extent because employment opportunities for men are fewer, and in some cases because men have abandoned their families. Mothers are therefore expected to leave their young and go to work in order to complement family income (Alemayehu *et al.*, 2009). The tightly scheduled nature of most paid work and the long periods of physical separation in which women partake infant care lead to non-adherence to EBF and conflict with the idea of breastfeeding on demand. In limited resource sites, additional feeding that is suitable, possible, harmless and viable is not common because it is expensive, therefore, promoting EBF (Taveras *et al.*, 2003).

2.3.4 Maternal factors

Marital status was found to be associated inversely with EBF (less common among married women) this inverse relationship appeared to be due to selection factors in the sample and possibly due to the fact that majority of single women were the teenagers who were probably under the care of their family. It was also found that the high maternal education level was associated with lower rate of EBF in Ethiopia, this might be explained by the fact that when women are better educated, the opportunity for employment is higher and thus the tendency to stay at home and practice EBF is compromised. At the same time, women may be influenced by advertising milk substitutes in media. Although the vast majority of women do breastfeed their children for a short time, they often cease breastfeeding exclusively too early for the above mentioned reasons (Tewodros *et al.*, 2009).

Women who visited antenatal or postnatal clinics had the intention to breastfeed for six months or more. But they did not, it may be because some babies were not breastfed within one hour of birth or received formula in hospital. The mother did not have such a

strong intention to breastfeed suggesting that interventions during pregnancy that aim to increase women's intention to breastfeed may have an effect (Polit & Beck, 2008).

2.4 Maternal and child health

The most vulnerable people are mothers in childbearing age, specifically the expectant and lactating and children under the age of five. They are the majority in the whole population hence they need special care through maternal and child health programs respectively (Vinod *et al.*, 2011).

They are at risk of infectious diseases like malaria, HIV and AIDS, tuberculosis among others. A woman living with HIV/AIDS has 20% to 50 % chance of passing the infection to her fetus during delivery and pregnancy complications resulting to illness or disabilities for both (Ferrara , 2010).

Maternal mortality also leads to fetal death. Less than 10% of babies who survive after maternal death live for more than one year. More than half a million women die annually in third world countries rendering emotive, social, and economic adversities for the children, whole family and even the communities (Ballantine & Spade, 2012). Since mothers play a big responsibility in parenting, proper nutrition is essential for these groups because their immune system is low and they require more energy, therefore, their diet should be balanced and in adequate proportions.

Most mother-child complications are unreported and go on to a great range since it's believed to be curses or bad luck in most African context. It can be prevented by ensuring better quality maternal and neonatal health care is available and complications predicted discussed and cured by trained health care. Seeking attention from cultural beliefs should be discouraged. When women are sick in the family or society, attention may be postponed or treatment not given, for the sake of being for there for family members (Nastas & Borja, 2015).

A lower infant birth weight was associated with suboptimal infant breastfeeding behavior on day seven while high infant birth weight of 3.6 kilograms was associated with delayed onset of lactation among primiparas and not multiparas even when controlling for duration of labor. One possible explanation for the latter finding is that delivering a large infant is more difficult mostly for primiparas regardless of the duration of labor, and leads to greater maternal or infant stress (Dewey *et al.*, 2003). However, these findings conflict with those of Chapman and Pérez-Escamilla who found that a higher risk of delayed initiation of breastfeeding for mothers of infants with birth weight less than 3.6 Kgs. However, they examined this relationship only within the primiparas (Chapman & Pérez-Escamilla, 2007).

Study findings of clear amniotic fluid versus meconium staining have been associated with sub optimal infant breastfeeding behavior at birth, one minute Apgar scores greater than seven was associated with suboptimal infant breastfeeding behavior on day three after birth and no use of oxygen that is, recovery by mask or blow by was associated with excess infant weight loss. All of these indicators were strongly interrelated, which is to be expected given that infants with low Apgar scores or evidence of stress that is meconium-stained amniotic fluid were much more likely to be given oxygen. When controlling for other risk factors linked with infant statuses such as cesarean section, birth weight, and duration of labor, there is a benefit to administering oxygen that has a positive influence on recovery from the birth experience and hence breastfeeding. This explains that all infants should receive oxygen at birth, but simply that breastfeeding outcomes may be enhanced by administration of oxygen to high-risk infants with regard to meconium staining (Dewey *et al.*, 2003). Another likely explanation is that infants who pass meconium sooner are less likely to have high bilirubin level and thus are more interested in breastfeeding (Hintz & Gaylord, 2008).

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Site

The study was carried out in Baringo County Referral Hospital, Kenya. Specifically pediatrics clinic and ward, maternity ward, mother and child clinic, Kabarnet. It is located in Central Rift valley, bordering Elgeyo-Marakwet, Samburu, West Pokot and Turkana counties. Baringo central sub-county has a population of 81,480 (Kenya National Bureau of Statistics, 2010) and an area of 588.52 km square. Baringo County assembly wards are Kabarnet, Sacho, Tenges, Ewalel/chap chap and Kapropita. The main ethnic group is Kalenjin which includes the Elgeyo, Tugen, Nandi, Kipsigis, Terik, Sabaot and Marakwet but the majority are the Tugen which is divided into Samor, Arror and Lembus. Other groups include Luo, Luhyia, Meru, Kikuyu, Kamba, and Turkana, most of them do business or are in formal employment. The leading economic activity is agriculture mainly livestock keeping and crop farming in maize and beans.

3.2 Study Design

This was a cross-sectional study as it was done at respective ages of different infants and not same infants over an entire six months period. The study used quantitative techniques.

3.3 Study Population

The study population included all mothers of children aged six months and below.

3.3.1 Inclusion criteria of mothers to take part in the study

- i. Mothers of children aged six months and below.

- ii. Mothers who were residents of the study area.
- iii. Mothers who had consented to take part in the study.

3.3.2 Exclusion criteria of mothers to take part in the study

- i. Mothers of children above six months.
- ii. Mothers who had very sick and congenital malformation children.
- iii. Mothers who were non-residents of the study area.

3.4 Sampling

3.4.1 Sample size determination

The study assumed that 32% level of exclusive breastfeeding from Kenya Demographic and Health Survey (2008-09). Thus $p = 0.32$ and $q = 0.68$ (Wieland *et al.*, 1998).

$$n = \frac{Z^2 pq}{d^2}$$

Z = the standard normal deviate at the required confidence level (set at 1.96 corresponding to 95% level confidence).

p = the proportion in the target population estimated to have characteristics being measured {Proportion of women who breastfeed exclusively ($p = 0.32$)}.

$$q = 1 - p (0.68).$$

d = the level of statistical significance set (0.05).

$$n = \frac{(1.96)^2 (0.68) (0.32)}{0.05^2} = 334$$

$$(0.05)^2$$

Response rate from the study was 330

$$330/334 = 98\%$$

3.4.2 Sampling procedure

Purposive sampling technique was done of mothers attending Baringo County Referral Hospital, Kabarnet at pediatric clinic and ward, maternity ward, mother and child clinic. This was done by approaching and interviewing mothers who fit into the inclusion criteria as per their attendance.

3.5 Selection and training of the research assistants

Two research assistants were recruited to participate in data collection. They were selected from those residing in the study area and had a minimum of secondary level education, fluent in both English and Kiswahili. The research assistants were taken through a one-day training session covering the following areas: the objectives and methodology of the research, interviewing and recording skills and standard way of asking questions to the sample population. The research assistants were exposed to a practical experience in conducting the interviews during pre-testing of the questionnaires, the responses were recorded by the investigator and appropriate advice was given to them on areas they needed to improve on.

3.6 Data Collection

The data was obtained through questionnaires whereby the research assistants and the principal investigator interacted with the mothers' one on one as they took note of their response. Daily routine checks were performed on the data to ensure that correct information was collected. The hard copies of the questionnaires were kept in a safe

cabinet under key and lock.

Quantitative data was collected by administering a structured questionnaire (Appendix 2 a) with both closed and open-ended questions to mothers attending Baringo County Referral Hospital, Kabarnet at pediatric clinic and ward, maternity ward, mother-child clinic, randomly as per their attendance. The interview was administered by the principal researcher assisted by two field assistants. The questionnaire captured issues such as knowledge and practices of mothers regarding exclusive breastfeeding and the factors associated with exclusive breastfeeding. The questionnaire interviews lasted between twenty and thirty minutes.

3.7 Data management and analysis

Data from the questionnaires were coded and entered into a computer using Statistical Package for Social Sciences (SPSS) software version 20 and analyzed using the same software. Information was sorted, categorized and cleaned in line with the study variables. The information was stored in computer protected by password. Results were presented in form of tables, bar charts and graphs based on numbers, frequencies and percentages. Descriptive statistics, frequencies and percentages were calculated to give characteristics of variables. Cross tabulation was performed to determine the relationship between certain variables and exclusive breastfeeding. Fisher's exact test was used to compare proportion because the study was done at respective ages of different infants and not same infants over an entire six months period. This led the expected frequencies to be less than five hence, the justification for Fisher's exact test as opposed to chi-square test.

P value was used to interpret the significance of the statistical test at a level of 5%.

