BREASTFEEDING PRACTICES DURING THE NEONATAL PERIOD AMONG MOTHERS DELIVERING AT NAIVASHA DISTRICT HOSPITAL

A DISSERTATION PRESENTED IN PART FULFILLMENT OF REQUIREMENTS FOR THE DEGREE OF MASTERS OF MEDICINE IN PAEDIATRICS AND CHILD HEALTH OF THE UNIVERSITY OF NAIROBI

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H58/65312/10

DECLARATION

I declare that this dissertation is my original work and has not been presented to any other university for award of an academic degree.

Sign…….

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This dissertation has been submitted to the University of Nairobi with our approval as university supervisors

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ACKNOWLEDGEMENT

This work has benefited immensely from the input of several persons who contributed their time, efforts and advice at different stages from study designs, implementation, analysis and final writing up. I am grateful to all these persons most of whom I do not mention individually in this acknowledgement. Due to the great support provided by the following persons I would like to specially acknowledge and sincerely thank:

My supervisors Prof Ruth Nduati and Dr Florence Murila for their input from the formative stage of study conception and their continued support throughout the entire research period,

The Partnership for Innovative Medical Education in Kenya (PRIME-K), through the Linked Award: Strengthening Maternal, Newborn & Child Health (MNCH) Research Training in Kenya. The study was supported by a grant from the US National Institutes of Health (R24TW008907). The content is solely the responsibility of the authors and does not necessarily represent the official views of the US National Institutes of Health (NIH).

I would also like to thank Millicent Ngethe for designing the study database and her assistance with data entry and Philip for supporting me in statistical analysis and interpretation of the findings in this study.

And lastly I would like to acknowledge my husband Eng. Patrick Mwangi for his financial, social and moral support and encouragement during the entire period of my post graduate training.

DEDICATION

I dedicate this work to my lovely family-husband Eng. Patrick Mwangi, Son Lincoln Karani and daughter Michelle Nyakio.

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LIST OF ABBREVIATIONS AND ACRONYMS

AFASS Acceptable, Feasible, Affordable, Sustainable, Safe

AHRQ Agency for Health Care Research and Quality

BFHI Baby Friendly Hospital Initiative

EBF Exclusive breast feeding

KNH Kenyatta National Hospital

MCH Maternal and Child Health

NDH Naivasha District Hospital

PCR Polymerase chain reaction

UNICEF United Nations Children's Fund

UON University of Nairobi

WHO World Health Organization

DEFINITION OF TERMS

Exclusive breastfeeding: Breastfeeding alone without giving any other food or drink, not even water except from drops, or syrups containing vitamins, mineral supplements or medicine when medically indicated.

Predominant breastfeeding: Breast milk is the predominant source of nourishment but infant may have received water or water based drinks such as teas, fruit juice, sugar water but no solid based drinks or non human milks

Mixed-milk feeding: The child consumes breast milk and any other non-human milk, such as commercial or home-prepared infant formula, cow's milk, fermented milk, evaporated milk, other animal milk. The child may also consume any of the liquids allowed under predominant breast-feeding but no solid foods or food-based fluids. This terminology only refers to feeding in the first 6 months of life. After 6 months babies are expected to receive complementary feeds.

Complementary feeds-nutritious solid foods given to the baby in addition to breast milk .These should be timely. WHO recommends complementary feeding from 6 completed months

Prelacteal feeds are liquids often given to the baby until the mother's milk comes in. Infants should not receive these liquids as they can be a source of contaminants and they can interfere with breast milk out

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ABSTRACT

INTRODUCTION: Exclusive breastfeeding is among interventions with proven effectiveness in reducing neonatal mortality and 22% of neonatal deaths could be prevented by timely initiation of breastfeeding

JUSTIFICATION: knowing the breastfeeding practices will help strengthen campaigns on exclusive breastfeeding which will be vital in reducing the under 5 mortality and hence in achieving the 4^{TH} MDG

OBJECTIVES: The main objective of this study was to determine neonatal feeding practices at Naivasha District Hospital (use of pre-lacteal feeds, adherence to initiation of breast feeding within an hour of delivery, exclusive breastfeeding in the neonatal period and problems experienced by nursing mothers in the neonatal period. The secondary objective was to assess maternal knowledge on exclusive breastfeeding.

METHODOLOGY: A longitudinal descriptive study that followed up postnatal mothers for a period of 28 days was done. The study population was healthy mothers of healthy term newborns who had been delivered normally. Recruitment of subjects was done in the post natal wards. Mothers were followed up by phone calls at 2 weeks and at 28 days to determine the feeding practices and to determine any challenges they were experiencing. Knowledge on exclusive breastfeeding was assessed by asking mothers to define breastfeeding and state the recommended duration of exclusive breastfeeding. Data was collected using a questionnaire.

Data entry was done in Microsoft access and excel data base and analyzed using STATA version 11.0.

RESULTS: The study recruited 230 mothers but 207 mother-infant pairs completed the study. Timely initiation of breast feeding occurred in 147 (71%) deliveries while pre-lacteal feeds were given to 63(30.4%) babies. The rate of exclusive breast feeding (EBF) in the cohort was 89.9% (186/207) at 2 weeks declining by 4.4 % to 85.5% (177/207) at week 4.use of prelacteal feeds was significantly associated with reduced exclusive breastfeeding rates at 2 weeks and at 4 weeks. One hundred and forty five (70%) mothers had adequate knowledge on EBF .Adequate maternal knowledge was however not associated with increased exclusive breastfeeding rates. The main problem reported was pain during feeding and this was associated rates with reduced EBF rates (p value<0.001)

CONCLUSION: Knowledge of mothers on exclusive breastfeeding was good however, exclusive breastfeeding rates were lower than expected in the neonatal period and use of prelacteal feeds was common.

RECOMMENDATION: mothers should be assisted to initiate breastfeeding immediately after delivery and be encouraged to sustain exclusive breastfeeding by giving them phone contacts of health care provider at discharge.

CHAPTER 1

1.1 INTRODUCTION AND LITERATURE REVIEW

Breastfeeding is the process of feeding the infant with mother's milk, either by direct nipple-baby mouth contact or by expressed breast milk. Breastfeeding is recommended as the best feeding alternative for infants up to six months and has a protective effect against mortality and morbidity.[1] Colostrum is the initial yellowish and sticky milk produced from mother's breasts in the first week after delivery. Transition milk is produced between day 7 and 10. Mature milk is whitish in color and is effectively produced from about the 10th day following delivery. Colostrum contains more protein [10% compared to 1% in mature milk], immunoglobulins [IgA], lactoferrin, white blood cells, vitamin A, zinc and less fat than mature milk. Colostrum is the baby's first immunisation. Since the newborn gut is permeable to macromolecules and therefore very vulnerable. Milk has sIGA which coats the infants gut and acts as anti-infective factor. White blood cells in breast milk help to protect against micro-organisms such us E.coli by phagocytosing them. Breast milk also has lactoferrin which binds iron making it unavailable for bacterial growth. Another important factor in breast milk is Bifidus factor,which promotes lactobacillus growth. The lactobacillus metabolizes lactose to make lactic acid. The lactic acid lowers ph and thus inhibits growth of bacteria like E.col. Lysozyme causes lysis of certain bacteria such as salmonella species[2]

The current World Health Organization WHO recommendations on breastfeeding stipulate that breastfeeding should start immediately following delivery for the baby to get colostrum. The infant should thereafter be exclusively breastfed for up to six months of life, day and night on demand. During this period, no fluids, including water, should be given to the baby. However, there is room for giving oral medication to the infant should he/she fall sick. Breastfeeding should still continue until the child is two years of age or beyond.

Numerous studies have shown a lot of benefits of breast milk. A 2004 prospective case control study by Marild S. et al in Sweden found that breastfeeding reduced the risk of acquiring urinary infections in infants up to seven months of age, with protection strongest immediately after birth.[5] A 2007 review for Agency for Healthcare and Research Quality(AHRQ) found that breastfeeding reduced the risk of acute otitis media, non –specific gastroenteritis and severe lower respiratory tract infection.[6] Edmont KM. et al did a study in Ghana on the effects of early infant feeding practices on infection specific neonatal mortality and the results showed a marked dose response in neonatal mortality with increasing delay of initiation of breastfeeding.[7] Breastfed babies have better arousal from sleep at 2-3 months, this period coincides with the peak incidence of SIDS. A study done at Munster found that breastfeeding halved the risk of SIDS in children up to the age of 1.[8] Breastfed babies also have lesser tendencies to develop both type 1 and type 2 diabetes, less childhood obesity, fewer tendencies to develop atopy, and less necrotizing enterocolitis.[9]

The mother also benefits from breastfeeding in various ways, for instance, there is reduced post partum bleeding because the oxytocin released during breastfeeding causes uterine contraction. Lactation amenorrhea is 98% effective as a means of contraception if exclusive breastfeeding is carried out. Studies have shown less risk of breast, ovarian and endometrial cancer amongst women who breast feed[10]

1.1.1: BARRIERS TO EXCLUSIVE BREASTFEEDING

Some of the factors that contribute to delayed initiation of breastfeeding include; Use of medication such as opioid analgesics during labour, mode of delivery e.g caesarian section done under general anesthesia, routine separation of the baby from the mother and use of pre- lacteal feeds.[11].

Lack of knowledge and lack of support from partners and health care providers contributes to low breastfeeding rates. This necessitates mothers' education about the benefits of breastfeeding from the 3rd trimester of pregnancy.

Resumption of work outside the home is one of the commonly cited reasons for discontinuing breastfeeding and thus giving alternative feeds. This occurs because of separation of the baby from the mother for long hours with no place at work place to express and store milk, eventually leading to reduced milk production and frustrations by mother and baby.

Poor latch causing pain, and other breast problems e.g. mastitis, cracked nipples, breast abscesses also contribute to poor lactation. Mothers may stop breastfeeding and opt to give alternative feeds when they experience these problems.

