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Knowledge and Practices on Early Breastfeeding among Mothers Delivering at a Teaching and Referral Hospital in Uasin-Gishu County, Kenya

Boor FK[1]*, Ogada IA[2] and Kimiywe J[2]

[1]Department of Foods, Nutrition, and Dietetics, University of Eastern Africa, Baraton, Kenya

[2]School of Applied Human Sciences, Department of Food, Nutrition, and Dietetics, Kenyatta University, Kenya

Abstract

Background: The World Health Organization and United Nations International Children's Emergency Fund recommend initiation of breastfeeding within 30-60 minutes of delivery, giving colostrum, and not giving pre and post-lacteals to newborns. Practices are however, still sub-optimal. For instance, the prevalence of timely initiation of breastfeeding within 1 hour of birth is 43% globally, 48% in sub-Saharan Africa, 62% in Kenya. The aim of this study was to establish the knowledge and practices on early breastfeeding among mothers who deliver at a Teaching and Referral Hospital, in Uasin-Gishu County, Kenya.

Methods: This was a cross-sectional study with mixed methods in data collection and analysis. A total of 285 mothers delivering at a Teaching and Referral Hospital were consecutively sampled. Face-to-face interviews were conducted with mothers using a researcher-administered questionnaire, while Key Informant Interviews were conducted with the nutritionist and the nurse in charge of the maternity ward. The early breastfeeding practices studied were time of initiation of breastfeeding, giving of colostrum, pre and post-lacteals, as well as exclusive breastfeeding.

Results: Majority of the mothers were knowledgeable on: timely initiation of breastfeeding (74.6%), giving colostrum (91.9%), while 99.6% and 91.2% knew that pre and post-lacteals should not be given respectively. The mothers who practiced timely initiation of breastfeeding were 96.5%, 98.2% gave breast milk as the first feed, 90.5% did not give post-lacteal, while 94% gave colostrum. There was an association between maternal early breastfeeding knowledge and practices.

Conclusion: Most mothers had good knowledge and practiced the recommended early breastfeeding.

Keywords: Breastfeeding, Colostrum, Pre-lacteals, Post-lacteals, Breastfeeding initiation, Knowledge, Practices

Abbreviations

BFHI: Baby Friendly Hospital Initiative; EBF: Exclusive Breastfeeding; UNICEF: United Nations Children's Fund; WHO: World Health Organization.

Background

Early breastfeeding practices have been shown to affect infant health, development, growth and survival [1]. It is for this reason that the World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF) and Kenya's Ministry of health recommend that after delivery, optimal early breastfeeding practices should be encouraged by the healthcare professionals in health facilities [1]. These optimal early breastfeeding practices include: initiating breastfeeding within 30 minutes to an hour of delivery; giving colostrum(the thick yellowish secretion from the breast within the first three days of the infant's life) [2]; not giving pre-lacteals(solids or liquids given to a newborn before initiation of breastfeeding hence before colostrum, for instance milk, honey, sugar water or herbs) [2]; not giving post-lacteals(solids or liquids given to a new born after initiation of breastfeeding, within three days of delivery) [2]; as well as exclusive breastfeeding (EBF) (giving a newborn breastmilk only, and nothing else except vitamins, mineral supplements or other prescribed medication) [3].

Optimal practices such as timely initiation of breastfeeding, feeding colostrum, exclusive

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*Correspondence:
Boor FK, Department of Foods, Nutrition, and Dietetics, University of Eastern Africa, Baraton, P.O. Box 2500-30100, Kenya.
Tel: +254721876127
E-mail: kiplagatboor@gmail.com

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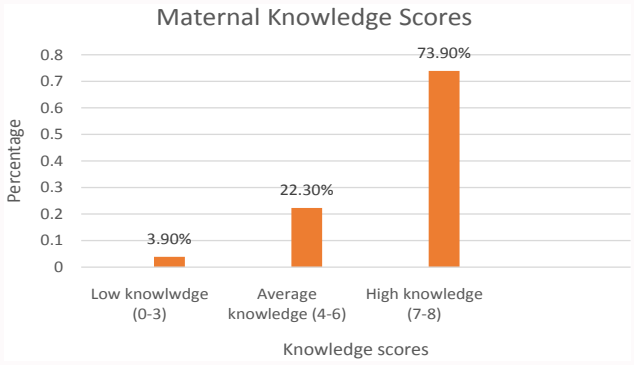

Figure 1: Maternal knowledge scores on early breastfeeding,

breastfeeding, skin-to-skin contact between mother and newborn, and rooming-in(newborn staying in the same room with the mother), can prevent up to 1.4 million deaths of children under 5 years of age annually, and about 10% of the annual disease burden [4 and 5]. Further, an association between giving of pre-lacteal feeds and delayed breastfeeding has been reported [6]. The reduction of neonatal morbidity and mortality may lead to the attainment of the goal 3 targets of the Sustainable Development Goals of ending preventable deaths of newborns and children under 5 years of age by 2030.