3.8 Variables

3.8.1 Dependent variable

The dependent variable for the study was exclusive breastfeeding.

3.8.2 Independent variables

The independent variables comprised of maternal socio-demographic characteristics (age, marital status and education level, parity and occupation). Other independent variables included; maternal knowledge on breastfeeding practices, and sources of breastfeeding information. Circumstantial factors included; place of delivery either home or health facility and birth type either normal, assisted or caesarean section. Infant characteristic was determined by infant age in months and sex.

3.9 Conceptual framework

The study examined the association of maternal knowledge on breastfeeding practices, sources of breastfeeding information, the delivery history of the mother which includes; place of delivery whether home or health facility and birth type whether normal, assisted or caesarean section with exclusive breastfeeding. Infant characteristic was determined by; infant age in completed months and infant sex. (Independent variables) and exclusive breastfeeding (Dependent variable). It also took into account respondents' socio-demographic characteristics influence on gender and age (independent variable), (Figure 3.1).

(independent variable), (Figure 3.1).

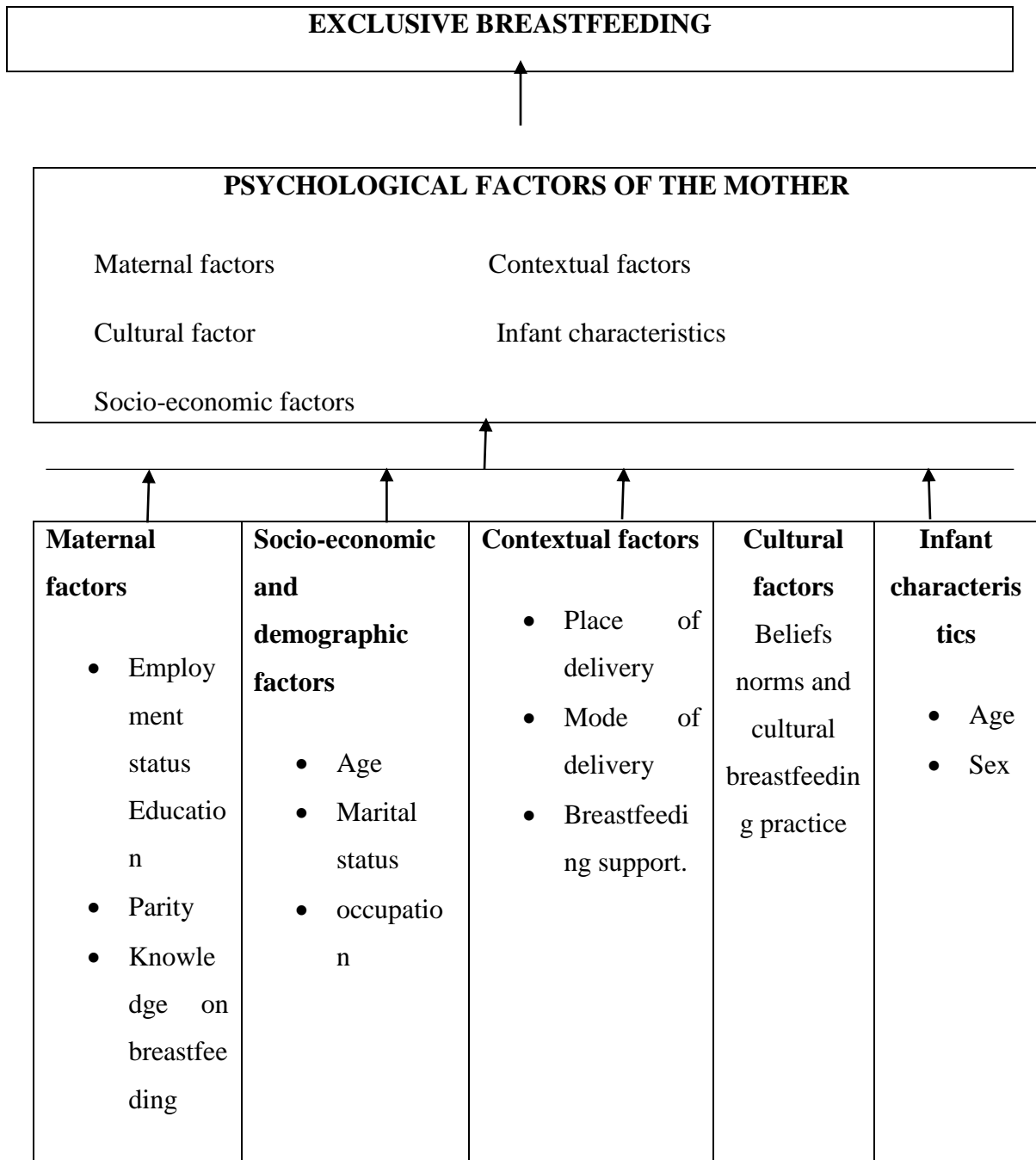


Figure 3.1: Conceptual Framework

3.10 Ethical Considerations

The proposal of this thesis was presented to Kenyatta National Hospital/ University of Nairobi ethical review committee for ethical approvals. Baringo County Referral Hospital, Kabarnet approval to carry out the research was also sought. Respondent consent was sought verbally and duly signed or thumb-printed on consent form attached to the questionnaire for study participation. They were informed of the objectives of the study, the nature of the study and what they were expected to do in the procedures. To ensure confidentiality, respondents were informed that their names were not going to be used in any report.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics

The study participants were 330 with infants aged zero to six months. The mean age was 27.6 (SD= 5.6) years, ranging from 15 to 43 years. Among the study participants, majority (66.1%) were married, (25.5%) were single and the rest were either divorced or widows. Slightly above half (54.2%) of the mothers had completed college education. Over two-fifth (41.5%) of the participants were business women, (20.6%) were employed and the rest were either farmers or unemployed.

Infants were aged six months and below, their ages were obtained by observing clinic monitoring card. Over half (69.1%) of the babies were aged 3 months and above. Among the babies, more than half (53.3%) were girls (Table 4.1).

Table 4.1: Socio-demographic characteristics of the mothers

	Variables	No. of Women N=330	Percentages
Marital status	Married	218	66
	Single	84	25.5
	Divorced	10	3.0
	Widowed	18	5.5
Total		330	100
Level of education	No formal education	24	7.3
	Primary education	60	18.2
	Secondary school level	67	20.3
	College and above	179	54.2
Total		330	100
Occupation:	Civil employment	63	19.1
	Business	59	17.9
	Farmer	137	41.5
	None	66	20.0
	Private sector	5	1.5
Total		330	100
Age of infant	0-3 Months	102	30.9
	3-6 Months	228	69.1
		330	100
Sex of the infant	Male	154	46.7
	Female	176	53.3
Total		330	100
Number of children	One	154	46.7
	Two-four	135	40.9
	Five-nine	37	11.2

	Ten and more	4	1.2
Total		330	100
	Maternal years (Age)	Median (range) 5.6 (15-43)	

4.2 Place of delivery, mode of delivery and antenatal attendance of the mothers

Majority 83.3% of the mothers delivered in the hospital, 82.4% through normal delivery and the rest were either through assisted delivery or cesarean section. Most of the mothers 82.4% attended antenatal clinics (Table 4.2).

Table 4.2: Place of delivery, mode of delivery and antenatal attendance of the mothers

Variables		No. of Women N=	Percentages
		330	
Place of delivery	Hospital/ health facility	275	83.3
	Home	55	16.7
Total		330	100
Type of delivery	Normal delivery	221	67.0
	Caesarean section	44	13.3
	Assisted delivery	65	19.7
Total		330	100
Attendance of ANC during pregnancy	Yes	276	83.6
	No	54	16.4
Total		330	100

4.3 Infant feeding practice

Majority 95.8 % of the interviewed mothers breastfed their babies and majority 46.5% of the mothers initiated breastfeeding within one hour after delivery while the rest had a delay in initiating breastfeeding. The main reasons for delay in initiating breastfeeding were delayed milk secretion and delivery through caesarean section (Table 4.3).

Table 4.3: Breastfeeding history, first initiation and the reason for the delay in initiating breastfeeding

Variables		No.	Percentages
Breastfeeding History	Not breastfed	14	4.2
	Ever breastfed	316	95.8
Total		330	100
Initiation of breastfeeding to the child for the first time after delivery	Immediately after delivery	147	46.6
	Within one hour	116	36.7
	2 – 3 hours	38	12.0
	Days	15	4.7
Total		316	100
Reasons for delay in initiating breastfeeding	Caesarean section	18	30.5
	Baby was sick	13	22.0
	Mother was sick	2	3.4
	Delayed milk secretion	26	44.1
	Total		59

4.3.1 The proportion of exclusive breastfeeding

The graph below indicates that by the end of 5 months only 2.2% of the infants were exclusively breastfed. The proportion of exclusively breastfeeding was high at the beginning of the baby's life after birth, most of the infants 88.9% were exclusively breastfed, however, the proportion started to decline as the age of the infant increases (Figure 4.1).