Fear of transmission of diseases such as HIV from mother to child can result in mothers opting not breastfeeding. However HIV positive mothers in developing countries are encouraged to exclusively breastfeed till 6 months of age while child is on prophylactic medication, there after they should continue to breastfeed for at least 1 year .Exclusive breast feeding reduces morbidity and mortality in HIV positive babies[13]

The fourth millennium goal (MDG-4) commits the international community to reducing mortality among the under five years by two-thirds between 1990 and 2015[14]. Globally, breastfeeding is now recognized as central to achievement of the millennium development goals. Recent data indicates that exclusive breastfeeding is the most effective preventive intervention for ensuring child survival and it is estimated that universal exclusive breastfeeding in the first six months (99% uptake by all mothers of young children) would result in 13% reduction of all under-five deaths[15] as shown in figure 1.A further 6% would be prevented by continued breastfeeding (breastfeeding beyond 6 months of life during complementary feeding).

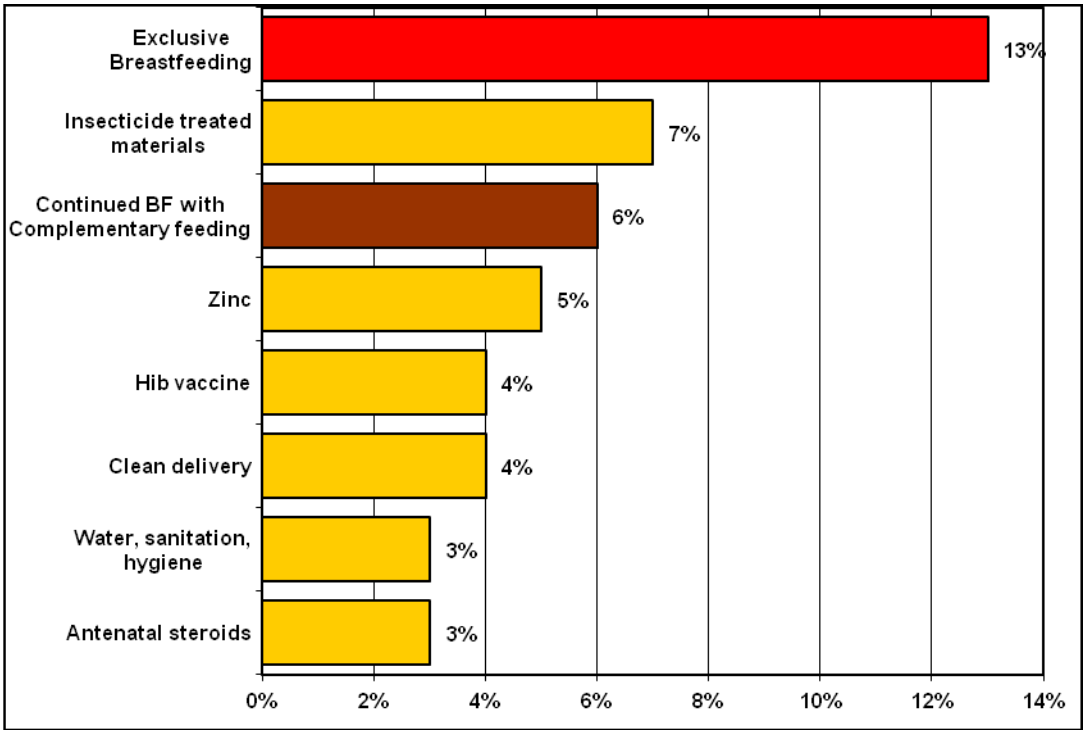

Figure 1: Proportion of under 5 years' deaths that could be prevented by Universal coverage with the Preventive Interventions

Despite the known and proven benefits of breastfeeding, the prevalence of exclusive breast-feeding in many parts of the world is disconcertingly low. According to the WHO data bank on breastfeeding in 2000, only 35% of infants between 0-4 months were exclusively breastfed. In sub-Saharan Africa, only 33% of children under the age of three months were exclusively breast-fed[16]. The potential impact of optimal breastfeeding practices is especially important in developing nations, but non-breastfed children in industrialized countries are also at greater risk of dying[17]

In Kenya, Infant and Young child feeding practices have been deteriorating over the past two decades[18]. Exclusive breastfeeding rates at six months are dismally low and declined from 3.5% in 1998 to 2.7% in 2003 and3.6% in 2008 as shown in table 1 [19] . The exclusive breastfeeding rates in the neonatal period was 28.3% in 1998 and the percentage of babies less than 2 months of age who were exclusively breastfeeding was 52% in 2008. This is despite the fact that Kenya is a signatory to all the global conventions with a commitment to do everything possible to promote, protect and support optimal infant and young child feeding practices.

Table 1: Situation of breastfeeding and complementary feeding practices in Kenya[18, 19, 20]

Practices	**1998 KDHS**	**2003 KDHS**	**2008-2009 KDHS**
Initiation of breastfeeding (Percentage of babies' breastfed within one hour of birth).	58%	52 %	58%
Percentage of babies 6 months exclusively breastfed in the last 24 hours	3.6%	2.6%	3.6%
Percentage of babies<2 months of age exclusively breastfed in the last 24 hours	28.2%	29.3%	51.8%
Duration of breastfeeding (Median duration in months of breastfeeding of children under three years of age)	21 months	20 months	21months
Bottle-feeding (Percentage of breastfed babies 0–<12 months of age fed from bottles in the last 24 hours).	17.7 %	27.6 %	16.9%

Studies done in some regions in Kenya have had results that are consistent with the findings of the demographic health surveys. A study on infant feeding conducted in Kibera slum in Nairobi showed dismal rates of exclusive breastfeeding with over two thirds of infants surveyed introduced to other feeds by 2 – 3 months of age.[21] A study done in Kenyan slums by Kimani M. showed poor adherence to WHO recommendations for breastfeeding and early infant practices. Only about 2% of infants were exclusively breastfed to 6 months. [22] Exclusive breastfeeding contributes to a reduction in neonatal mortality which contributes significantly to under5 mortality as shown in the figure below

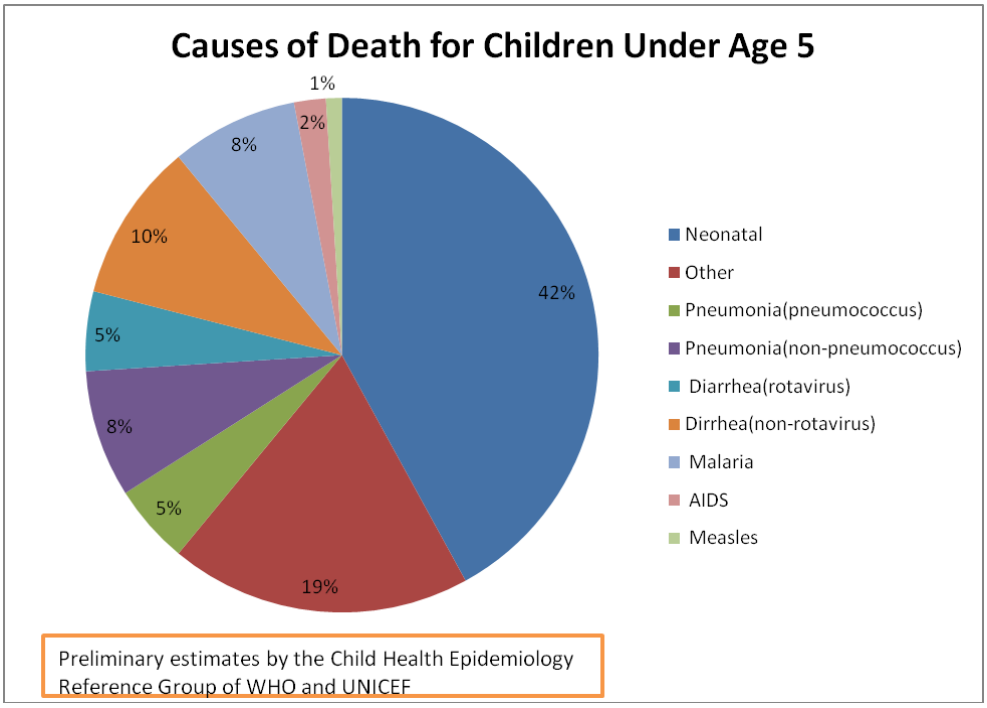

Figure 2: proportion of neonatal deaths contributing to under 5 mortality

1.1.2: VARIOUS BREASTFEEDING PRACTICES ND MEASUREMENT

a) BREASTFEEDING RATES

Exclusive Breastfeeding (EBF) Rate

The WHO recommends that infants be exclusively breastfed from birth to about six months of age. If infants were being breastfed according to this recommendation, all (100%) of infants would be breastfed from 0 - < 6 months. However, the highest percentage of exclusive breastfeeding rate reported in any nationwide survey is about 60% (for Rwanda) and in many countries it is as low as 2% (e.g. Ghana)

EBF rate = (Number of infants 0 to<6months on EBF /Number or infants 0 to <6months) 100

Predominant Breastfeeding (PBF) Rate

The predominant breastfeeding rate (PBR) illustrates the proportion of infants who are breastfed but who also receive water, water-based drinks (sweetened or flavored water, teas, and infusions), fruit

juice, or oral rehydration salts (ORS) solution. No other liquids or solids, i.e. no food-based liquids, are allowed. Infants who receive other milks are *not* predominantly breastfed.

Some programs have been able to increase the rate of predominant breastfeeding (by encouraging women to stop feeding milk to infants), but have been unable to change the exclusive breastfeeding rate because of the insistence by the culture that infants need water. Thus, collecting both rates is necessary, since a program may in fact have a major effect on predominant breastfeeding, but not on exclusive breastfeeding. The same age intervals are used for both the rate of exclusive and predominant breastfeeding.

PBF rate = (Number of infants 0 to<6months on PBF /Number or infants 0 to <6months) 100

Never Breastfed (Never BF) Rate

This indicator shows the proportion of infants who never even begin to breastfeed. In most countries, this rate is usually quite low (1-2%); in some (e.g., Mexico), it is greater than 15%

Never BF rate = (Number of infants 0 to<6months who never BF/Number of live births) 100

b) TIMELY INITIATION OF BREASTFEEDING

Initiation of Breastfeeding in the First Hour of Life

Mothers are more likely to successfully initiate lactation, encounter fewer problems, and maintain breastfeeding for a longer period if the child remains with the mother and is put to the breast soon after delivery. Optimal practice is defined as putting the child to the breast within one hour of delivery. Early initiation of breastfeeding is beneficial to both mother and child. For the mother, breastfeeding immediately after delivery will facilitate placental expulsion and uterine contraction, reducing the risk of postpartum hemorrhage. Immediate initiation will help to establish milk flow and prevent breast engorgement. Early initiation is also critical to the infant. The early breast milk,

colostrum, is rich in nutrients and anti-infective agents, providing protection to the infant entering a world of pathogens. Close contact of the baby with the mother leads to skin colonization with mother bacteria, the ones she already provides protection against though passive antenatal passive transfer of antibodies and through breastfeeding.