Several strategies have been developed internationally and in Kenya to promote and protect early breastfeeding. These include the International code of marketing of breast-milk substitutes, the Innocenti declaration, the Global IYCF strategy, Kenya IYCF strategy and the international Baby-Friendly Hospital Initiative (BFHI). In Kenya, the Ministry of health standard procedures recommend health education to mothers during the antenatal period, at delivery and after delivery at mother and child health clinics and at community level by Community Health Volunteers. Several studies however, show that the strategies advocating that mothers be supported and helped with breastfeeding in maternity care facilities influence early breastfeeding practices directly at the hospital level [7], but this influence reduces after the mother leaves the health facility.

The prevalence of timely initiation of breastfeeding is 43% globally, 45% in sub-Saharan Africa, 60% in Eastern and Southern Africa and 53% in the least developed countries [8]. In Kenya, the rate of initiation of breastfeeding within 1 hour is 58% of children ever breastfed, while 42% are given something before breastfeeding (pre-lacteals). In the former Rift valley province of Kenya, where this study was conducted, 63.7% of children ever breastfed are initiated to breastfeeding within 1 hour [9]. Statistics indicate that early breastfeeding practices are still sub-optimal in Kenya, specifically in Uasin-Gishu County, and this presents a challenge to meeting the Sustainable Development Goals (SDGs) and Kenya Vision 2030 in this area.

Early breastfeeding practices are partly influenced by maternal knowledge, as these help a mother make decisions on whether and how she will breastfeed. It is therefore, important for healthcare systems to strengthen interventions that improve maternal knowledge and skills on the recommended practices. There is limited literature on the early breast feeding knowledge, and practices of mothers who deliver in hospital, and none has been conducted in Uasin-Gishu County. It is against this background that this study was conducted. The findings of this study may benefit stakeholders such as the Ministries of Health, Uasin Gishu county, as well as other organizations concerned with infant and young child health, as it highlights the gaps in early breastfeeding knowledge and practices among mothers delivering at health facilities.

Methods

Research design and location

The study adopted a cross-sectional design applying mixed methods (qualitative and quantitative techniques) in data collection, analysis and presentation.

The study was carried out at a Teaching and Referral Hospital in Uasin-Gishu County, Kenya from from 12th March, 2016 to 2nd April, 2016. The Teaching and Referral Hospital was selected for the study because of its location in the region. Being the second largest referral hospital in Kenya it serves a wide population the central and north rift region, Nyanza and western Kenya regions and also some parts of Uganda. It has a well-established maternity facility which has a bed capacity of 500 beds and conducts up to 12,000 deliveries per year (30 daily) [10]. It has operating rooms for cesarean deliveries, and a neonatal intensive care unit which can care for 100 newborns at any given time [10]. The standard operating procedures at the hospital for a new delivery promote: timely initiation of breastfeeding, giving colostrum, not giving pre and post-lacteals, rooming in, skin-to-skin contact and exclusive breastfeeding. This is done by educating all pregnant and lactating mothers during their visits to the clinics as well as during delivery [11].

Study population

The study targeted mothers 15-49 years of age who had delivered at the Teaching and Referral Hospital but had not been discharged from the hospital after delivery. The average number of births per day in the Teaching and Referral Hospital is 30, with an average of 900 per month [10]. All the targeted mothers with newborns 0-72 hours of age that were delivered at the teaching and referral hospital, and not yet discharged were included in the study. The mothers who delivered through cesarean section, were too weak to respond to questions and those who declined to give informed consent were excluded from the study.

Sample size

The sample size was 283 newborn-mother pairs calculated based on a standard normal deviate at 95% confidence level (1.96), an estimated proportion of mothers in Rift valley who initiate breastfeeding within one hour at 69.4% [9], and a desired level of precision of 0.05 for a target population less than 10,000.

A further ten percent of the calculated sample size was added to cater for non-response.

In addition, two key informants (1 Nurse in charge of the maternity ward and 1 Nutritionist) participated in the study.