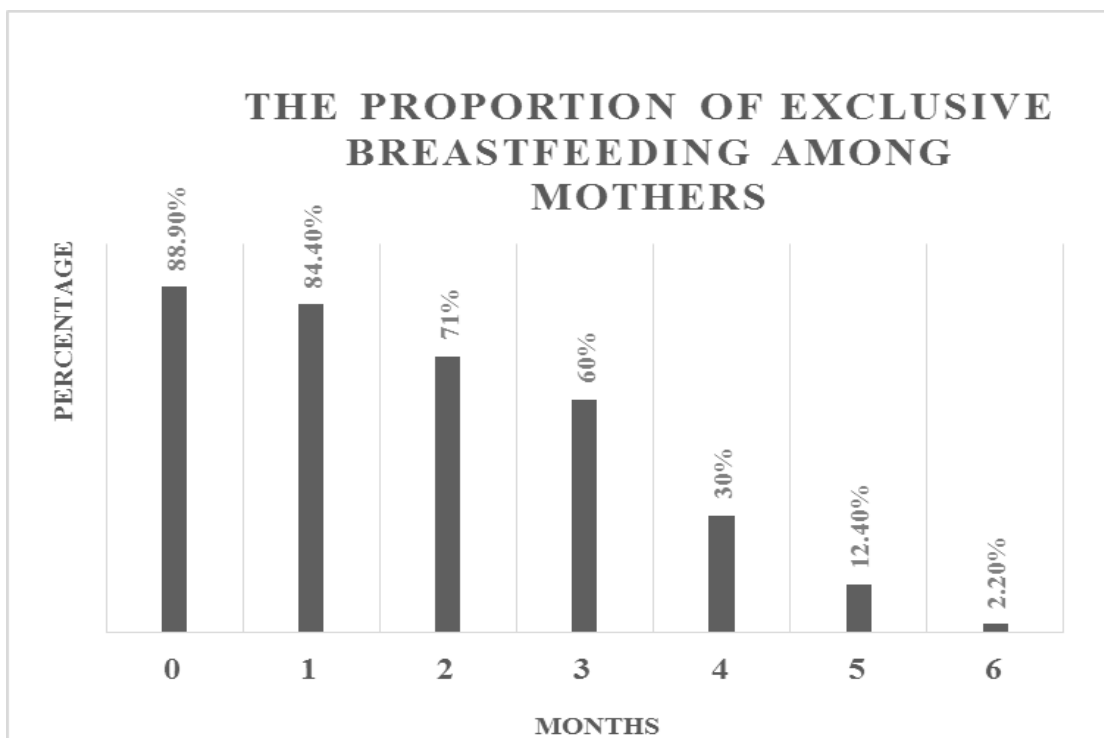


Figure 4.1: The proportion of exclusive breastfeeding.

4.3.2 Mixed feeding accompanied with breast milk

Most respondents 97.8% gave their infants breast milk and other foods or liquids before six months of infant's life. The food or liquid reported to be given to the infants were mainly milk 53% and others included soft ugali, herbal medicine and fruits juice (Figure 4.2).

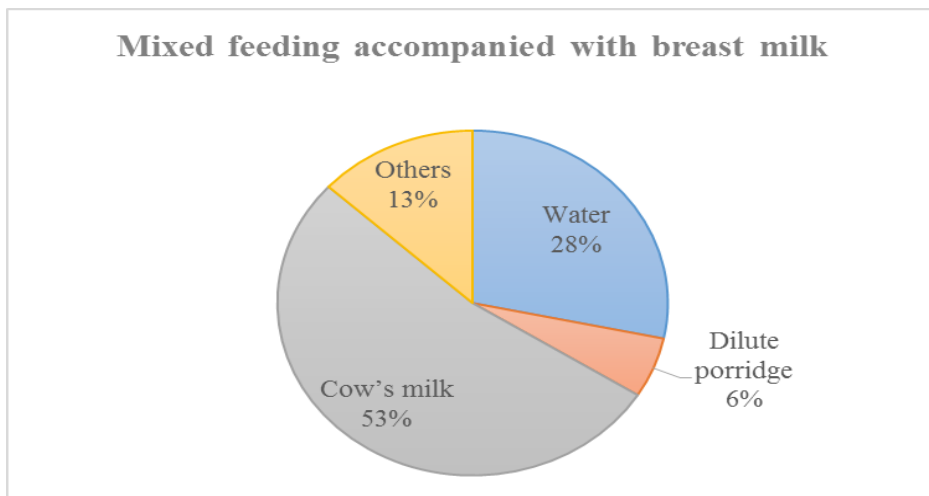


Figure 4.2: Mixed feeding accompanied with breast milk.

4.3.3 Other feeding practices

Other feeding practices category included mothers giving infants liquids or food before initiating breastfeeding (pre-lacteal feeding) and mothers who weaned their infants early before six months (early cessation of breastfeeding). Data shows that out of 49 infants who fell in this category; 14 were pre-lacteal feeds while the remaining 35 were stopped from breastfeeding (early cessation) before six months. Majority of the mothers (77.1%) experienced sore or cracked nipples and majority of the mothers (83.3%) went to hospital to manage breastfeeding problems (Table 4.4).

Table 4.4: Infant feeding practice

Variables		No. of Women N=	Percentages
		330	
Ever breastfed the child	No	53	4.2
	Yes	277	95.8
Total		330	100
Reason for giving other foods before initiating breastfeeding	Insufficient milk	28	51.9
	Sore nipples	4	7.4
	Illness of the mother	10	18.5
	Illness of the child	12	22.2
Total		54	100
Breastfeeding problems	Abscess	16	11.1
	Mastitis	17	11.8
	Sore or cracked nipples	111	77.1
Total		144	100
Management of the problem	Express breast milk	4	2.8
	Went to hospital for advice	120	83.3
	Rub local herbs on it	20	13.9
	Total	144	100

4.3.4 Reasons for early weaning of the infant.

Most common reason given was working away from home 61 and breast milk not enough 9 (Figure 4.3).

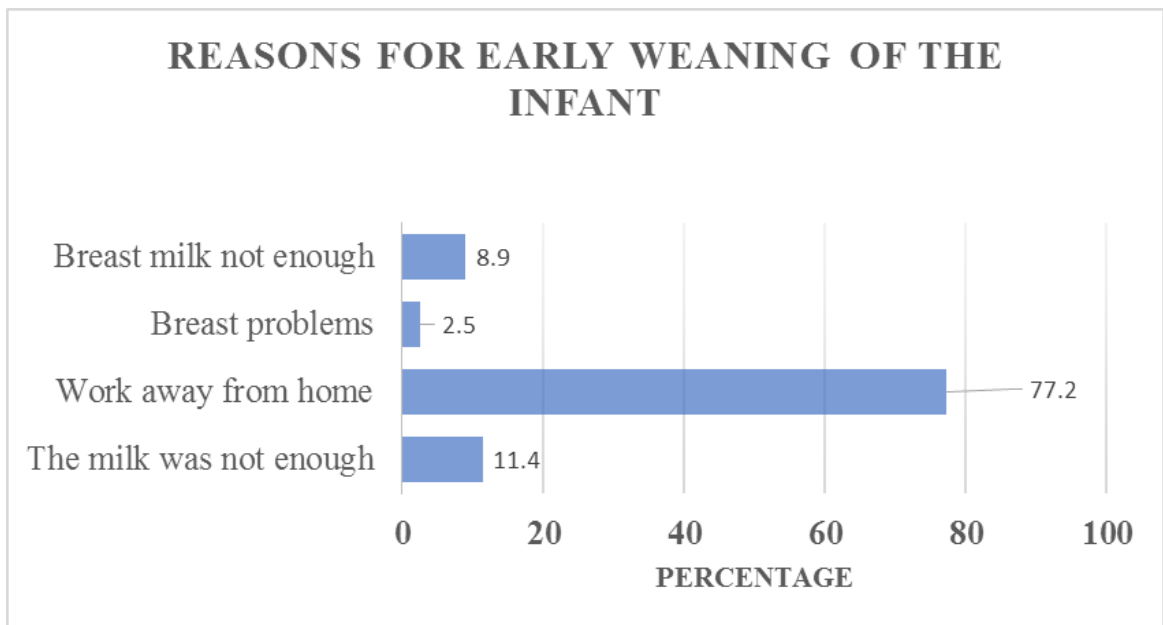


Figure 4.3: Reasons for early weaning.

4.3.5 Influence on mother's decision on mixed feeding practice

The mothers who were practicing mixed feeding before starting breastfeeding, most 48% of them were influenced by grandmothers and 30% were influenced by health workers (Figure 4.4).