Measurement:

(Number of infants0-<12 months put to breast within 1 hr of birth/ Total number of infants 0-<12 months of age)100

c) **FREQUENCY OF BREASTFEEDING IN 24 HOURS**

Frequent feeding is especially important in early infancy. The young infant's stomach capacity is limited, and frequent suckling is necessary to meet the child's nutritional needs. Frequent suckling is critical for stimulating optimal milk production during the first one to two weeks of life when lactation is being established, and is necessary to ensure the maintenance of the mother's milk production throughout lactation. Frequent breastfeeding, with no long intervals between feeds, will also help to maximize the contraceptive effect of breastfeeding and protect the mother from closely spaced pregnancies. If an infant is breastfed three or fewer times per day, then the amount of breast milk consumed is likely to be less than about 200 kcal per day (or less than 30% of the energy requirement of an infant <6 months, about 25% of the energy requirement of an infant 6- 12 months, and 15% of the energy requirement of children aged one to three years). Early breast milk production is maintained by persistence of high prolactin levels after delivery. In turn high prolactin levels are maintained by frequent suckling. A gap of 8 hours between feeds results in precipitous drop in the prolactin and may lead to lactation failure.[3]

Measurement:

(Sum of suckling episodes in previous 24 hrs of infants in 1 month age cohort/ Number of breastfeeding infants in one month age cohort)100

This indicator is difficult to measure in populations with a culture of breastfeeding on demand. It is also prone to recall error. Adequacy of breastfeeding may also be determined by the number of times the baby passes urine in a 24 hour period, the normal being 6-8 times.

1.2: JUSTIFICATION AND UTILITY

The neonatal period can be a challenging time for the mother since breast milk production is not well established, especially during the first 2 weeks post partum. Mothers are therefore tempted to give alternative feeds to the baby which can be harmful to the neonate and decrease milk production. This has a negative effect on rate and duration of exclusive breastfeeding.

Exclusive breastfeeding has a great impact on lowering neonatal mortality which contributes significantly (42%) to the under 5 mortality. Despite there being a decrease in the under 5 mortality in Kenya (from 115 per 1000 live births in 2003 to 74 per 1000 live births in 2009) and the infant mortality rate (from77 to 52 per 1000 live births), the rate for the neonatal mortality only reduced marginally(from 31 to 28 per 1000 live births [18, 19.20].

The Naivasha region is well known for its floriculture industry and mothers who work in the flower farms are forced to leave their babies early at home in order to earn an income. This study sought to determine some of the feeding practices carried out by the mothers at Naivasha and identified the reasons given by mothers who are not exclusively breastfeeding their babies during the neonatal period. Knowing the knowledge of mothers on exclusive breastfeeding will help in educating them about the breastfeeding practice that is appropriate for their baby.

The findings of this study shall be useful for policy makers and health care providers in strengthening the campaigns on exclusive breastfeeding. Increasing the rates of exclusive breastfeeding will be vital in achieving the 4th MDG which aims at reducing childhood mortality.[14.]

1.3 STUDY QUESTION

What are the breastfeeding practices among mothers delivering at Naivasha district hospital?

1.4 STUDY OBJECTIVES

OVERALL OBJECTIVE

To determine the breast feeding practices among mothers delivering at Naivasha district hospital.

SPECIFIC OBJECTIVES

1. To determine the prevalence of use of pre-lacteal feeds
2. To determine the adherence to of timely initiation of breast feeding
3. To determine the prevalence of exclusive breastfeeding in the neonatal period
4. To determine the problems experienced by nursing mothers in the neonatal period
5. To determine the knowledge of mothers on exclusive breastfeeding

CHAPTER 2: METHODOLOGY

2.1: STUDY DESIGN

This was a longitudinal descriptive study that followed up mothers for a period of 28 days post delivery-a longitudinal study is a correlation research that involves repeated observations of the same variables over a period of time

2.2: STUDY SITE

The study was carried out at Naivasha District hospital, in the maternity ward. The hospital is the main referral facility in Naivasha District and its environs (North Kiambu, North Narok, South Kinangop and Gilgil). Monthly data summaries indicate that there are 10-20 vaginal deliveries per day (approx 3000 to 6000/year) and 200 daily attendances at the MCH. There are 5 to 10 admissions to the newborn unit daily. The hospital has a staff establishment of 250 and a bed capacity of 167. The catchment population is approximately 500,000.The Naivasha area is known for its floriculture industry.

2.3: STUDY POPULATION

Newborns and their mothers who met the inclusion criteria

2.4: STUDY PERIOD

The study was done over a period of 3 months, from August 2012 to October 2012.

2.5: SUBJECT SELECTION

2.5.1: Inclusion criteria

- Babies whose mothers gave informed consent.

2.52: Exclusion criteria

- sick newborns
- Newborns with congenital malformations
- Premature neonates ,birth weight <2500 grams
- Mothers who delivered via caesarian section
- Apgar score <5 at 1 min
- Sick mothers after delivery

2.6: SAMPLE SIZE

Calculated using Fischer's formula for prevalence studies

$$N=\frac{z^2p(1-p)}{d^2}$$

Where; N=Sample size

Z=1.96 standard normal deviate at 95% confidence interval

P=estimated prevalence using the study done in Ghana by edmont k.m et al-prevalence of exclusive breastfeeding in the neonatal period=70%.

D=degree of precision-set at 0.05

$$N=\frac{1.96^2x0.7x0.3}{0.05^2} \quad n=322$$

For population less than 10,000

nf=n/1+(n/N)

N=estimate of population size=500(10 to 20 deliveries per day)

nf=desired sample size for population less than 10,000

n=desired sample size for population more than 10,000

322/1+(322/500)

nf=196

A minimum of 196 mother/ baby pairs were targeted for recruitment to answer to all the objectives of the study.

2.7: SAMPLING METHOD

This study applied consecutive sampling of eligible mother baby pairs. Where any mother/baby pair meeting the inclusion criteria was recruited in the study.

2.8: STUDY PROCESS

Mothers and their newborns were assessed before discharge from the hospital. Those who met the inclusion criteria were approached and were informed about the study. Those who agreed to be in the study signed an informed consent and were recruited in the study. The mothers were subjected to the first questionnaire. It obtained demographic data, antenatal history, birth history, socioeconomic status, and knowledge of exclusive breast feeding (Appendix 6) .Locator information was collected in a different form and was kept under a locked cabinet of which the principal investigator kept the key. This was not accessible to any other person to maintain confidentiality. (Appendix 5).Mothers /infant pairs were discharged home.

Mothers were given a phone call interview at 2 weeks and at 28 days post partum to assess the feeding practices and to determine the challenges they were experiencing concerning feeding their neonates. Interviews on feeding practices were done using a questionnaire which was be adapted from the WHO format for assessing infant feeding practices. (Appendix 7)

2.9: PROGRESS OF STUDY SUBJECTS DURING THE STUDY

A total of 300 mothers of infants at Naivasha district hospital were approached for possible inclusion in the study. Out of these mothers a total of 232 post natal mothers met the inclusion criteria. Two hundred and thirty mothers signed an informed consent form and were recruited in the study. Two hundred and seven mothers completed the study and were included in the final analysis. The flow chart presented in figure 4 below shows a summary of the recruitment and progress of subjects in the study.

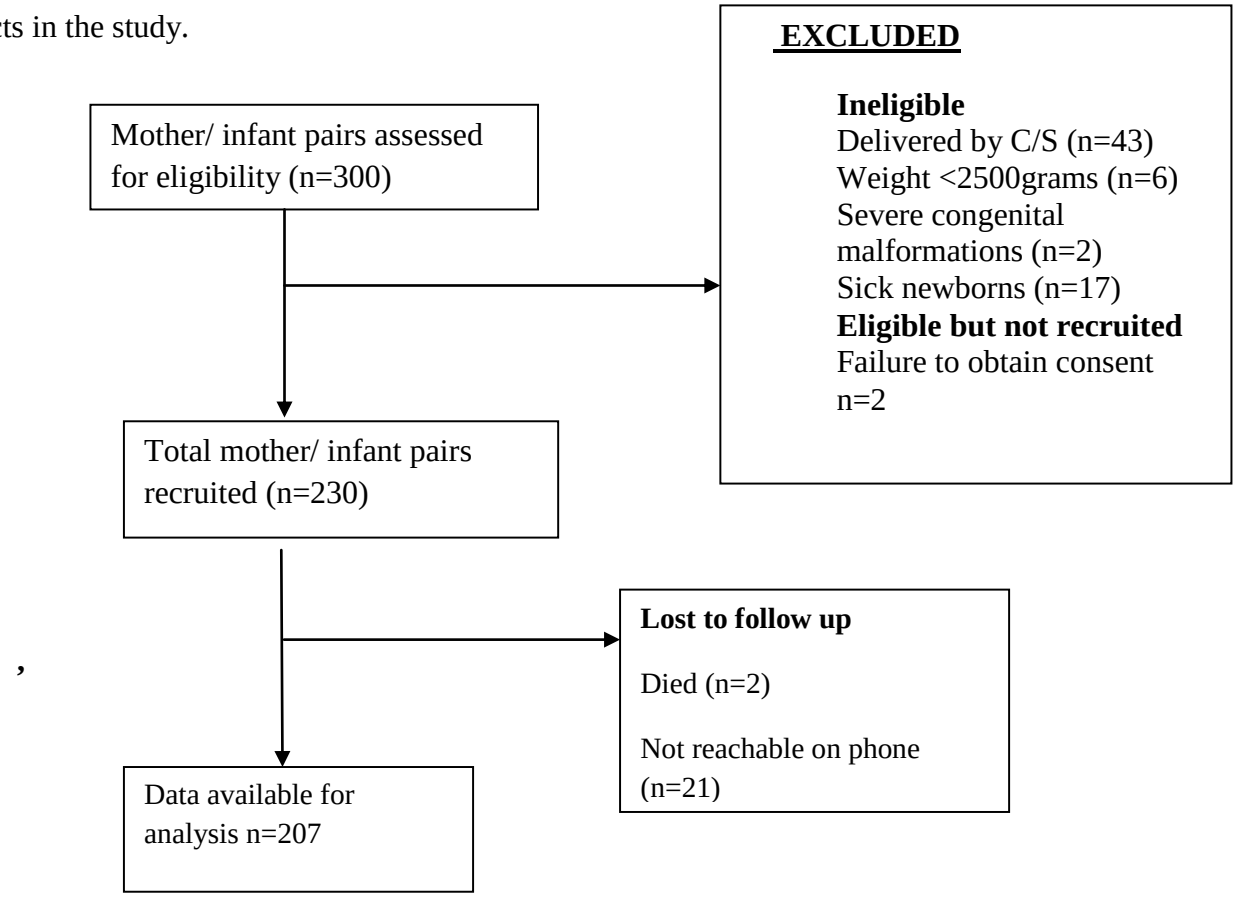

Figure 3: Recruitment and flow of subjects in the study done on mothers delivering at Naivasha District Hospital