Sampling techniques

The Teaching and Referral Hospital was purposively selected because it has a well-established maternity facility, and serves a large population in the North Rift region of Kenya. Cluster sampling was used when selecting the mothers to be interviewed. Mothers' dormitories were divided into clusters, then the clusters were randomly selected. All mothers in the randomly selected cluster were interviewed to participate in the study until the sample size was achieved.

Table 1: Maternal and infant demographic and socio-economic characteristics.

Maternal and infant demographic and socio-economic characteristics		N=283	
		N	%
Age of mother in complete years	Mean ± SD (28.89±6.67)		
	15 – 24	81	28.7
	25 – 34	145	51.2
	35 – 44	55	19.4
	45 -47	2	0.7
	Total	283	100
Marital Status of mother			
	Married	156	55.1
	Single	123	43.5
	Separated	4	1.4
	Total	283	100
Parity	Mean ± SD (2.38±1.51)		
	1 – 2	181	64
	3 – 4	69	24.4
	More than 5	33	11.6
	Total	283	100
Level of education			
	Completed college/university	109	38.7
	Completed Secondary	83	29.4
	Completed primary	59	20.9
	No formal education	31	11
	Total	283	100
Occupation of mother			
	Housewife	101	35.7
	Self-employed	74	26.1
	Professional	54	19.1
	Student	45	15.9
	Farmer	9	3.2
	Total	283	100
Infants' age in hours	Mean ± SD (45.30±18.70)		
	0-24 hours	36	12.7
	25-48 hours	100	35.4
	49-72 hours	147	51.9
	Total	283	100
Sex of infants			
	Male	163	57.6
	Female	120	42.4
	Total	283	100

*Multiple response.

The two key informants were purposively selected because they were the most knowledgeable on early breastfeeding practices at the maternity ward. This is because they had worked in this ward for a period of more than one year and were also in charge of their respective specialties at the ward.

Data collection instruments and procedures

One time face to face interviews were conducted with mothers at the hospital using a validated researcher-administered questionnaire [12 and 13]. These elicited information on:

Table 2: Maternal knowledge on early breastfeeding practices.

Aspects of knowledge		N=283	
		N	%
Importance of breastfeeding*	Knew that breastmilk is nutritious	208	74.6
	Knew that it protects against infections	64	22.9
	Knew that it prevents pregnancy	3	1.1
	Do not know any importance of breastfeeding	4	1.4
Maternal knowledge on baby's first feed	Knew that breast milk only should be the first feed	281	99.6
	Knew that Pre-lacteals should be first feed	2	0.4
Time of initiation of breastfeeding	Within 30 minutes	204	72.1
	Within 1hour	6	2.1
	More than 1hour	73	25.4
Newborns should be given colostrum	Yes	260	91.9
	No	23	8.1
Post-lacteal feeds should not be given to newborns	Yes	25	8.8
	No	257	91.2
Appropriate age to introduce other foods	Correct (at 6 Months)	236	83.4
	Incorrect	47	16.6
How often to breastfeed the baby	On demand	164	58
	At specific times	119	42
Exclusive breastfeeding is recommended	Yes	258	91.2
	No	25	8.8

*Multiple responses given.

1. Maternal and newborn socio-economic and demographic characteristics.

2. Early breastfeeding knowledge among mothers on: the importance of breastfeeding; timely initiation of breastfeeding; colostrum; pre-lacteals; and post-lacteals.

3. Maternal early breastfeeding practices such as time of breastfeeding initiation, giving colostrum, any pre-lacteal feeds given, any post-lacteal feeds given, skin-to-skin contact, and rooming-in.

To enhance the validity and reliability of the questionnaire, a pre-test was conducted with 28 mothers who did not participate in the main study, but had similar characteristics as the study participants. During the pre-test, data was collected twice at an interval of two days from the same participants. A comparison was then made between the responses obtained from both interviews and correlation coefficient of 0.90 (0.80-0.99; 95% CI) was achieved. This indicated adequate reliability of the questionnaire [14].

In addition, two Key informant interviews (KII) were conducted with the nutritionist in her office and the nurse in charge of the labor ward at the nurse's station. Two pre-tested KII guides were used and these elicited information on the prevalent early breastfeeding practices among mothers delivering at the hospital, the policies and standard operating procedures of promoting early breastfeeding at the hospital, and the early breastfeeding challenges faced by the healthcare staff and mothers delivering at the hospital.

Data analysis and presentation

Data was analyzed using Statistical Package for Social Sciences

Table 3: Maternal early breastfeeding practices.