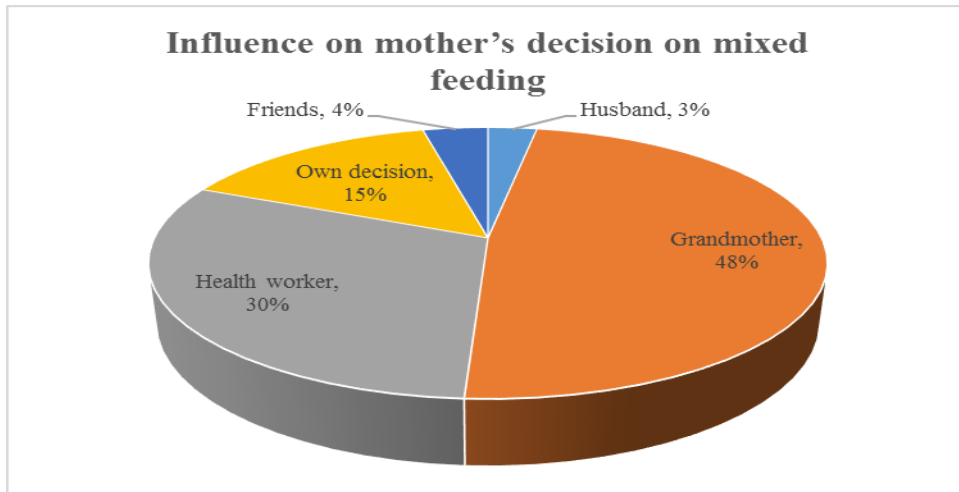


Figure 4.4: Influence on mother's decision on mixed feeding

4.4 Mother's level of knowledge on exclusive breastfeeding and feeding practices

Above half (58.5%) of mothers who had information about exclusive breastfeeding were and the rest had no information. Among those who had information, majority (71%) got it from health workers but the rest got it from media, relatives, friends, health talks, group gathering and traditional birth attendants. Most of the mothers (82.1%) were shown how to breastfeed and also how to attach the baby to the breast by health workers. (Table 4.5).

Table 4.5: Mother’s level of knowledge on exclusive breastfeeding and feeding among mothers

Variables		No. of Women N=	Percentages
		330	
Breastfeeding information	Yes	193	58.5
	No	137	41.5
Total		330	100
Source of information	Health workers	137	71
	Media	38	19.7
	Relatives	10	5.2
	Others	8	4.1
	Total	193	100
How to breastfeed	Shown	271	82.1
	Not shown	59	17.9
Total		330	100
Who showed	Health workers	186	68.6
	Relatives	83	30.6
	Friends and reading from books	2	0.8
	Total	271	100
Attachment of the baby to the breast	Shown	246	74.5
	Not shown	84	25.5
Total		330	100
Who showed	Health worker	170	69.1
	Relatives	76	30.9
Total		246	100

4.5 Barriers associated with exclusive breastfeeding practice

The main reason that hindered mothers from breastfeeding their babies exclusively were mainly, lack of information 50%. Other reasons included advice from relatives and friends and lifestyle (0.3%), (Figure 4.5).

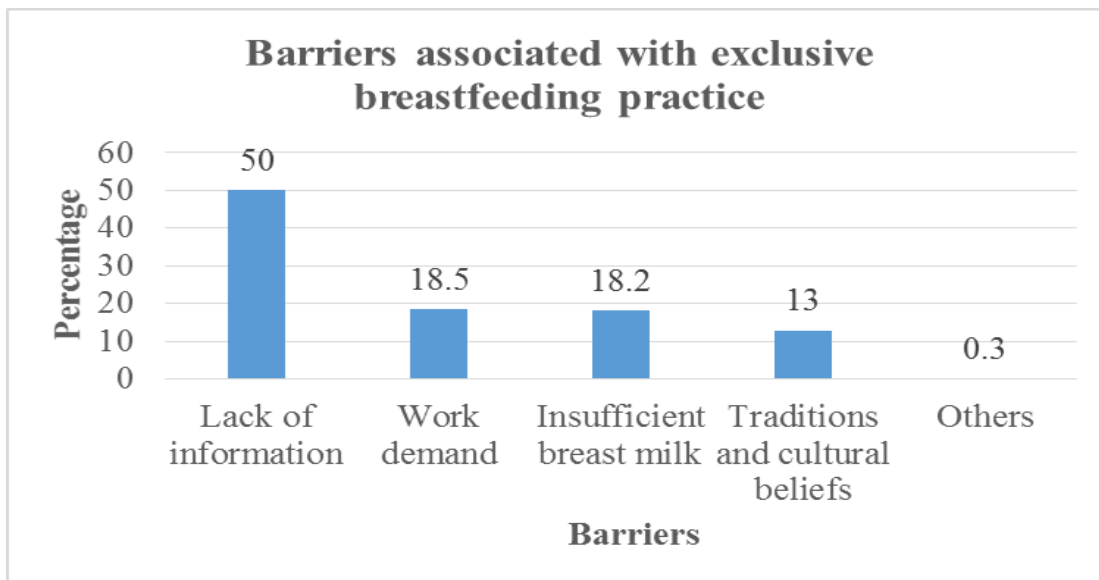


Figure 4.5: Barriers associated with exclusive breastfeeding practice

4.6 Factors that predict mothers on the practice of exclusive breastfeeding

Association between exclusive breastfeeding and socio-demographic characterizes using Fisher's exact test, variables that were statistically significant with $P \leq 0.05$ were firstly, level of education for mothers with children at six months of age ($P=0.038$). Secondly, number of children of mothers with children at one ($P=0.032$), two months ($P=0.011$) and four months ($P=0.043$) of age. Thirdly, mode of delivery for mothers with children

less than a month (P=0.048). Lastly, breastfeeding initiation of the mothers with children at two (P=0.003) and four months (P=0.05) of age (Table 4.6).

Table 4.6: P values evaluating the associations between exclusive breastfeeding and socio-demographic characteristics

Exclusive breast feeding	Period	Level of			Number of children	Sex of the infant	Mode of delivery	Initiating breastfeeding
		Marital Status	education	Occupation				
	<1	0.002	0.755	1	0.0669	1	0.048	0.649
	1	0.225	0.9	1	0.032	1	0.135	0.003
	2	0.087	0.335	0.988	0.011	0.61	0.136	0.05
	3	0.896	0.086	0.916	0.636	0.295	0.936	0.796
	4	0.068	0.355	0.376	0.043	0.566	1	0.48
	5	0.796	0.288	0.777	0.741	0.491	0.394	0.565
	6	0.095	0.038	0.693	1	1	0.665	0.832

Association between exclusive breastfeeding and information for on exclusive breastfeeding characterizes using Fisher’s exact test, variables statistically significant with $P \leq 0.05$ were; ante-natal attendance among mothers with children at two months (P=0.021) and four months (P=0.043) of age and information on exclusive breastfeeding among mothers with children at six months (P=0.045) of age (Table 4.7).

Table 4.7: P values evaluating the associations between exclusive breastfeeding and information for on exclusive breastfeeding among mothers

Exclusive breast feeding	Period	Advisor			Trained on exclusive breastfeeding		
		Ante natal attendance	Place of delivery	on mixed feeding	Information on exclusive breastfeeding	exclusive breastfeeding	Sufficiency of breast milk
	<1	0.155	0.488	1	1	0.278	1
	1	0.633	0.151	0.143	0.735	0.202	1
	2	0.021	0.213	1	1	0.162	0.586
	3	0.422	1	0.333	1	0.34	0.564
	4	0.05	1	1	0.182	1	0.085
	5	1	0.06	1	0.361	0.625	1
	6	0.338	0.6	1	0.045	0.546	0.633

Association between exclusive breastfeeding and barriers associated with exclusive breastfeeding using Fisher's exact test, the variable that was statistically significant with $P \leq 0.05$ is reason for not breastfeeding exclusively for mothers with children less than a month ($P=0.024$) and at three months ($P=0.001$) of age (Table 4.8).

Table 4.8: P values evaluating the associations between exclusive breastfeeding and barriers associated with exclusive breastfeeding

Exclusive breastfeeding	Period	Problems when breastfeeding	Specific	Reasons for not breastfeeding exclusively
			problems when breastfeeding	
	<1	1	1	0.024
	1	0.313	0.454	0.838
	2	0.803	0.536	0.746
	3	0.407	0.381	0.001
	4	1	1	0.274
	5	0.344	1	0.297
	6	0.063	0.143	0.567

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussions

This chapter covers discussion starting with infant feeding practice, the association between the mothers' level of knowledge on exclusive breastfeeding and feeding practices, barriers associated with exclusive breastfeeding practice and factors that predict mothers on the practice of exclusive breastfeeding. Lastly, conclusions and recommendations.

5.2 Infant feeding practice

Breast milk has three components that are lifesaving; these are oligosaccharides which are types of sugar that stop the bacteria from attaching to the cell, antibodies that protect the immune system and lactoferrin that kills bacteria and viruses (Cline, 2013).

In this study majority of the mothers interviewed 96% breastfeed their babies hence received colostrum. Colostrum is full of antibodies and immunoglobulin which protects newborns against diseases and has a laxative effect that helps infants expel tarry first stool (Uruakpa *et al.*, 2002). Studies conducted in Tanzania concurs with this study, it showed that of infants were given colostrum as it was being perceived as good, even if they did not associate it with its nutritional value (Liamputtong, 2012; Silva *et al.*, 2013).