2.10: MEASURE OF OUTCOMES

The primary outcomes of this research was self-reported duration of exclusive breastfeeding using "ever given" recall (at any time since birth, have you or anyone else ever given your infant anything to eat or drink other than your breast milk?). To assess knowledge of mothers on exclusive breastfeeding, mothers were asked to define exclusive breastfeeding in terms of what feeds should be given and to state the recommended duration of exclusive breastfeeding. Mothers who answered correctly to the two questions were classified as knowledgeable.

2.11: BREASTFEEDING INDICATORS THAT WERE ASSESSED

The indicators were grouped by breastfeeding topic into the following categories:

1. **Breastfeeding Rates**

a. **Exclusive Breastfeeding Rate (EBR)**

Measurement of exclusive breastfeeding rate:

Number of neonates exclusively breastfeeding x 100

Number of neonates recruited in the study

b. **Predominant Breastfeeding Rate (PBR)**

Measurement:

Number of neonates predominantly breastfeeding x100

Total number of neonates recruited in the study

c. **Never Breastfed Rate**

Measurement:

Number of children never received breast milk X100

Number of live births recruited

2. Timely Initiation of Breastfeeding

Initiation of Breastfeeding in the First Hour of Life

Measurement:

$$\frac{\text{Number of neonates put to breast within 1 hr of birth}}{\text{Total number of neonates recruited in the study}} \times 100$$

3. Frequency of Breastfeeding in 24 Hours

Average number of suckling episodes reported within the last 24 hours across breastfeeding mothers

Measurement:

$$\frac{\text{Sum of suckling episodes in previous 24 hrs of infants in 1 month age cohort}}{\text{Number of breastfeeding infants in one month age cohort}} \times 100$$

2.12: DATA MANAGEMENT

Participants' files were stored in a locked cabinet by the investigator during data collection and in a locked cabinet in the statistician's office during data entry. None of the participant files had information that could directly identify the participant; rather the participants' files had serial numbers instead of names.

Data was entered into a password protected Microsoft Access and excel database and once entry was completed, the principal investigator compared the contents of the database with the hard copy files of the participants to identify any data entry errors

2.13: DATA ANALYSIS

Data was analyzed using STATA version 11.0. Basic descriptive statistics for frequencies and means were applied. Categorical variables were compared using the chi-squared tests for nominal variables whereas continuous variables were compared using t-tests for comparing means. Independent correlates of exclusive breastfeeding were identified using logistic regression.

2.14: ETHICAL CONSIDERATION

Before the research was conducted, Ethical approval was sought from the Ethical and Research committee of KNH/UON. Informed consent was sought from the mothers. The information obtained was kept confidential by all the people who participated in the research. The locator identification forms were kept by the principal investigator under a locked cabinet and the key was kept by the principal investigator. There were no names on the participants' file rather they had serial numbers, Participation in the study was voluntary and mothers who declined to participate in the study or who opted out were not prejudiced against.

CHAPTER 3: RESULTS

The findings of the study are presented below in the following sequence; participant's characteristics, timely initiation of breastfeeding, use of prelacteal feeds, exclusive breastfeeding rates, problems experienced by nursing mothers and maternal knowledge on exclusive breastfeeding

3.1 PARTICIPANTS' CHARACTERISTICS

3.1.1. Socio-demographic information

Table 2 shows the socio-demographic characteristics of the study participants. The average age of mothers recruited was 25.4 years (range 16-48 years). Most of them (77%) were married and 99.9% attended ANC at least once during the current pregnancy. Majority (55%) had primary school level education and 39% had attained secondary level education. The median duration (in years) of formal education among the mothers was 8 years (IQR 7-10 years).

Table 2: Socio-demoghraphic information of post natal mothers at Naivasha District Hospital

Characteristic	**Category**	**Frequency (%)**
Average age (years)	Mean (SD)	25.4 (5.7)
Marital status	Married	160(77.3)
	Single	43(20.8)
	Divorced	3(1.5)
	Separated	1(0.5)
Education level	Tertiary	9(4.4)
	Secondary	80(39)
	Primary	113(55.1)
	None	3(1.5)

3.1.2 Socio-economic information

The socio economic status of the mothers who participated in the study is shown in table 3. Out of the 207 mothers 166 (80.2%) were unemployed. Eighty three (40.1%) mothers lived in a one roomed house. Approximately two-thirds (68.9%) of mothers lived in a cemented house and a similar proportion (68%) had electricity in their houses. Most (85.6%) of the post natal mothers paid rent less than 3000 shillings a month.

Table 3-Socioeconomic data of mothers delivering at Naivasha District Hospital

Variable	**Level**	**Frequency (%)**
Employment status	Employed	41(19.8)
	Unemployed	166(80.2)
Number of rooms in house	One	83(40.1)
	Two	62(30)
	Three	44(21.3)
	>Three	18(8.7)
Floor material	Earthen	58(28.2)
	Cement	142(68.9)
	Wood	6(2.9)
Electricity	Yes	140(68)
	No	66(32)
Monthly rent	<3000	119(85.6)
	3000-5000	15(10.8)
	5000-10000	3(2.2)
	Above 10000	2(1.4)

3.2 SOURCE OF INFORMATION ON BREASTFEEDING

Post natal mothers reported various sources of information on breast feeding. Figure 4 shows that mothers frequently (85%) reported that they got breast feeding information from health workers. Other sources of information were from; the mother in law 7%, friends 4.4% and media 1.9%

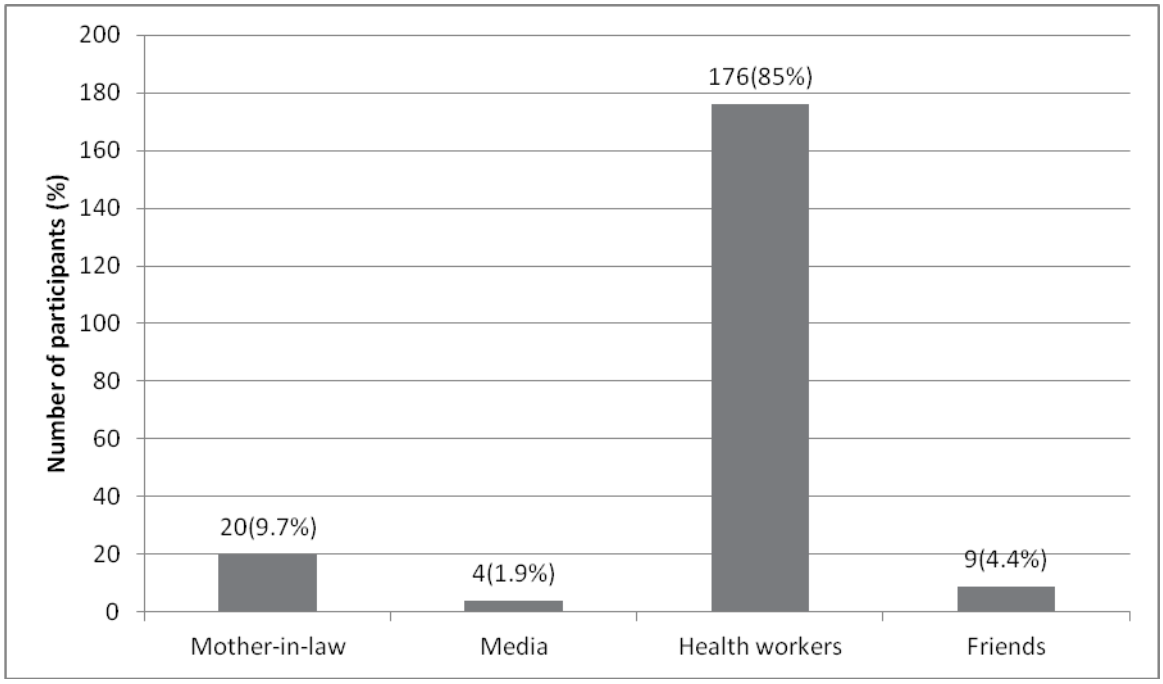

Figure 4: Reported source of breast feeding information among ANC mothers at NDH

Forty-two percent of mothers in this study were first time mothers (Table 4). Apart from the index child 107 (51.7%) mothers reported that they had at least one child aged under five years and 68.2% of mothers with an under five had only a single child in this age category.

Table 4: Obstetric history of post natal mothers at Naivasha District Hospital

		Frequency (%)
Parity (n = 207)		
	Primipara	87(42)
	Multipara	120(58)
ANC attendance	Yes	206(99.5)
Number of children under 5		
(n = 107)	1	73(68.2)
	≥2	34(31.8)

3.3. BREASTFEEDING PRACTICES

Timely initiation of breastfeeding

One hundred and forty seven mothers (71%) initiated breast feeding within an hour of birth. The rest of the mothers initiated breastfeeding at varying durations. The reasons given for delayed initiation included; infant was still asleep (25%), mother was too exhausted (3%), mother was asleep (1%).All mothers whose data was analyzed managed to initiate breastfeeding by the end of 72 hours.