Maternal early breastfeeding practices		N=283	
		N	%
Time of breastfeeding initiation after delivery	0-30 minutes	84	29.7
	31-60 minutes	189	66.8
	After one hour	10	3.5
	Total	283	100
First feed	Breast milk	278	98.2
	Non-breast milk (pre-lacteal)	5	1.8
	Total	283	100
Baby fed colostrum	Yes	266	94
	No	17	6
	Total	283	100
Post-lacteal feeds given	Yes	27	9.5
	No	256	90.5
	Total	283	100
Bottle Fed	Yes	19	6.7
	No	264	93.3
	Total	283	100
Skin to Skin care	Yes	276	97.5
	No	7	2.5
	Total	283	100
Rooming-in	Within one hour	262	92.6
	After one hour	21	7.4
	Total	283	100
Exclusive breastfeeding	Yes	256	90.5
	No	27	9.5
	Total	283	100
Mother skill on positioning and attaching the baby to the breast	Correct	254	89.7
	Incorrect	29	10.3
	Total	283	100

(SPSS) version 23.0. Descriptive statistics including means, frequencies, percentages, and standard deviation were generated for demographic and socio-economic characteristics of the study participants, as well as their knowledge and practices. Chi-square was used to determine the association between categorical data such as the early breastfeeding knowledge and practices. Statistical significance was set at $p<0.05$. The key informant interviews were transcribed verbatim and content analysis conducted by categorizing into key pre-determined themes: the prevalent early breastfeeding practices among mothers delivering at the hospital; the policies and standard operating procedures of promoting early breastfeeding at the hospital.

Logistical and ethical considerations

Ethical clearance was obtained from the Kenyatta University Ethical Review Committee, ethical review number KU/R/COMM/51/566 and the Institutional Research and Ethics Committee of Moi University, approval number 0001541. A research permit was obtained from the Kenyan National Commission for Science, Technology and Innovation (NACOSTI).

Voluntary, informed consent in the form of signatures or thumb prints, was solicited from all participants. Those who declined to participate were excluded from the study. The participants' confidentiality and anonymity was ensured by use of codes as identification rather than names.

Table 4: Association between maternal knowledge and practices.

Aspects of knowledge and practices		N=283		
Knowledge	Practices		Pearson's Chi-square	P value
	Yes	No		
Timely initiation to breast milk	n(%)	n(%)		
Yes	204(72.1)	6(2.1)	0.28	0.599
No	70(24.7)	3 (1.1)		
First feed				
Yes	278(98.2)	4(1.4)	55.80	0.000*
No	0(0.0)	1 (0.4)		
Post-lacteals given				
Yes	10(3.5)	15(5.3)	25.01	0.000*
No	20(7.1)	238(84.1)		
Give colostrum				
Yes	255(90.1)	5(1.8)	94.50	0.000*
No	11(3.9)	12(4.2)		

*Significant at $p<0.05$.

Results

A total of 315 mothers were eligible to participate in this study. Out of these, 285 consented while 30 declined to participate and were therefore excluded. The questionnaire was administered to all 285 mothers who were recruited to participate in the study after signing the consent form. Out of the 285 questionnaires, 2 were incomplete, therefore 283 questionnaires were analyzed. The response rate was 99.3%, a response rate of more than 60% is considered adequate [15]. For the qualitative data, 2 key informants were interviewed and both responded adequately to the questions asked.

Demographic and socio-economic characteristics of the participants

The mean age of the mothers was 28.9±6.7 years, with the youngest and the oldest mother being 15 years and 47 years respectively (Table 1).

About half (51.2%) of the mothers were between 25-34 years of age. Slightly more than half (55.1%) were married, while 64.0% had between 1 to 2 children. The mean number of children being 2.38±1.51. Slightly over a third of the mothers (38.7%) had college or university level of education, while 11% did not have any formal education. About a third (35.7%) of the women were housewives.

The mean ages of the infants was 45.30±18.70 and was determined in hours since delivery. Half of the infants (50.8%) were 49-72 hours of age, 32.9% were 25-48 hours of age while 16.3% were less than 24 hours of age. There were more male infants (57.6%), than females (42.4%).