The study finding showed that 53.5% of the mothers did not breastfeed their babies immediately after delivery. The major reasons for the delay in initiating breastfeeding being delayed milk secretion and delivery through caesarean section. The findings of this concurs with a study in Nigeria which found out that the reasons for the delay in initiating breastfeeding included; caesarean section delivery, baby or mother was sick or

delayed milk secretion (Agunbiade & Ogunleye, 2012). Studies has shown that the major risk of delayed onset of breastfeeding is neonatal mortality, since infants are susceptible and easily predisposed to infections (Edmond *et al.*, 2006). Infants who are not breastfed on the first hour of life are fifteen times more likely to die from pneumonia and eleven times more likely to die from diarrhea, both diseases caused by bacteria, virus and parasites. An early to breastfeeding give newborns essential nutrients, exposure to the bacteria on the mother's breast helps to colonize a newborn's digestive system with essential antibodies (Watson & Mason, 2015).

The study findings showed that (95.8%) of the mothers breastfed their babies which concur with other studies that showed that breastfeeding is a common practice (Riordan & Wambach, 2009) and (Kourtis & Bulterys, 2012). Although breastfeeding is a common practice the findings of this study showed that the proportion of the mothers who exclusively breastfed their infants to the age of five months was only 2.2% which agrees with other studies in parts of Africa which found that exclusive breastfeeding was a rare practice (Liamputtong, 2012).

In this study, 97.8% of infants were given other liquids before six months of infant life. This was due to cultural beliefs that infants need to take herbal medicine for proper immunity, after three months of age. It was believed that breast milk alone cannot satisfy the baby up to the age of six months. This concurs with findings from a study in Turkey which showed that 40% of the mothers started solid foods before 4 months of age (Ergenekon *et al.*, 2006). In another study conducted in a rural area of Cameroon, all women surveyed introduced their babies to water and food supplementation prior to 6 months of age. More than 38 % gave water in the first month of life (Kakute *et al.*, 2005).

Previous studies have shown that infant feeding decision is an influential practice, where mothers do not have much control over infant feeding decision because significant people exert a substantial influence over the breastfeeding. In addition, the

grandmother's attitude brings their own practice and beliefs on breastfeeding of the baby (Swisher, 2016; Freire, 2005). The findings from this study concur with the studies that majority of the mother's decision on infant feeding was made by the baby's grandmother.

5.3 Barriers associated with exclusive breastfeeding practice

The findings from this study showed that the barriers to exclusive breastfeeding as reported by mothers were; work demand, insufficient breast milk, insufficient information about exclusive breastfeeding, refusal by the baby to breastfeed, mother or baby being sick, distance to the workplace, cultural beliefs, advice from relatives and friends and maintaining body structure. Some women suggested that husbands should provide needs for the family and support their wives in the exclusive breastfeeding practice. The workplace should have baby care centers and breastfeeding bumps should be provided to promote exclusive breastfeeding.

These findings are consistent with a study conducted in Viet Nam, women's return to work in the first months of postpartum was a common practice and a major deterrent to exclusive breastfeeding. Most mothers indicated it was not possible to take their infants with them to work reasons being the field was too far away and the child might get too much sun, pesticides in the field might be harmful to the child and there was no one to care for the child (Dearden *et al.*, 2002).

In China, a study conducted in rural Sichuan identified barriers to breastfeeding that were similar to the ones described in this study; mothers' perceptions that they do not have sufficient milk and lack of support from families, places of employment, and health systems (Guldan, 2000).

Lack of proper information on breastfeeding sometimes acts as a barrier to its practice though women are strongly determined to breastfeed (Jahangeer *et al.*, 2008). As

revealed by the findings of this study, inadequate knowledge on exclusive breastfeeding was critical for its practice because the major barrier to exclusive breastfeeding was insufficient information.

In Mauritius, employment, maternity leave and the length of maternity leave are very influential on the exclusive breastfeeding and thus affect mother's choice of feeding practice. Despite the fact that the working mothers may be aware of the benefits of breastfeeding, many of them are rather reluctant to practice exclusive breastfeeding as compared to unemployed mothers, only twelve weeks of maternity leaves are granted to public officers for three confinements only (Pay Research Bureau, 2003). These findings are consistent with the finding of this study because work demand was barrier to exclusive breastfeeding, hence mothers could not take their babies to work place because either there are no baby care centers at the work place or work place environment harsh for the baby.

A study conducted in Nigeria, is also in consistent to study this finding since urban or working mothers complained that lack of a crèche in offices hampered their ability to breastfeed exclusively as they had to resume work before six months. In addition, women who were unable to take an extended leave from work following the birth of their children are less likely to continue breastfeeding when they return to work (Adelaja, 2012).

The findings of this study showed the reasons for early weaning were baby's refusal to breastfeed, breast problems, breast milk not enough for baby's growth and working away from home. This is in contrast with a study in Namibia, which showed most (36.5%) mothers introduced complementary foods/liquids because they felt they needed to teach the child to eat, 26.2% felt it was the right age to do so, 18.3% reported breast milk alone not good for the baby and 14.3% did so because they had returned to work immediately after the birth of their child (Amadhila, 2005). Also, another study in Nairobi conducted among the Somali community in Eastleigh contrast with this study

since it found that there was a perception that breastfeeding was painful and inconvenient coupled with perceived poor milk supply contributed to poor infant feeding practices among infants 0–12 months old (Reygal, 2007).

5.4 Mother's level of knowledge on exclusive breastfeeding and feeding practices

The findings of this study showed that more than half of the interviewed mothers had information on exclusive breastfeeding and majority were thought how to attach the baby to the breast by health workers during antenatal clinic visit or at delivery. Findings of this study were similar to a previous study where factors associated with the duration of exclusive breastfeeding revealed a positive significant association between the duration of EBF and mothers breastfeeding knowledge, meaning that having knowledge on breastfeeding promotes the practice of exclusive breastfeeding (Barbara *et al.*, 2008). The importance of mothers' breastfeeding knowledge has been shown in another study (Chezem *et al.*, 2003).

The findings of this study is consistent to another study in Kigoma region, Western Tanzania which showed that adequate knowledge of exclusive breastfeeding influenced the prevalence of exclusive breastfeeding; the higher the level of adequate knowledge of EBF among the women, the higher the prevalence of exclusive breastfeeding (Nkala & Msuya, 2011). The lack of proper information on breastfeeding sometimes acts as a barrier to its practice though women are strongly determined to breastfeed. It was reiterated that continual support using a nutrition education 'communication mix' is prone to be more effective to result in positive behavior change towards infant feeding practices (Sethi *et al.*, 2003).

The findings of this study is in contrast with a study conducted in Morogoro Tanzania, which found that while no association was found between information about breastfeeding given at different contacts with a health facility and the duration of either exclusive or predominant breastfeeding in the rural area, in the urban area the mothers

who received information about breastfeeding from the health service personnel at an antenatal clinic breastfed exclusively and predominantly for a longer period (Shirima *et al.*, 2001).

5.5 Factors that are associated with the practice of exclusive breastfeeding

The findings of this study showed that exclusive breastfeeding was significantly associated level of education. Majority of the mother's level of education was college and above hence mothers could make better informed decision of infant feeding This finding is consistent to a study finding in Ghana which showed that it appeared that higher education is positively associated with EBF(Aidam *et al.*,2005).

In Peninsular Malaysia, a study identified area of residence, maternal ethnicity, occupation, smoking status, parity, husbands support for breastfeeding and bed-sharing practice to be associated with exclusive breastfeeding (Tan, 2011). In contrast with the findings of this study showed that exclusive breastfeeding was significantly associated with the number of children of the mother. The findings showed that most mothers had one child hence given the information about exclusive breastfeeding, the mothers could practice since no experience to the practice for breastfeeding.

Studies showed that exclusive breastfeeding was significantly associated with the place of delivery (De sevo, 2013; Tsatsolulis *et al*, 2009). The findings is of this study in contrast, it showed that exclusive breastfeeding was significantly associated with the mode of delivery. Most of the mothers who delivered through normal delivery initiated breastfeeding at the first hour of birth hence the most likely the practice.

The findings of this study showed that exclusive breastfeeding was significantly associated with ante-natal clinic visits. Majority of the mothers visited ante-natal clinics hence interacted with health workers and were told exclusive breastfeeding hence were able to practice. This study is agrees with a study conducted in Nigeria, revealed

decreased child age in months, geopolitical region, antenatal clinic visits, household wealth and gender as factors significantly with EBF (Agho *et al.*, 2011).

The findings of this study showed that exclusive breastfeeding was significantly associated with reason for not breastfeeding exclusively. The main reason for not breastfeeding exclusively was working away from home hence the mothers could not take their child to where they are working either the place of work did not have baby care centers, distance to place of work or harsh environment at work place. These concurs with a study conducted in Eldoret, it reported barriers to EBF were among others; breast milk unsatisfying to the infant and mother resuming to work, which were attributed to inadequate breastfeeding knowledge among mothers (Cherop *et al.*, 2009).