Use of prelacteal feeds

Sixty three newborns (30.4%) received at least one prelacteal feed. Four main types of prelacteal feeds were given to newborns at Naivasha . Figure 6 presents these prelacteal feeds and shows that sugar or glucose water was the most frequently given feed, 55 (26.6%). Non-human milk was given to 48 (23.2%) of newborns and plain water given to 41 (19.8%) infants.

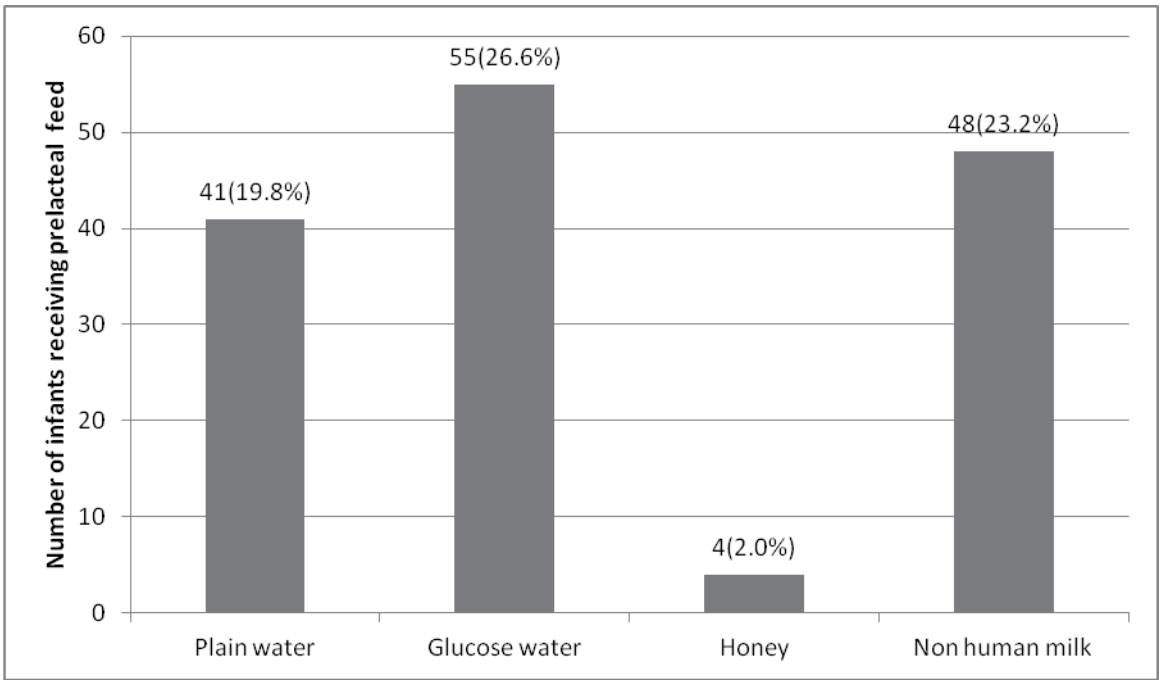

Figure 5: Prelacteal feeds given to newborns at Naivasha District HospitalReasons for giving prelacteal feeds

The most common reasons for giving prelacteal feeds were not having enough milk (96%) and the child being thirsty (4%). The persons who commonly recommended use of prelacteal feeds were mothers in law (42 %), husbands (27 %) and health care workers (31%). Four mothers of Muslim origin gave honey to their newborns because of cultural beliefs that a newborn should have something sweet touch their lip. Most of the prelacteal feeds were given at home on the second day before the mother's milk came in.

Breast feeding practices at 2 weeks and 4 weeks follow-up

The breast feeding practices at 2 weeks and 4 weeks follow-up are shown in Table 6.

During the initial follow-up at 2 weeks, 186/207 (89.9%) mothers were exclusively breast feeding, while at 4 weeks 177/207(85.5) were exclusively breastfeeding. Exclusive breast feeding rates at the two follow-up time points declined by 4.4% but this reduction was not statistically significant (p = 0.18).

Table 5: Breast feeding practices among post natal mothers at Naivasha District Hospital

Breastfeeding rates	Prelacteal feeding	Week2	week 4	Difference between wk2 and wk 4(95% CI)	P value
Exclusive breastfeeding rate	147(71%)	186(89.6%)	177 (85.5%)	4.4%(-2 to 10.7)	0.18
Predominant breastfeeding rate	157 (76.8%	205(99%)	199 (96.1%)	2.9%(-0.1 to 5.9)	0.06
Mixed milk feeding	198(94.2%)	19(9.2%)	25(12.1%)	2.9%(-22.1 to 15.3%)	0.76
Frequency of breastfeeding (> 8 feeds in 24 hours)	205(99%)	169(92.4%)	190 (95%)	2.7%(-2.2 to-7.5)	0.29

Predominant breast feeding rates were higher compared to EBF rates at both follow-up points. During the first follow-up (Week 2) 99% of mothers were predominantly breast feeding. The rate of predominant breast feeding declined to 96.1% at 4 weeks but the decline was not statistically significant (p = 0.06). Mixed milk feeding was reported in 9.2% of infants at 2 weeks and 25 (12.1%) infants at four weeks follow up. Complementary feeding was not reported since none of the mothers gave any solid feeds during the neonatal period.

Frequency of breastfeeding

Mothers who were breastfeeding 8 or more times daily at 2 weeks was 169(92%), increasing to 190(95%) at 4 weeks. The breastfeeding intensity in the cohort was 11.1%.

Prelacteal feeding and EBF rates

Table 5 shows that newborns that were given prelacteal feeds were significantly less likely to be exclusively breast feeding during 2 week and 4 week follow up.

Table 6: Prelacteal feeding and its impact on exclusive breast feeding in a newborn cohort at Naivasha District Hospital

	Prelacteal feed given		RR (95% CI)	P value
	Yes (n = 63)	No (n = 144)		
Two weeks follow up				
Exclusively breastfed				
Yes	50(79.4%)	136(94.4%)	1.00	
No	13(20.6%)	8(5.6%)	0.4 (0.3-0.7)	0.0015
Four weeks follow up				
Exclusively breastfed				
Yes	47(74.6%)	130(90.3%)	1.00	
No	16(25.4%)	14(9.7%)	0.5 (0.3-0.8)	0.003

Out of the 207 postnatal mothers 21(10.1%) reported that their infants had been given other feeds other than breast milk at 2 weeks (Table 6). An additional 9 infants were given other feeds between 2 and 4 weeks representing an increase of 4.3% in reported rates of feeds other than breast feeds, 30 (14.5%).

Non-human milk was the most common feed other than breast milk given at 2 weeks 19 (9.2%) and 4 weeks 28 (13.5%). This increase in the prevalence of non-human milk feeding was however, not statistically significant (p = 0.56). Other commonly given drinks were sugar or glucose water (7.7% versus 10.6% at 2 and 4 weeks, respectively) and plain water (7.2% compared to 8.2%).

Table 7: Feed types given to newborn cohort at Naivasha District Hospital

	2 week follow up		4 week follow up	
	Frequency	Percent	Frequency	Percent
Plain water	15	7.2%	17	8.2%
Sugar or glucose water	16	7.7%	22	10.6%
Honey	5	2.4%	6	2.9%
Herbal preparation	8	3.9%	10	4.8%
Non-human milk	19	9.2%	28	13.5%

Cessation of breastfeeding

Complete cessation of breast feeding was not reported for any mother/ infant pair at 2 weeks. During the second follow up, two mothers reported that they had completely stopped breast feeding. The respective age of the two infants at which breast feeding was completely stopped was 18 days, and 26 days. Reasons for breastfeeding cessation were: mother was too sick to continue breast feeding, and the other mother quoted cultural reasons since the child was ill.

3.4 BREASTFEEDING RELATED PROBLEMS

Breast feeding related problems were reported by 56 (27.1%) of the postnatal mothers in Naivasha District Hospital. (Figure 7) There was a significant association between any report of breast feeding problem and rates of exclusive breast feeding (Table 8).

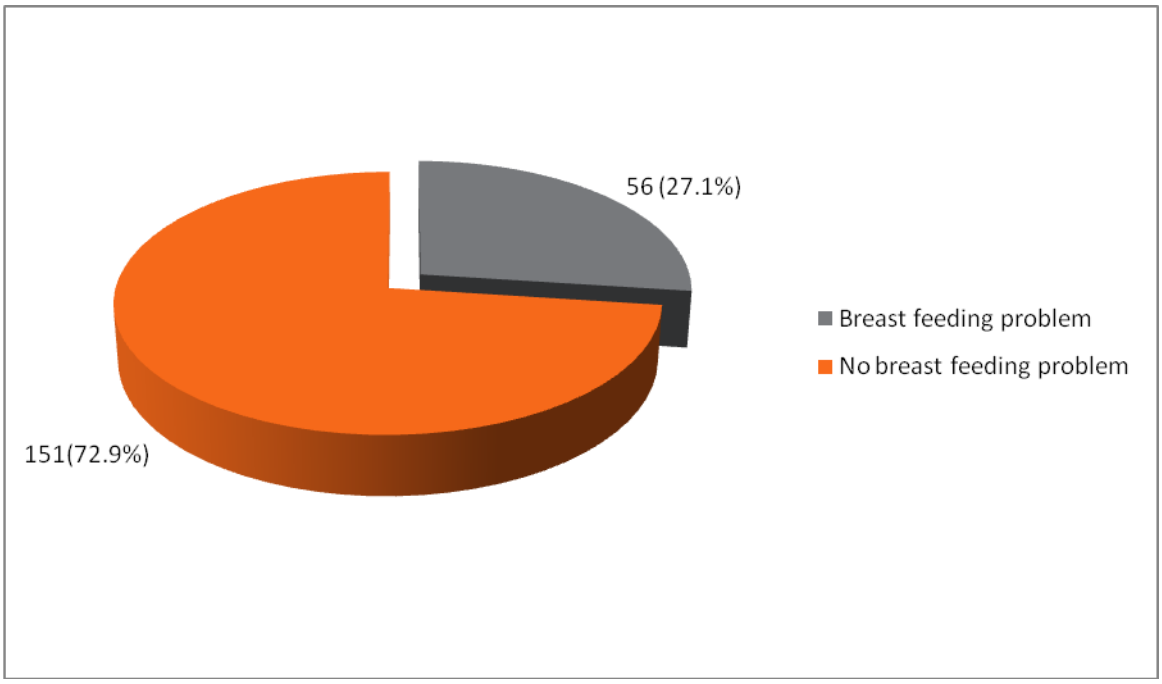

Figure 6: Prevalence of breast feeding problems among nursing mothers at Naivasha DH

Table 8 shows that the mothers who exclusively breastfeed are less likely to report any breast feeding problem during the first month after birth. Approximately a quarter of mothers with breast feeding problems were exclusively breastfeeding during follow up compared to three quarter of mothers without breast feeding problems who also reported that they were exclusively breast feeding (p value < 0.001 at both follow ups).