Maternal knowledge on the recommended early breastfeeding practices

The majority of the mothers knew the importance of breastfeeding, with 74.6% knowing that breast milk is nutritious (Table 2), and the least (1.1%) knowing that it prevents pregnancy by delaying amenorrhea. Almost all mothers (99.9%) knew that breast milk is

the only recommended first feed for the baby after a safe delivery. For timely initiation of breastfeeding, most of the mothers (72.1%) knew that breastfeeding should be initiated within 30 minutes after delivery, while 25.4% did not know the appropriate time to initiate breastfeeding. The majority of the mothers (91.9%) knew that a baby should be fed on colostrum while 8.1% reported that colostrum is not important. For post-lacteals, a majority of the mothers (91.2%) knew that these should not be given to newborns, while 8.8% thought that post-lacteals could be given to the newborns after initiation of breastfeeding. A similar observation was made with exclusive breastfeeding, as 91.2% knew that it is recommended to exclusively breastfeed.

The KII findings pointed out that mothers received information from the healthcare personnel. "*There are manuals used to educate mothers. We also provide brochures and the Mother and child health (MCH) booklets to the mothers. At the back of each booklet there are short well-written instructions on how to breastfeed, the positioning of the baby to the breast and what to do to enable them to produce enough breast milk*" ($KI_{1,}$ 2016). It was also indicated that the information is given both at antenatal and postnatal clinics. "*We educate mothers verbally during prenatal and post-natal visits in groups and one on one when the need arises*" ($KI_{1,}$ 2016).

Maternal knowledge scores on early breastfeeding

In reference to Mucheru et al. (2016) where low knowledge ranged between 0 – 40%, average knowledge 50-70% and high knowledge 80-100%, the knowledge score was calculated for all mothers on aspects of early breastfeeding (Figure 1).

Mothers were scored on the 8 questions as shown in Table 2. Each correct response scored one point while an incorrect response was not awarded any score. A total score was calculated for each participant based on the right answers. Therefore, each mother could score a maximum of 8 points and a minimum of 0 points. Most mothers had a high knowledge on recommended breastfeeding practices as 73.9% scored a total of 7-8 points out of the possible maximum of 8. The mean maternal knowledge score for all mothers' based on individual mother's total score was high at 6.75 with a standard deviation of ±1.26 (Figure 1).

Maternal early breastfeeding practices

Majority of the women initiated breastfeeding within one hour of delivery, with 29.7% initiating within 30 minutes, and 66.8% of mothers initiating after 30 minutes but within an hour after delivery (Table 3).

Similarly majority of the mothers (98.2%) had fed the newborns with breast milk as the first feed after delivery, while 1.8% had given pre-lacteals after delivery. Most newborns (94.0%) were fed on colostrum, while 90.5% were not given any post-lacteals other than breast milk after breastfeeding initiation.

The KII findings also indicated that culture and cultural beliefs played a role in influencing the use of pre and post lacteals by mothers in early breastfeeding stages. According to ($KI_{2,}$ 2016), *"There is a belief that when a baby has been delivered, they have to be given a local herb or local concoction after birth. Mothers believe that it washes the digestive system of the baby. Usually, the mother-in-law comes after the baby has been delivered and secretly gives the concoction*". It was also reported that "*Some mothers think that colostrum is dirty and therefore not safe for the baby and so they discard it. In fact, it is the mother-in-law or the mother's mother who encourage them to express the colostrum and discard it*" ($KI_{1,}$ 2016).

Association between maternal knowledge on early breastfeeding and their practices

Chi-square test was used to test for association between maternal knowledge on early breastfeeding and their practices (Table 4). The aspects of knowledge and practices were timely initiation to breast milk, first feed of the baby, giving post-lacteals and giving colostrum to the baby. There was no association between a mother's knowledge on timely initiation to breastfeeding and her practicing timely initiation to breastfeeding (chi-square: 0.28; p=0.599). Significantly a higher proportion of mothers knew that breast milk is the baby's first food, they also gave breast milk as the first feed (chi-square: 55.80; p=0.000); knew that post-lacteals should not be given to a baby, and did not give pre-lacteals to the babies (chi-square: 25.01; p=0.000). knew that a baby should be given colostrum, they also gave colostrum to the babies (chi-square: 94.50; p=0.000).

The findings showed that there was an association between early breastfeeding knowledge and maternal practices.

Discussion

The international baby-friendly hospital initiative (BFHI) aims to promotes and protect maternal and child health by ensuring that mothers are supported and helped with breastfeeding in maternity care facilities [7]. Giving mothers' information about the benefits of breastfeeding might influence those who have not already made a decision, or those whose decision is not final [17].