5.6 Conclusions

Exclusive breastfeeding in Baringo County was a rare practice because the majority of the mothers (98.8%) did not breastfeed their infants exclusively. Mother's knowledge on exclusively breastfeeding the most likely the practice of exclusive breastfeeding. According to this study, majority of the mothers did not understand about exclusive breastfeeding, among those who did, they could not practice because of cultural factors like feeding infants with herbal medicine and infant feeding practice was influential role in this community mainly by grandmothers. Hence, feeding infant with complimentary feeds exposes them to risk of infections like gastrointestinal infection, lower respiratory infection, diabetes type 1 or otitis media among others.

The barriers to exclusively breastfeeding were; work demand hence working away from home, milk not enough, baby refusal to breastfeed, breast problems, mother or baby being sick, distance to the workplace, cultural beliefs, advice from relatives and friends and maintaining body structure. These barriers led to infant being fed on pre-lacteal feeds hence poor child growth and development like neurodevelopment, underweight, stunted, wasted or obese.

The predictors of exclusive breastfeeding in Baringo County was the level of education, the number of children of the mother, mode of delivery, ante-natal visits and reason for not breastfeeding exclusively. This implies that mothers who had highest level of education, mothers with firstborns, delivered through normal delivery and mothers who visited ante-natal clinic were more likely to breastfeed exclusively. Also, mothers who worked away from home were less likely to breastfeed exclusively.

5.7 Recommendations

Following conclusions;-

- Mothers should be encouraged and supported to breastfed all infants within an hour of birth, on demand and up to the first six months of age.
- The ministry of health, county government medical director and non-governmental organizations dealing with child health should advance knowledge on exclusive breastfeeding in the community.
- Strategies approved by the health workers and Non-government Organizations should be implemented to encourage exclusive breastfeeding, targeting the key role players who are; fathers, traditional birth attendants and all grandmothers.
- Mothers who attend ante-natal and post- natal clinics, should be given brochures that are simple and clear to understand, which address concerns on cultural beliefs, negative attitudes and breastfeeding problems with solution.
- County government and community-based organization dealing with child health programs should form support groups of mother to mother, peer counselors and community-based interpersonal communication in the county.
- The government should advocate policies to provide financial support to those mothers in informal sectors who have infants less than six months to enable them attend ante-natal clinics and to deliver in hospitals.

- Health workers should be trained on policies of breastfeeding which should be kept to date through refresher training.

Further research to be done on ways of improving breastfeeding counseling at the maternal and child clinics to make it more effective in improving infant feeding practices in the county.

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APPENDICES

Appendix 1 (A): Consent Form

Date.....

The title of the study: Factors associated with exclusive breastfeeding among mothers with children under the age six months attending Baringo County Referral Hospital, Kabarnet.

Investigators: PI, Fridah Jebet Limo, ITROMID/ JKUAT

Study location: Baringo County Referral Hospital, Kabarnet.

Introduction

My name is Fridah Jebet Limo. A Masters' student at Jomo Kenyatta University of Agriculture and Technology. I am the principal investigator in this study that aims at factors associated with exclusive breastfeeding among mothers with children aged six months and below attending Baringo County Referral Hospital, Kabarnet.

Purpose of the study

The aim of this study is to determine factors associated with exclusive breastfeeding among mothers with children aged six months and below attending Baringo County Referral Hospital, Kabarnet. At the end of this study, the findings will contribute to the reduction of malnutrition and enhance child survival by taking suitable measures in likely interventions and firming up the existing infant feeding campaigns.

Procedures

I would like you to participate in this study. If you agree to participate, you will receive an identification number. A trained interviewer will ask you several questions on exclusive breastfeeding. The questions will be about awareness on exclusive breastfeeding, socio-demographic characteristics and barriers to the practice.

If therefore, you wish to participate, the principal investigator requests that you give permission by signing the consent form. The interview will take approximately twenty minutes.

Potential harm or risks

There is no harm or risks associated with participation in the study.

Benefits

This research is purely academic and you will benefit from the study by learning more on exclusive breastfeeding and how to do it effectively and efficiently

Compensation

If you agree to participate, you will not be paid for any study procedures to be carried out.

Confidentiality

All information relating to your participation in this study will remain private. Your name will not be used; instead, a unique code for each informant will be used. The information will be locked up for information security.

Alternative to participation

Your participation in this study is voluntary. If you do not want to participate there will be no penalty. You may stop your participation at any time without penalty or loss of benefits.

Contact person

In case of any queries or concerns, please contact the following: UON/KNH ethics and Research Committee, E-mail: uonknh_erc@uonbi.ac.ke or Jomo Kenyatta university of Agriculture and technology P. O. Box 62200-00200, Nairobi; Tel No 2722541- 2713349-072220590 or Fridah Jebet Limo, Principal Investigator cell No: 0725179189; Email fridahlymo@gmail.com

(b): PARTICIPANT CONSENT FORM**Participant Statement**

The study you are about to participate in is aimed at determining factors associated with exclusive breastfeeding among mothers with children aged six months and attending Baringo County Referral Hospital, Kabarnet. Should you agree to participate in the

study, you will be asked to give relevant information questions on exclusive breastfeeding. The questions will be about awareness on exclusive breastfeeding, socio-demographic characteristics and barriers to the practice. Any additional information about the study will be provided to you including the final study results.

The methods and means by which the study will be conducted have been explained to me by the researcher. All questions have been answered to my full satisfaction and I fully understand my role. I also understand that withdrawal from the study at any point is voluntary and not subject to penalty. I agree to participate in this study.

Participant signature.....Date
.....

Researcher's signature.....Date.....

Kiambatisho 1 (A): Fomu Ya Kuomba Ridhaa

Tarehe.....

Mada: Unyonyeshaji wa maziwa ya mama pekee kwa kipindi cha miezi sita ya mwanzo baada ya mtoto kuzaliwa kwa akina mama wanaoudhuria hospitali ya rifaa, Kauti la Baringo, Kabarnet.

Mtafiti: Fridah Jebet Limo ITROMID/ JKUAT

Eneo: Hospitali ya rifaa, Kauti la Baringo, Kabarnet.

Utangulizi

Mimi naitwa Fridah Jebet Limo mwanafunzi katika chuo kikuu cha Jomo Kenyatta ya kilimo na teknolojia. Ninafanya utafiti kuhusu, Unyonyeshaji wa maziwa ya mama pekee kwa akina mama walio na watoto wa umri wa miezi sita hadi wanaozaliwa wanaoudhuria hospitali ya rifaa, Kauti la Baringo, Kabarnet.

Lengo la utafiti

Utafiti huu unalenga kuainisha unyonyeshaji wa maziwa ya mama pekee kwa kipindi cha miezi sita ya mwanzo baada ya mtoto kuzaliwa kwa akina mama wanaoudhuria hospitali ya rifaa, Kauti la Baringo, Kabarnet. Matokeo ya utafiti huu yatachangia katika kupunguza athari za kukosa viinilishe vya vyakula na kuimarisha uhai wa mtoto kwa kuchukua hatua mwafaka kwa njia ya kuingilia na kuimarisha kampeni za kumlea mtoto kinachoishi.

Utaratibu

Ningependa kushiriki kwako katika utafiti huu. kama utachagua kushiriki utapewa nambari ya kujitambulisha, mhojai atakuuliza mfululizo wa maswali kuhusu maswali kadhaa juu ya taarifa za kidemografia, ufahamu/uelewa kuhusu unyonyeshaji wa maziwa ya mama tu na vikwazo vipihasa zinasababisha mama ashindwe kunyonyesha mtoto wake maziwa yake pekee kwa kipindi cha miezi sita ya mwanzo baada ya kuzaliwa wanaoudhuria hospitali ya rifaa, Kauti la baringo, kabarnet. kama umekubali kushiriki, mtafiti anakusii utoe idhini kwa kuweka sahihi kwenye fomu ya kuomba ridhaa. Mahojiano yetu yatachukua kama dakika ishirini hivi.

Madhara

Hakuna madhara yoyote kwa kushiriki katika utafiti huu.

Faida

Utafiti huu ni kwa sababu ya kujiendeleza kimasomo na kama unakubali kushiriki katika utafiti huu, tunategemea kwamba taarifa tutakazo zipata kutoka kwako pia zitakua na maana kwa kujua mengi kuhusu unyonyeshaji wa maziwa ya mama pekee kwa kipindi cha miezi sita ya mwanzo baada ya mtoto kuzaliwa na jinsi ya kuifanya vizuri.

Malipo

Ukikubali kushiriki hautalipwa kwa mpangilio yoyote katika utafiti huu.

Usiri

Majibu yote utakayo toa yatakua siri na hayataonyeshwe kwa wengine zaidi ya wafanyi kazi wa utafiti huu. Taaarifa utakazotoa zitatumika kwa lengo la utafiti tu na sio sababu zingine zozote. Jina lako au kitu chochote cha kukutambulisha hakitaonekana kwenye ripoti badala yake tutatumia nambari.

Haki ya kujitoa

Ushiriki katika utafiti huu ni wa hiari .unaweza kusitisha mahojiano wakati wowote endapo utaona ni vyema kufanya hivyo na hakutakua na athari zozote na hutapoteza stahili zako zozote.