Table 8: Prevalence of problems experienced by nursing mothers at Naivasha DH and its impact on exclusive breast feeding

	Problem reported (n = 56)	No problem reported (n = 151)	RR (95% CI)	P value
Two weeks follow up				
Exclusively breastfeeding(n = 186)	43(76.8%)	143(94.7%)	0.4 (0.2-0.6)	<0.001
Not exclusively breastfeeding (n = 21)	13(23.2%)	8(5%)	1	
Four weeks follow up				
Exclusively breastfeeding(n = 177)	38(67.9%)	139(92%)	0.4 (0.2-0.5)	<0.001
Not exclusively breastfeeding (n = 30)	18(32.1%)	12(40%)	1	

The most commonly reported breast feeding problem was pain during feeding, 43 (20.8%). Other frequently occurring problems probably related to pain during feeding were sore nipples in 32 (15.5%) mothers and breast engorgement in 21 (10.1%) mothers. Twelve infants were unable to suckle well at different times during the follow up period and all these were related to acute illnesses.

Details of specific breast feeding problems associated with exclusive breast feeding rates at 4 weeks are shown in table 9. Exclusive breastfeeding was associated with less pain during breastfeeding. (P value <0.001)

Table 9: Impact of breast feeding problems on exclusive breast feeding rates

	All women N=207	EBF n=178	Non-exclusive breastfeeding n=29	RR (95% CI)	P value
Pain during breastfeeding	43/207 (20.8%)	25(14.1%)	18(60.2%)	0.24 (0.15-0.38)	<0.001
Cracked or sore nipples	32/207 (15.5%)	19(10.8%)	13(42.7%)	0.25 (0.14-0.45)	<0.001
Breast engorgement	23/207 (11.1%)	17(9.7%)	6(19.2%)	0.48 (0.21-1.1)	0.10
Infant not able to suckle	12/207 (5.8%)	8(4.7%)	4(12.4	0.40 (0.13-1.2)	0.10
Not enough milk	15/207 (7.2%)	12(6.8)	3(10	0.68 (0.2-2.3)	0.53
Infant does not want to nurse	7/207 (3.4%)	_	7(23.3%)	NA	NA
Mother sick	4/207 (1.9%)	_	4(13.3%)	NA	NA

3.5 MATERNAL KNOWLEDGE OF BREAST FEEDING

Based on breast feeding definition comprising both the appropriate duration (six months) and an accurate knowledge of the term exclusive breast feeding, a total of 145 (70%) mothers were determined to have appropriate breast feeding knowledge. Figure 8 shows that mothers with appropriate breast feeding knowledge were as likely to give plain water or sugar water compared to mothers without breastfeeding knowledge. However, mothers with adequate breast feeding knowledge were less likely to give non-human milk.

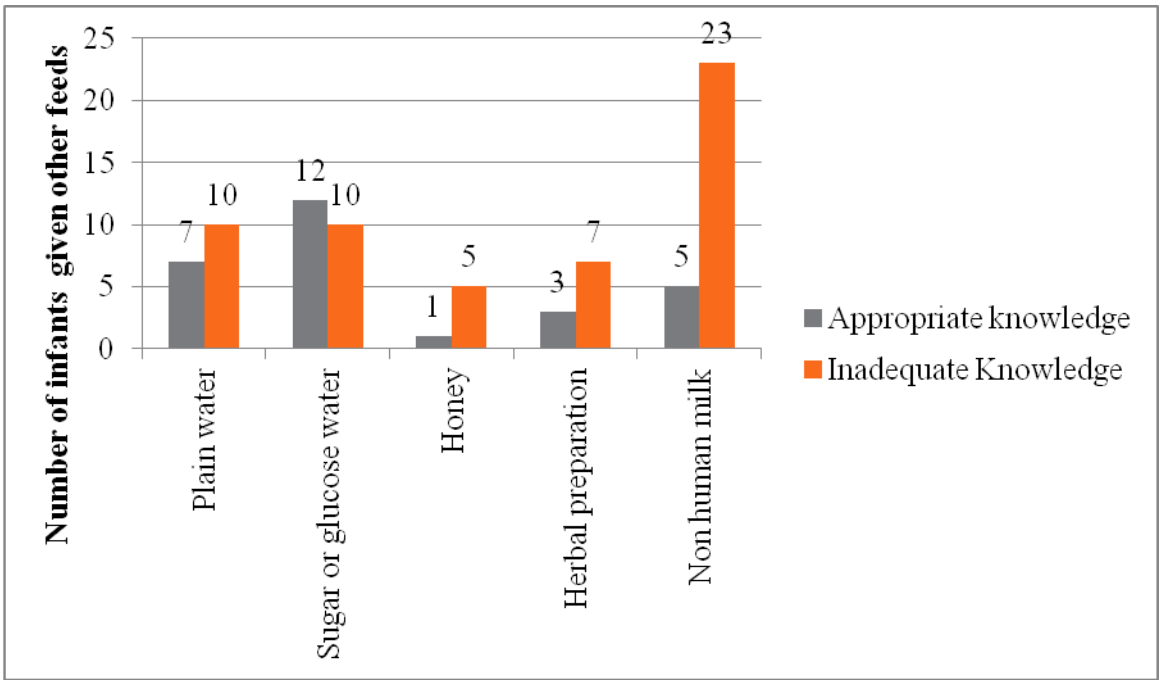

Figure 7: Maternal breast feeding knowledge among participants giving different types of feeds during neonatal period

Table 10 shows that appropriate breast feeding knowledge was not significantly associated with exclusive breast feeding rates at either first or second follows up.

Table 10: Maternal breast feeding knowledge and exclusive breast feeding practices

	Breast feeding knowledge		RR (95% CI)	P value
	Yes (n = 70)	No (n = 137)		
Two weeks follow up				
Exclusively breastfed				
Yes	64(37.6%)	106(62.4%)	1.00	
No	6(22.2%)	21(77.8%)	1.7 (0.8-3.5)	0.12
Four weeks follow up				
Exclusively breastfed				
Yes	62(35%)	115(65%)	1.00	0.37
No	8(26.7%)	22(73.3%)	1.3 (0.7-3.5)	

Effect of Maternal knowledge on use of feeds other than breast milk

Babies of women with good knowledge had significantly reduced risk of being exposed to water feed, honey, herbal preparations and non-human milk RR=0.6 [(95% CI0.3,1.01) p= 0.007, 0.01,<0.001], as shown in table 11.

Table 11: Effect of Maternal knowledge on use of feeds other than breast milk

Feeds other than breast milk	Knowledgeable N=145	Not knowledgeable N=62	RR (95% CI	P_{M-H} value
Water	7 (4.8%)	10 (16.1%)	0.6 (0.3,1.01)	0.007
Sugar water	12 (8.2%)	10 (16.1%)	0.8 (0.5,1.1)	0.09
Honey	1 (0.7%)	5 (8%)	0.2 (0.04,1.4)	0.01^{+}
Herbal preparation	3 (2%)	7 (11.2%)	0.4 (0.2,1.1)	0.01^{+}
Non-human milk	5 (3.4%)	23 (37.1%)	0.09 (0.04,0.2)	< 0.0001

+ Fischer's exact value

CHAPTER 4: DISCUSSION

This study was done in a hospital based cohort .The cohort included well mothers and their newborns who were ready to be discharged home. The key findings of this study that aimed to look at the breastfeeding practices among mothers delivering at Naivasha district hospital will be discussed.

Timely initiation of breastfeeding was practiced in 71 % of the post natal mothers. This figure is comparable to a large cohort study undertaken in rural Ghana by Edmont K.M et al where breastfeeding was initiated within the first day of birth in 71% of infants[7]. In the KDHS 2008/2009, timely initiation of breastfeeding was 58%.This was a slight increase from 2003 which was at 52%[21, 22]. The results obtained in this study were higher than the KDHS survey results because the KDHS survey is community based and captures the experience of women who deliver at home.

A large scale community based programme that was done was done in Bolivia and Madagascar between 1999 and 2003 looked at timely initiation of breastfeeding and exclusive breastfeeding rates during the first month of life[23]. In Bolivia, timely initiation of breastfeeding went from 56% in 2000 to 69% in 2001 and reached 74% by the end of 2003. In Madagascar, the initiation rate went from 34% at baseline in 2000 to 69% in 2001, 76% in 2002, and rose to 78% in 2004.[24] our results are comparable to those found in Madagascar at the end of the programme in 2004.

All mothers managed to initiate breastfeeding by the end of 3 days. In the study done in Ghana [7] 1.3% of babies had not initiated breastfeeding by the end of the 3rd day.

Although exclusive breastfeeding rates in our study group are lower (85.5%) than the recommended WHO expectations (90%), the rates are high when compared to those obtained in the study done in Ghana where 70% were exclusively breastfed during the neonatal period.[7] In the

KDHS done in 2008, the percentage of babies 0-1 months of age who were exclusively breastfed was 51.8%.The results found in our study are higher than those of the KDHS[21].

The percentage of mothers practicing predominant breastfeeding in the neonatal period was higher at 2 weeks because more mothers were giving breast milk and sugar solutions, while at 28 days more had introduced non-human milk which is not used in calculating predominant breast feeding rates.