The findings of the current study indicate that women were knowledgeable on most aspects of early breastfeeding. Mothers' knowledge on timely initiation was high, where mothers knew that it should be started within an hour of birth. These results are similar to one conducted in Nyando-Kenya which also indicated that mothers' knowledge on the importance of giving colostrum was high which is in agreement with the findings of this study. Mothers knew that pre-lacteals should not be given to the baby, and that babies should not be introduced to other feeds before six months. The study also reported a high percentage on the mothers knowledge on exclusive breastfeeding. A study in in Ethiopia which indicated that women knew that giving pre-lacteal was a means of cleaning the babies stomach differed with the findings of the current study [21].

The early breastfeeding practices which include timely initiation, giving colostrum, and practicing rooming-in have positive benefits to the infants. These are the reduction of neonatal morbidity and mortality, according to FAO, (2007) as cited by a study conducted in India [5]. Exclusively breastfed infants can experience extra benefits if breastfeeding starts within an hour of birth [19]. A study conducted in Nigeria, stated that early breastfeeding has the potential to foster successful establishment and duration of breastfeeding [20]. The study findings indicated that most mothers practices timely initiation to breastfeeding within an hour after delivery, which was similar to an Kenyan study which reported that most of the participants initiated breastfeeding within one hour [21]. The Kenyan study however, covered data on children 0-1 month whereas this study covered the first 72 hours of birth. The higher rates of timely initiation can be attributed to the fact that the mothers delivered at a health facility which is most likely to implement the recommended practice.

The findings of this study indicated that use of pre-lacteals was

very low among the mothers, despite the challenge of mother-in-laws and caretakers bring to the hospital some concoctions to the hospital as reported by the key informants. The rate of giving colostrum was very high in this study as indicated by the study findings, the findings contrasted with studies in Southern Ethiopia, and Nigeria, where some women considered colostrum as expired milk and gave pre-lacteal feeds instead and discarded the colostrum, some even viewed it as pus, and that breastfeeding was commenced after 3 – 6 days [18 and 22].

The rate of rooming-in according to the study findings was good as the World Health Organization emphasizes it and that the activities of the first three days after birth have a significant effect on successful breastfeeding. It improves maternal attachment, increases breastfeeding rates significantly, it also reduces incidences of abuse, abandoning of the infant and failure to thrive [23]. Mothers practiced skin-to-skin care where babies were placed in close body contact with their mothers after birth. A study in the United Kingdom suggested that neonatal staff must encourage and empower parents to care for and form an attachment with their new baby because this will not only boost parents' confidence in handling their babies whilst in hospital but will also increase their competence when the baby is discharged [24].

Limitations of the Study

The study did not observe the early breastfeeding practices but relied on information reported by the mothers. Probing and collecting the data within 72 hours of delivery was however done to minimize recall bias.

Conclusions

Generally, from the study's findings, the rate of initiation of breastfeeding is high, and the use of post and pre-lacteal feeds is low possibly due to the maternal education conducted at the MCH clinics. This can also be attributed to a higher rate of women practicing skin-to-skin contact and rooming-in. The provision of the brochures on early breastfeeding practices by the hospital as reported by the key informants may have influenced their practices on early breastfeeding. The good maternal practices are expected to have a positive outcome for the babies and their mothers. However gaps exist on the influence of culture towards giving traditional herbs (pre and post-lacteals).

Recommendations

The healthcare personnel should continue with education even after mothers have been discharged from the hospital, however they should strengthen areas such post-lacteal education to avoid the influence of culture.

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Availability of Data and Materials

Data and materials will not be shared by the author because the health facility hasn't granted authority and also to preserve participants confidentiality.

Authors' Contributions

FKB conceived and designed the study, supervised data collection, performed data analysis, data interpretation and manuscript preparation. IO critically reviewed it for intellectual content, participated in the designing and supervision of the study and manuscript preparation. JK participated in the designing and supervision of the study as well as manuscript preparation. The authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

Ethical clearance was obtained from the Kenyatta University Ethical Review Committee, ethical review number KU/R/COMM/51/566 and the Institutional Research and Ethics Committee of Moi University, approval number 0001541. A research permit was obtained from the Kenyan National Commission for Science, Technology and Innovation (NACOSTI).

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Authors' Information

Department of Foods, Nutrition, and Dietetics, University of Eastern Africa, Baraton, Kenya. P.O. Box 2500-30100, Eldoret-Kenya.

Department of Food, Nutrition, and Dietetics, Kenyatta University, Kenya. P.O. Box 43844-00100, Nairobi-Kenya.

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