Watu wa kuwasiliana nao

Mwandishi kamiti ya ithini na utafiti UON/KNH, barua pepe: uonknh_erc@uonbi.ac.ke ama chuo kikuu cha Jomo Kenyatta ya ukulima na teknolojia, sanduku la posta 62200-00200, Nairobi; nambari ya simu 2722541- 2713349- 072220590, au mtafiti mkuu; Fridah Jebet Limo, nambari ya simu 0725179189, barua pepe fridahlymo@gmail.com

SEHEMU B: FOMU YA IDHINI YA KUSHIRIKI

Hotuba ya kushiriki

Utafiti huu unalenga kuainisha unyonyeshaji wa maziwa ya mama pekee kwa kipindi cha miezi sita ya mwanzo baada ya mtoto kuzaliwa kwa akina mama wanaoudhuria hospitali ya rifaa, Kauti la Baringo, Kabarnet. Ukikubali kushiriki utaulizwa maswali juu ya unyonyeshaji wa maziwa ya mama pekee kwa kipindi cha miezi sita ya mwanzo baada ya mtoto kuzaliwa. Maswali ni ya taarifa za kidemografia, ufahamu/uelewa kuhusu unyonyeshaji wa maziwa ya mama tu na vikwazo vipi hasa zinasababisha mama ashindwe kunyonyesha mtoto wake maziwa yake pekee kwa kipindi cha miezi sita ya

mwanzo.Matokeo ya utafiti huu utapata. Mimi nimesoma fomu hii ya idhini na nimeielewa. Maswali yangu yamejibiwa pia naweza kusitisha mahojiano wakati wowote endapo nitaona ni vyema kufanya hivyo na hakutakua na athari zozote na hutapoteza stahili zangu zozote.Nakubali kushiriki katika utafiti huu.

Saini ya mshiriki.....Tarehe.....

Saini ya mtafiti/ mtafiti msaidizi..... Tarehe.....

Appendix 2 (A): Questionnaire

FACTORS ASSOCIATED WITH EXCLUSIVE BREASTFEEDING AMONG MOTHERS WITH CHILDREN AGED SIX MONTHS AND BELOW ATTENDING BARINGO REFFERAL HOSPITAL, KABARNET

1. Date of interview ___/___/ 2015

2. Interviewers initials _____

3. Questionnaire no. _____

4. Respondents No. _____

SECTION 1: SOCIO – DEMOGRAPHIC INFORMATION (circle the correct answer/ fill in space provided)

A. Mother's information

1. How old are you? (Age in years)

Years.....

2. What is your marital status? 1) Married 2) Single 3) Cohabiting 4) Divorced

5) Widow

3. What is your highest level of education?

1) No formal education 2) Primary school 3) secondary school 4) College and above

4. What is your occupation? 1) Civil Employment 2) Farmer 3) Business 4) None 5)

Others specify.....

5.

If working away from home, do you take the baby with you?

1) Yes 2) No

6. How many children do you have? 1) One 2) More (state the number).....

B. Infants Information

7. How old is your child? (Months)

8. Sex of your child? 1) Male 2) Female

9. Birth weight of a child (verify by using RCH card if available)/ kg

10. Where did you deliver this child?

1) Hospital/Health facility 2) Home 3) Others specify.....

11. What was the mode of delivery? 1) Normal delivery 2) Caesarean section 3) Assisted delivery

12. Who assisted you during delivery? 1) Health worker 2) TBA 3) Relatives 4) Others specify

SECTION 2: INFANT FEEDING PRACTICES

13. Is this your 1st, 2nd or 3rd child? (If 1st child go to question.17)

Specify

14. If not your 1st child, did you breastfeed the older child?

1) Yes 2) No

15. If breastfed, for how long? Months/days

16). If not breastfed 15, why?

1) Going back to work 2) baby refusing to breastfeed 3) Breast milk was not enough 4)

Others

17. Have you ever breastfed this child? 1) Yes 2) No (If no. go to question. 22)

18. When did you initiate breastfeeding to your child for the first time after delivery?

1) Immediately after delivery 2) Within 1 hour 3) 2-3 hours 4) Days (mention)

19. If delayed more than one hour, what were reasons that made you delay in breastfeeding initiation? 1) Caesarean section 2) Baby was sick 3) Mother was sick

4) Delayed milk secretion 5) Others (Mention).....

20. Do you currently breastfeed your child? 1) Yes 2) No

21. If the baby is still breastfeeding do you give your child any other food or liquid like water/juice apart from breast milk?

1) Yes 2) No

22. After delivery, did you give your baby anything to eat/drink before starting breastfeeding?

1) Yes 2) No

23. If yes, what did you give your baby?

1) Water 2) Dilute porridge 3) Milk 4) Others (specify).....

24. Who advised you to provide your child with such type of food/ fluid?

1) My own decision 2).Grandmother 3). Friends 4) Others (specify).....

25. What were the reasons for introducing such food before starting breastfeeding?

1) Insufficient milk 2) Sore nipples 3) Illness of the mother 4) Illness of the child 5) others (specify)

26. When did you start introducing extra foods/drinks including water to your child?

1) Less than 1 month 2) 1 to 3 months 3) 4 to 5 months 4) 6 months

27. If your child is not currently breastfeeding, how old were the child when you stopped breastfeeding him/her?.....months

28. Why did you stop breastfeeding?

1) The milk was not enough 2) Work away from home 3) Breast problems 4) Others

(Specify)

29. Who influenced your decision on your feeding practice?

1) Husband/spouse 2) My mother 3) Mother in law 4) Health worker 5) My own decision 6) Others (Mention)

SECTION 3: SOURCES OF INFORMATION ON EXCLUSIVE BREASTFEEDING.

30. During pregnancy did you attend Ante Natal Clinic? (If no go to question number. 32) 1) Yes 2) No

31. Did anyone talk to you about breastfeeding?

1) Yes 2) No

32. What were you told about breastfeeding?

1) Benefits of breastfeeding 2) Positioning of the baby 3) Exclusive breastfeeding

4) Management of breast problem 5) Expression of breast milk 6) others (mention).....

33. Have you ever heard about exclusive breastfeeding? (If no. go to question number. 36). 1) Yes 2) No

34. If yes, where did you get the information from?

1) Health workers 2) Media 3) Relatives 4) Others (specify).....

35. Did anyone show you how to breastfeed?

1) Yes 2) No

36. Who showed you how to breastfeed?

1) Health workers 2) Relatives 3) others (specify).....

37. Did anyone show you how to attach the baby to the breast?

1) Yes 2) No

38. Who showed you how to attach the baby to the breast?

1) Health workers 2) Relatives 3) Others (specify).....

SECTION 4: KNOWLEDGE OF MOTHER ON EXCLUSIVE BREASTFEEDING.

39. What is the importance of yellowish milk (colostrum)?

- 1) Nutritious 2) Protection against diseases 3) I don't know 4) Others (mention).....

40. Do you think breast milk alone is sufficient for the baby for 0-6 months?

- 1) Yes 2) No

41. If no, for how long is breast milk sufficient for the baby?

- 1) 1 month 2) 2 months 3) 3 months 4) 4 months 5) 5 months

42. How many times per day should the baby be breastfed?

- 1) 3-4 times 2) 5-6 times 3) on demand 4) others.....

43. What is the appropriate time to start complementary foods?

- 1) Less than 1 month 2) 1 to 3 months 3) 4 to 5 months 4) 6 months

SECTION 5: BARRIERS TO EXCLUSIVE BREASTFEEDING.

44. Did you experience any breastfeeding problems? 1) Yes 2) No

45. If yes, what were the problem?

1) Abscess 2) Mastitis 3) Sore/cracked nipples 4) Others (mention).....

46. How did you manage the problem?

1) Express breast milk 2) Went to hospital for advice 3) Rub local herbs on it

4) Others (mention).....

47. What do you think are the reasons for mothers not to breastfeed exclusively?

1) Lack of information 2) Work demand 3) Insufficient breast milk 4) Traditions and cultural beliefs 5) Other (mention)

Kiambatisho 2(B): Dodoso

DODOSO LA UTAFITI JUU YA UNYONYESHaji WA MAZIWA YA MAMA PEKEE KWA KIPINDI CHA MIEZI SITA YA KWANZA BAADA YA MTOTO KUZALIWA KWA AKINA MAMA WALIO NA WATOTO CHINI YA MIEZI SITA WANAOU DHURIA HOSPITALI YA RIFAA, KAUTI LA BARINGO, KABARNET

1. Tarehe ya mahojiano _____/_____/2015
2. Kifupi cha jina la anaehoji _____
3. Namba ya Dodoso _____
4. Namba ya Mhojiwa _____

SEHEMU 1: TAARIFA ZA KIDEMOGRAFIA

KIPENGELE A: TAARIFA BINAFSI ZA MAMA

1. Umri wako ni? _____
2. Je hali yako ya ndoa kwa sasa ikoje?
 - 1) Nimeolewa 2) Sijaolewa 3) Naishi na mwenza 4) Nimeachika 5) Mjane
3. Kiwango cha juu cha elimu?
 - 1) Sijasoma 2) Elimu ya msingi 3) Elimu ya sekondari 4) Chuo kikuu
4. Unafanya kazi gani?
 - 1) Nimeajiriwa 2) Mkulima 3) Mfanya biashara 4) Kazi nyingine (taja) _____

5. Kama unafanya kazi/shughuli zako mbali na nyumbani, je, huwa unaenda na mtoto wako kwenye shughuli zako?

1) Ndio 2) Hapana

6. Una watoto wangapi? 1) Mmoja 2) Zaidi ya mmoja (taja idadi).....

KIPENGELE B: TAARIFA ZA MTOTO

7. Mwanao ana umri gani? _____(miezi)

8. Jinsia ya mtoto? 1. Mke 2. Mume

9. Uzito wa mtoto alipozaliwa _____kilo(Hakikisha kama ana kadi ya kliniki)

10. Ulijifungulia wapi mtoto huyu?

1) Hospitali 2) Nyumbani 3) Kwingineko (taja).....