The number of mothers who gave prelacteal feeds was high considering the fact that the recruitment procedure only targeted mothers/infant pairs who were well. Majority of mothers were giving sugar dissolved in water solutions, and a few gave infant formula. These results are higher than that of the study done by Lakati on the effects of prelacteal feeds on full breastfeeding in 5 hospitals in Nairobi where prevalence of prelacteal feeds was 26.8% [25]. Infant formula, water and glucose solution is what was commonly used in his study and that is comparable to what was used in our study at Naivasha. The results are however lower than those obtained in the KDHS 2008/2009 where the use of pre lacteal feeds was at 42% .In the KDHS 2008/2009,the most common pre lacteal feeds given were plain water, sugar water and sugar and salt water. Our results on feed types used are comparable to those found in the KDHS2008/2009 survey.[21]

Naivasha District hospital is a baby friendly hospital that encourages mothers to initiate breastfeeding within the first hour and discourages use of prelacteal feeds; however mothers who clearly demonstrate lack of milk, those who delivered via caesarian section their babies are given infant formula as the mother's milk comes in. Newborns of sick mothers are also given infant formula till the mother is able to express or breastfeed.

The majority of mothers gave prelacteal feeds on the second and 3rd day before their milk came in. Prelacteal feeds were used once or continuously as a supplement to breast milk. In studies done in

India, use of pre lacteal feeds ranges from 62-100% with some mothers discarding colostrum due to traditional beliefs that the initial yellowish milk can harm the baby.[26]

Neonates should suckle at least 8-12 times to maintain flow of milk.

The majority of infants were suckling as recommended for in the neonatal period. The highest frequency was reported during the first 3 days .This is because the mothers had to put the baby to the breast more often to increase stimulation of milk production. The frequency dropped slightly to 95% at 2 weeks but increased to 96% at 4 weeks since the neonates demands had started to increase .Our results are comparable to those done by the KDHS 2008 which concluded that Frequent breastfeeding of children is a common occurrence in Kenya. More than nine in ten (93 percent) infants under six months of age were breastfed six or more times in the 24 hours prior to the survey.[21]

Only 2 mothers' stopped breast feeding .One cited cultural beliefs, since the infant was sick and they had failed to perform certain norms. The mother was counseled on the dangers of stopping to breastfeed but that was in vain. The other mother who had stopped breastfeeding was sick and had to be admitted at hospital. The mother was counseled on the importance of continuing to put the baby to the breast to reestablish milk flow once stable. The rest of the mothers continued to breast feed despite the challenges they were experiencing.

Most of the problems reported by mothers were pain during suckling and a feeling of not having enough milk, these problems were addressed and mothers were referred to the nearest health facility for assistance on breast attachment to prevent nipple cracking and were encouraged to breast feed more or express more milk to prevent breast engorgement. Similar problems were reported by mothers in the study done by Kihara at Kenyatta national hospital[27]. In a study done in Canada on breastfeeding experience of women with major difficulties who use services of a breastfeeding clinic, the main problems identified by mothers included pain during suckling and low milk supply.[28] Therefore pain is a common sited problem across the globe and frequent interaction with

healthcare providers will enable mothers to avoid some of the conditions leading to pain like poor latch, cracked nipples, breast engorgement and breast abscesses.

Knowledge on exclusive breast feeding was good. This is due to the fact that majority of mothers attended ANC and had probably received education on the importance of exclusive breast feeding. However despite the mothers being knowledgeable, they still used prelacteal feeds and introduced water and other milks to their newborns. Our result on knowledge was higher than that of studies done in Nigeria. In one of the studies done in Nigeria on knowledge and practice of exclusive breastfeeding in Kware, adequate knowledge was 39%.[29]

During the phone call interviews, neonates at risk e.g. those refusing to breast feed, those with fevers, or vomiting were identified and the mothers were advised to go to the hospital for evaluation and proper management. This may have contributed to the low mortality in the study group. Mothers also called liberally to consult whenever they had any question concerning the health of the child and/or the mother.

Two babies died in the course of the study. The deaths were between 2 weeks and 28 days. A verbal autopsy questionnaire was not used to ascertain the cause of death. A follow up interview on the mothers later revealed that the children died of neonatal sepsis. One mother of the children who died delayed to initiate breastfeeding and the other mother was giving cow milk to the child. The study done in Ghana showed that16% of neonatal deaths could be saved if all infants were breastfed from day 1 and 22% if breastfeeding started within the first hour[7]. We however cannot conclude that there was an association between delayed initiation of breastfeeding and use of cow milk to the cause of death in the infants. The overall mortality in the group was 0.01%.this figure is low compared to the findings of kihara done at KNH which was 14% of babies before 6 weeks [27]

STRENGTHS OF THE STUDY

The objectives of the study were met.

Adequate sample size was taken to cater for loss of follow up

There was initial contact with the mother infant pairs and follow was done at 2 weeks and at 28 days.

STUDY LIMITATIONS

Loss to follow up- Some study subjects were not reachable by phone – this was limited by obtaining reliable telephone contacts of the mother and someone else to call when the mother was not reachable. However some mothers were still not reachable on both telephone numbers provided. Some study subjects died before the end of the study. Overall there was an 11% loss to follow up. The investigator catered for this by recruiting a number higher than the sample size required.

The information obtained was self-reported and hence the data obtained from mothers concerning breastfeeding practices may not be exactly what was being carried out.

CONCLUSION

Timely initiation of breast feeding (71%), adequate maternal knowledge on EBF (70%) and exclusive breast feeding rate during the neonatal period (85.5%) were above average. However, use of prelacteal feeds was common (30.4%) among mothers who deliver at NDH. The most common problem reported by breastfeeding mothers was pain during feeding (20.8%)

RECOMMENDATIONS

Health care providers should help mothers who deliver at health care facilities to initiate breastfeeding within the first hour of delivery .This can be done by delivering well newborns to the mothers abdomen to encourage skin to skin touch for warmth transfer and helping exhausted mothers to attach babies to the breast.

Mothers who deliver at the hospitals should still be encouraged to exclusively breast feed till 6 months of age while in the community. Mothers should be given telephone contacts of health care providers at discharge to call them in case of any concerns or worries about their breastfeeding newborn and their health.

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TIMELINE

Activities	Specific activities	Duration	Start	End
Proposal development	Literature search, supervisor engagement ,presentation to the department	2months	October 2011	March 2012
Department and Ethics marking and approval	Making adjustments to the proposal	2 months	April 2012	July 2012
Data collection	Data collection	3months	August 2012	October 2012
Data analysis	Data cleaning -Data editing -Feeding the data -Analysis of data	1month	November 2012	December 2012
Data dissemination	Presentations- orals -Report writing -Report editing -Presentation of final report	1month	December 2012	January 2013
Marking and feedback	Report marking by the department.-feedback	1-2 month	March 2013	May 2013

BUDGET

NO.	NAME OF THE ITEM	COST @ ITEM	NUMBER OF ITEMS NEEDED	TOTAL COST
	Pens	15 Kshs	5	75
	Printing(Questionnaires & consent documents)	10shilling	30pages x 1copy	300
	Photocopying	3 Shs/page	9 pages x 250 copies x2 3 pages x 250 copies	4500 750
	Transport	500Kshs/trip /day	x 30 days	30,000
	phone call for mothers(200mothers)	5Kshs/min	207 mothers x20 minutes	20,700
	Subsistence fee (food + AOB)	500 per day	30 days	15,000
	Research Assistants	500 Kshs/assistant	30daysx2 assistants	30,000
	Statistician	10,000Kshs		10,000
	GRAND TOTAL			**111,325**

APPENDICES

Appendix 1: CONSENT EXPLANATION AND FORM

Study title: Practices in feeding the neonates born at Naivasha district hospital

Introduction

My name is Dr. Everlyne Agisa Kegode from the University of Nairobi; Department of Pediatrics and Child Health. I am conducting a study to determine how mothers feed their babies born at Naivasha District Hospital. You are being asked to participate in the study because both you and your baby meet the qualifications to be included in my study.

Voluntary participation

Your participation in the study is voluntary and you are free to withdraw from the study even after recruitment without consequences.

Procedure

Once you agree to participate in my study, I will ask you some questions before you go home using a questionnaire. I will also give you a phone call after 2 weeks, and 28 days to ask you some questions on how you are feeding your baby. I will therefore require that you give me your phone number and of another person to contact when you cannot be reached to contact you for the interviews.

Confidentiality

The phone number and address will not appear on the questionnaires and instead the questionnaire will have serial numbers. The form containing your information will be kept in a locked cabinet and

I will be the only person with access to the cabinet. The information that will be obtained from the research will be used strictly for research purposes. The locator identification form will be destroyed once the research is complete. All information obtained during the research will be kept confidential by everyone who will participate in it.

Benefits

There are no monetary gains from this study. The findings obtained from the study will be important in educating mothers about breast milk and the importance of exclusively breastfeeding and will be used by the health care providers and policy makers.

Risks

You will not be exposed to any procedures or interventions during this research but you will only be asked questions.

If the questions during the interview in early postpartum life are too overwhelming, we shall abandon the interview without any consequences and may resume at your own convenience.

In case of any questions

If you have any questions regarding the study, feel free to contact me or any of my supervisors or the chairman of the KNH/UON ethics and research committee on tel726300 ext44102

Principal Investigator: Dr.Agisa Kegode Tel No 0721296302

Supervisors: Prof.Nduati, Dr Murila

University of Nairobi, Department of Pediatrics and Child Health

Consent form

I, Mr./Mrs./Ms ----------, the parent

Of (child's name) ----------.

agree to the above and give consent for me and my child to be included in this study

As explained to me by----------

I understand the purpose of the study and conditions of participation.

Sign---------- Date----------

Witness Sign---------- Date----------

Appendix 2: FOMU YA IDHINI KUSHIRIKI

Maelezo kwa mzazi

Jina langu ni Dk. Agisa Kegode Evelyne kutoka Chuo Kikuu cha Nairobi; Idara ya Pediatrics na Afya ya mtoto.

Nafanya utafiti kuamua mazoea ya kulisha mtoto mchanga kati ya akina mama katika Hospitali ya Wilaya ya Naivasha.

Unaulizwa ushiriki katika utafiti kwa sababu, wewe na mtoto wako mnahitimu .

Hii itahitaji nikuulize maswali katika mwanzo wa utafiti.Nitakupigia simu baada ya wiki mbili na siku 28 kuuliza maswali jinsi unavyolisha mtoto wako.