11. Ulijifungua? 1) Kawaida 2) Oparesheni 3) Kwa kusaidiwa

12. Nani alikusaidia wakati unajifungua? 1)Nesi/ daktari 2) Mkunga wa jadi 3) Ndugu

Wengineo Taja

SEHEMU YA 2: TAARIFA ZA ULISHAJI WA MTOTO ULIVYOFANYIKA

13. Je, huyu ni mtoto wako wa ngapi? (Kama sio wa kwanza, nenda swali la 17)

Taja idadi.....

14. Kama sio wa kwanza, je? Ulimnyonyesha mtoto anayemfuata?

1) Ndio 2) Hapana

15. Kama ndio, ulimnyonyesha kwa muda gani?.....siku/miezi

16. Kama hapana, kwa nini?

1) Ilibidi nirudi kazini 2) Maziwa yalikuwa hayatoshi 4) Mengineyo

17. Je, umewahi kumnyonyesha huyu mtoto? (kama hapana nenda swali la 22). 1) Ndio 2) Hapana

18. Baada ya kujifungua, ulimnyonyesha mtoto wako kwa mara ya kwanza baada ya muda gani kupita?

1) Mara tu baada ya kujifungua 2) Ndani ya saa moja 3) Masaa 2-3 4) Baada ya siku..... (taja)

19. Kama ulichelewa zaidi ya saa moja, ni sababu zipi zilipelekea uchelewe?

1) Uzazi wa oparesheni 2) Mtoto alikua mgonjwa 3) Mama alikua mgonjwa 4) Maziwa

yalichelewa kutoka 5) sababu nyingine
(taja).....

20. Kwa sasa huyu mtoto nanyonya? 1) Ndio 2) Hapana

21. Kama mtoto bado ananyonya, unampa chakula chochote au kinywaji kando na maziwa yako? 1) Ndio 2) Hapana

22. Baada ya kujifungua, ulimpa mwanao chochote kabla ya kuanza kumnyonyesha?

1) Ndio 2) Hapana

23. Kama jibu ni ndio, ulimpa nini?

1) Maji 2) Uji mwembamba 3) Maziwa 4) Vingine
(taja).....

24. Nani alikushauri kumpa aina hiyo ya chakula/kinywaji?

1) Maamuzi yangu binafsi 2) Nyanya 3) Marafiki 4) Wengineo (wataje).....

25. Ni sababu zipi zilikufanya umwanzishie chakula/kinywaji?

1) Maziwa yalikuwa hayatoshi 2) Chuchu zilichupuka 3) Mama alikuwa mgonjwa 4)
Mtoto alikuwa mgonjwa 5) Mengineyo (taja).....

26. Ulianzisha vyakula/vinywaji vya ziada muda gani baada ya mtoto
kuzaliwa? 1) Chini ya mwezi 1 2) Mwezi 1-3 3) Miezi -5 4) Mezi- 6

27. Kama mtoto wako hanyonyi kwa sasa, alikua na umri gani ulipomwachisha
kunyonya?

Miezi

28. Kwa nini ulimwachisha kunyonya?

1) Maziwa yalikuwa hayatoshi 2) Nafanya kazi mbali na nyumbani 3) Matatizo ya maziwa
4) Sababu nyingine (taja)

29. Nani alikushawishi namna ya kumlisha mtoto?

1) Mume/ mwenzu 2) Mamangu 3) Mama mkwe 4) Watumishi wa afya 5) Uamuzi
wangu binafsi 6) Wengineo

(taja).....

SEHEMU YA 3: CHANZO CHA TAARIFA ZA UNYONYESHAJI

30. Je, ulihudhuria kliniki ya mama na mtoto wakati wa ujauzito?

1) Ndio 2) Hapana

31. Je, ulizungumziwa chochote kuhusu unyonyeshaji?

1) Ndio 2) Hapana

32. Uliambiwa nini?

1) Faida za unyonyeshaji 2) Namna ya kumweka mtoto kwenye titi 3) Unyonyeshaji maziwa ya mama tu 4) Kushughulika matatizo ya titi 5) Ukamuaji wa maziwa ya mama

6) Mengineyo (taja).....

33. Je, umewahi kusikia kuhusu unyonyeshaji wa maziwa ya mama pekee? (kama hapana nenda swali namba 36)

1) Ndio 2) Hapana

34. Kama ndio ulipata wapi taarifa hizi?

1) Kwa watumishi wa afya 2) Vyombo vya habari 3) Ndugu 4) Wengineo (taja).....

35. Unaelewa nini kuhusu neno unyonyeshajiwa maziwa ya mama pekee?

.....

36. Je, kuna mtu yeyote alikuonyesha/kukufundisha namna ya kumnyonyesha mtoto? 1) Ndio 2) Hapana

37. Nani alikuonyesha/kukufundisha?

1) Watumishi wa afya 2) Ndugu 3) Wengineo (taja).....

38. Kuna mtu yeyote aliekuonyesha/kukufundisha namna ya kumweka vizuri mtoto kwenye titi? 1) Ndio 2) Hapana

39. Nani alikuonyesha/kukufundisha?

1) Watumishi wa afya 2) Ndugu 3) Wengineo (taja).....

SEHEMU YA 4: UFAHAMU/UELEWA KUHUSU UNYONYESHaji WA MAZIWA YA MAMA PEKEE

40. Ni nini umuhimu wa maziwa ya kwanza ya njano yanayotoka mara baada ya kujifungua?

1) Ni lishe bora 2) Yanazuia magonjwa 3) Sijui 4) Sababu nyingine (taja).....

41. Je, unafikiri maziwa ya mama tu yanamtosha mtoto kwa miezi 6 ya mwanzo toka kuzaliwa? 1) Ndio 2) Hapana

42. Kama hapana unafikiri maziwa ya mama yanaweza kumtosheleza mtoto muda gani? 1) Mwezi 1 2) Miezi 2 3) Miezi 3 4) Miezi 4 5) Miezi 5

3. Mtoto anahitaji kunyonyeshwa mara ngapi kwa siku?

1) Mara 3-4 2) Mara 5-6 3) Kila anapohitaji 4) Muda mwingine (taja).....

44. Ni muda gani mwafaka kwa kuanza kulikiza?

1) Chini ya mwezi 1 2) Mwezi 1 mpaka 3 3) Miezi 4 mpaka 5 4) Miezi 6

SEHEMU YA 5: VIZUIZI VYA UNYONYESHaji

45. Ulipata matatizo yoyote ya titi wakati wa kunyonyesha?

1) Ndio 2) Hapana

46. Kama ndio ulipata matatizo gani? 1) Jipu kwenye titi 2) Titi kuuma (mastitis) 3) Michupuko kwenye chuchu 4) Mengineyo (taja).....

47. Ulikabiliana vipi na tatizo hilo?


1) Nilikamua maziwa 2) Nilienda hospitali kuapata ushauri 3) Nililipaka titi dawa ya kienyeji 4)

Mengineyo (eleza).....


48. Kwa maoni yako unafikiri ni sababu zipi zinazopelekea akina mama wasinyonyeshe kwa kipindi cha miezi sita ya mwanzo baada ya kujifungua?

1) Kukosa elimu sahihi ya unyonyeshaji 2) Kazi/ajira 3) Maziwa kutomtosheleza mtoto 4) Mila na desturi 5) Mengine (taja).....


Appendix 3: Ethical Clearance



UNIVERSITY OF NAIROBI
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Ref: KNH-ERC/A/331

Fridah Jebet Limo
TM310-1147-2013
JKUAT

Dear Fridah

Research proposal – Factors associated with exclusive breastfeeding among mothers with Children under the age of six months attending Baringo County Referral Hospital, Kabarnet (P240/04/2014)

This is to inform you that the KNH/UoN-Ethics & Research Committee (KNH/UoN-ERC) has reviewed and **approved** your above proposal. The approval periods are 30th July 2015 – 29th July 2016.

This approval is subject to compliance with the following requirements:

- Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
- All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
- Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
- Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
- Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal.*)
- Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
- Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website <http://www.erc.uonbi.ac.ke>

Protect to discover

Permission granted
COUNTY DIRECTOR OF HEALTH
BARINGO COUNTY
21 AUG 2015
with M. Mwangi
P.O. Box 21-30400, KABARNET
Dr. Mary C. Sang
20/8/2015