Nitahitaji unipe nambari yako ya simu na ya mtu mwengine pia iwapo hautapatikana kwa nambari yako ili niweze kuwasiliana na wewe.

Ushiriki wako katika utafiti ni wa hiari na uko huru kutoka kwenye utafiti hata baada ya kuajiri bila matokeo. Hakuna faida ya kifedha kutokana na utafiti huu.

Taarifa zitakazopatikana katika utafiti zitakuwa na umuhimu wa kuelimisha akina mama juu ya maziwa na umuhimu wa kunyonyesha na kusaidia watunga sera na wanahuduma wa afya.

Kama utazidiwa na maswali tutawachana nayo bila matokeo yeyote na tunaweza kurudia ukiwa tayari tena.Taarifa zote zitawekwa siri.

Kama una jambo la kimaadili kuhusiana na utafiti, unaweza wasiliana na mwenyekiti wa kamati ya maadili na utafiti katika KNH, simu 726300 - upanuzi 44355.

Mkuu wa uchunguzi: Dk. Agisa Kegode. Simu 0721 296302

Wasimamizi: Prof. Nduati, Dk murila. Wa chuo kikuu cha Nairobi

IDHINI YA MZAZI WA MTOTO

Mimi----------ni mzazi

wa----------Nimekubali kushiriki katika utafiti huu kama nilivyo elezewa na Daktari

----

Sahihi ---------- Tarehe----------

Shahidi ---------- Tarehe ----------

Appendix 3 : LOCATOR IDENTIFICATION FORM

1. Mother infant pair number ----------
2. Mother's name----------
3. Baby's name----------
4. Telephone number----------
5. Residence----------
6. Incase you can not be reached on phone who else can the investigator call ?

Name----------

Telephone number----------

Appendix 4 : INITIAL QUESTIONNAIRE

1. Mother-infant pair number ☐

2. Age of the mother in completed years----------

3. Date of birth of the baby _____

4. Marital status

☐ Married

☐ Single

☐ Divorced

☐ Separated

☐ Widowed

5. How many rooms? One ☐

Two ☐

Three ☐

>Three ☐

6. Amount of house rent per month in Kenya shillings

Less than 3 thousand ☐

3-5 thousand ☐

☐

5-10thousand

10-15thousand

Above 15 thousand

7. Do you have electricity Yes No

8. Flooring material

Earthen

Cement

Wood

9. Level of education

Tertiary

Secondary complete

Secondary incomplete

Primary complete

Primary incomplete

None

10. Employment status? Employed Not employed

11. If employed

Professional /technical

Skilled manual

Unskilled manual ☐

Domestic services ☐

Agriculture ☐

Small scale business ☐

12. Did you attend ANC during pregnancy? Yes ☐

No ☐

13. If yes from which gestation month

14. What is your source of information on breastfeeding?

You mother in law ☐

Media ☐

Medical staff ☐

Friends ☐

15. How many children do you have? ----------

15.1 How many children do you have aged less than 5 years?

Indicate number of children _____

16. What is exclusive breastfeeding? (Mother to explain in details what should be given to the child and what should not be given) …….....

……..

17. For how long should exclusive breastfeeding be carried out? ……

Appendix 5: FEEDING PRACTICES QUESTIONNAIRE

Mother infant pair no……..

Questionnaire completed by (name): _____

Questionnaire completed on (Day/Month/Year): . |___|___|/|___|___|/|___|___|___

A .FEEDING HISTORY

1. Breast-feeding Initiation and Frequency

- Breast-feeding initiation (first calling only)

1.0 Did you ever breast-feed your infant? 1 = yes, 2 = no ……|___| |___|

(if no, end of the questionnaire)

2.0 How soon after delivery was your infant first put to the breast?

Days |___|___|

Hours |___|___|

Minutes |___|___|

3.0 Did you give the first milk that comes from your breast to your infant? |___|

1 = yes, 2 = no

4.0 Did your infant receive anything to eat/drink *before* your milk came in (breasts full of milk)?

1 = yes, 2 = no, 9 = don't know *(if no, go to question 5)*

4.1 What did he receive? If item quoted yes, specify (if applicable), give reason(s) and who recommended giving it to infant. (If no, go to next item)

Given	Reason 1	Reason2	Who recommended
1. Plain water	|___|	|___|___|	|___|___| _____
2. Sugar or glucose water	|___|	|___|___|	|___|___| _____
3. Honey	|___|	|___|___|	|___|___| _____
4. Herbal preparation	|___|	|___|___|	|___|___| _____
5. Non-human milk	|___|	|___|___|	|___|___| _____
6. Semi-solid food	|___|	|___|___|	|___|___| _____
7. Vitamins, mineral drops	|___|	|___|___|	|___|___| _____
8. Liquid medicine	|___|	|___|___|	|___|___| _____
9. Other	|___|	|___|___|	|___|___| _____
10. Other	|___	|___|___|	|___|___| _____

Codes Reasons

1. Child was crying

2. Child was hungry

3. Child was thirsty

4. Child had colic/gas/abdominal pain

5. Child had diarrhea

7. Child was not well

8. Child refused to breast-feed

9. Mother was tired

10. Mother was sick

11. Mother had breasts problems

12. Mother had no milk

13. Mother died

14. Traditional belief

90. Other reason

99. No reasons offered

Codes who recommended

1. Infant’s mother herself
2. Husband
3. Infant’s grand-mother
4. Health worker
5. Somebody else
6. Don’t know

5.0 At any time after leaving the hospital, have you or anyone else given your infant anything to eat or drink other than your breast milk?

1 = yes, 2 = no, 9 = don't know ⌊___⌋

5.1 What was given to the infant? If item quoted yes, specify (if applicable),

Indicate the number of days it has been given; give reason(s) and who recommended giving it to infant

	Given	How many days	Reason 1	Reason2	Who recommended
(If no, go to next item)					
1. Plain water	|___|	|___|___|	|___|___|	|___|___|	_____
2. Sugar or glucose water	|___|	|___|___|	|___|___|	|___|___|	_____
3. Honey	|___|	|___|___|	|___|___|	|___|___|	_____
4. Herbal preparation	|___|	|___|___|	|___|___|	|___|___|	_____
5. Non-human milk	|___	|___|___|	|___|___|	|___|___|	_____

6. Semi-solid food |___| |___|___| |___|___| |___|___| _____

7. Vitamins, mineral drops |___| |___|___| |___|___| |___|___| _____

8. Liquid medicine |___| |___|___| |___|___| |___|___| _____

9. Other |___| |___|___| |___|___| |___|___| _____

Codes Reasons

1. Child was crying

2. Child was hungry

3. Child was thirsty

4. Child had colic/gas/abdominal pain

5. Child had diarrhea

6. Child was not growing well

7. Child was not well

8. Child refused to breast-feed

9. Mother was tired

10. Mother was sick

11. Mother had breasts problems

12. Mother had no milk

13. Mother died

14. Traditional belief

90. Other reason

99. No reasons offered

Codes who recommended

1. Infant’s mother herself
2. Husband
3. Infant’s grand-mother
4. Health worker
5. Somebody else
6. Don’t know.

- **Breast-feeding Frequency (both calls)**

6.0 Are you breast-feeding your infant now? 1 = yes, 2 = no …….|___| |___|

7.0 How many times did you breast-feed (put infant to the breast) yesterday during the daylight hours? *Code '99': can't specify*|___| |___| |___|

8.0 Was the infant breast-fed on demand during the daylight hours? …….___| |___|

1 = yes, 2 = no

8.1 Was the infant breast-fed on demand during night-time hours? …….|___| |___|

1 = yes, 2 = no

9.0 How many times did you breast-feed yesterday during the night-time? *Code '99': can't specify* |___ |___| ___|

2. CEASSATION OF BREAST-FEEDING (both calls)

10.0 Have you stopped breast-feeding every day and night your infant? ……|___|

1 = yes, 2 = no

11.0 How old was your infant when you stopped breast-feeding him every day and night? *(Code □ 00' days for never breast-feed, and code □ 99' days for don't know)*

Months |___|___|

Weeks |___|___|

Days |___|___|

12.0 If known, specify date (day/month/year): ……..

|___|___|/|___|___|/|___|___|___|___|

13.0 Why did you stop breast-feeding your infant?

01 infant old enough ……..……..|___|

02 infant no longer wanted to breast-feed …….. |___|

03 infant did not want to eat solid foods …….. |___|

04 pregnancy …….. |___|

05 fear of transmitting HIV …….. |___|

06 advised by health provider …….. |___|

If yes, specify who… _____

07 advised by husband/partner ……..…….. |___|

08 advised by other person …….. |___|

If yes, specify who… _____

09 separation from infant due to work ……....|___|

10 separation from infant for other reasons …….. |___|

if yes, specify: …… _____

11 mother too sick to breast-feed …….. |___|

if yes, specify: …… _____

12 infant too sick to breast-feed ……..|___|

If yes, specify… _____

13 infant not growing well …….. |___|

14 other reason …….. |___|

if yes, specify: …… _____

B.**BREAST-FEEDING RELATED PROBLEMS (both calls)**

14.0 Have you experienced any problems breast-feeding your infant? ……..|___|

1= yes, 2 = no *(if no, go to23.0)*

14.1 What problems have you experienced?

Event occurred?		Infant's age	when occurred?
01	breasts engorged ……..…..	|___|	|___|___|/|___|___|___|
02	pain during feeding ……..	|___|	|___|___|/|___|___|___|
03	infant does not want to nurse……..	|___|	|___|___|/|___|___|___|
04	infant nurses too often…….	|___|	|___|___|/|___|___|___|
05	infant not able to suckle……..	|___|	|___|___|/|___|___|___|

06 not enough milk……..... |___| |___|___|/|___|___|___|

07 cracked nipples, sore nipples …….. |___| |___|___|/|___|___|___|

08 breast or areola abscesses/oozing sore….. |___| |___|___|/|___|___|___|

09 mastitis or breast inflammations …….. |___| |___|___|/|___|___|___|

10 nipple exudate/rash/itching …….. |___| |___|___|/|___|___|___|

12 Mother sick …….. |___| |___|___|/|___|___|___|

If yes, specify… _____

13 Other ……. |___| |___|___|/|___|___|___|

If yes, specify… _____