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PREDICTORS OF EXCLUSIVE BREASTFEEDING AMONG MOTHERS WITH CHILDREN AGED 6 TO 12 MONTHS IN MKURANGA DISTRICT, COAST REGION - TANZANIA

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ABSTRACT

Background: *The World Health Organization (WHO) recommends that infants should be exclusively breastfed for the first six months of life to achieve optimal growth and development. Breast milk contains all the nutrients that an infant needs in the first 6 months of life and bioactive factors that augment the infant's immature immune system, providing protection against infection, and other factors that help digestion and absorption of nutrients. Exclusive breastfeeding (EBF) for the first six months of infants' life is a cost effective intervention in saving children's lives especially in developing countries. Despite all the advantages of EBF, in Tanzania many women still do not practice it as recommended. Women's decisions regarding breastfeeding may be influenced by social, environmental, physical and personal factors.*

Main objective: *To explore predictors of exclusive breastfeeding among women with children aged 6 to 12 months in Mkuranga District, Coast Region.*

Methodology: *This was a across sectional study involving 300 mothers with children aged 6 to 12 months and 10 elderly women residing in selected villages of Mkuranga District. The mothers were selected through multistage cluster sampling while the elderly women were conveniently identified within the households where the postnatal mothers were living. Information from the postnatal mothers and the elderly women was collected using a structured interview schedule and a key informant guide respectively. Data was entered and analyzed using Epi Info version 3.5.4 computer software. Bivariate analysis and multiple logistic regressions were performed to identify statistically significant predictors of exclusive breastfeeding.*

Results: *The highest proportion of mothers (81.3%) initiated breastfeeding within one hour after birth. Knowledge of EBF for the first six months of life was relatively high (86%) compared to the EBF practice (7%). In the multivariate analysis, mothers with knowledge on the duration of EBF (OR 5.56, p-value = 0.02) and the principle of emptying one breast first before shifting to the other (OR 18.34, p-value < 0.00) were significantly more likely to practice EBF compared to mothers who did not use this principle. Elderly women played a major role of caring for both newborns and mothers after delivery, but study findings showed that they had insufficient knowledge on EBF.*

Conclusion: *The predictors of EBF on the study area were knowledge on the duration of EBF and the time spent to empty one breast. Strategies targeting on improving breastfeeding knowledge and skills among mothers as well as elderly women may help to improve EBF in Mkuranga District.*

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1.0 BACKGROUND

Exclusive breastfeeding (EBF) is feeding a child with breast milk only and no other foods or liquids, except drops or syrup of medicines prescribed by medical personnel. EBF is superior to non-exclusive breastfeeding with a protective effect against both morbidity and mortality (Kramer and Kakuma, 2012; León-Cava *et al*., 2002). According to WHO and UNICEF, exclusive breastfeeding should start within less than one hour of delivery and must continue up to 6 months of infant's age since it is the only source of nutrients for the babies at that age (WHO, 2017).

Children, especially newborns, are at great risk of malnutrition in the first six months of life when breast milk alone is inadequate to meet their nutritional requirements. Exclusively breastfed children are at lower risk of infectious disease such as diarrhoea and acute respiratory infection (ARI) than infants who are not exclusively breastfed in the first six months of life (Kramer and Kakuma, 2012; Kramer and Kakuma, 2004; Arifeen *et al*.,2001). It has been estimated that exclusive breastfeeding for the first six months could reduce more than 800,000 infant mortality (Black *et al.,* 2013).

Good practice of EBF can prevent 13.8% of all deaths among infants aged less than 2 years and 11.6% of under 5-years children deaths (Rollins *et al.,*2016; Victora *et al.,*2016; Black *et al.,*2013). Despite solid evidence supporting EBF for the first six months of life, its prevalence has remained low worldwide (Diallo *et* al., 2000; Li *et* al.,2005). It was estimated that in 2012, only 35% of infants were exclusively breastfed globally (Cai and Brown, 2012). In Sub –Saharan Africa (SSA), the setting with the highest prevalence of infant and child mortality, suboptimal breastfeeding practices are common (WHO and UNICEF, 2012). Only 36% of SSA infants are exclusively breastfed (Yalçin *et al.,* 2016)]. In Tanzania, the 2015-2016 Demographic Health Survey indicates that only 59% of infants are exclusively breastfed.

A mother can exclusive breastfeed her infant comfortably during the first six months if she is supported in initiating breastfeeding within one hour of delivery (WHO, 2011). She should also understand the correct positioning, how to attach the infant to the breast and when to shift to the second breast after the infant has empted the first. It is also momentous to assist her to have the knowledge and skills on how to express the breast milk and the importance of breastfeeding the infant frequently during the day and night and to continue to breastfeed even when the infant is sick as well as to increase the breastfeeding regularity during and after illness.

Factors influencing women's decision on EBF differ by demographic factors such as maternal age, marital status, education, race, socioeconomic status, cultural factors, parity and number of children at home. Social support and socio cultural factors also have a potential influence on woman's decision to breastfeed (Scott *et al*., 2006; Patil and Yadavannavar, 2011). Maternal attitudes toward breastfeeding and perceptions of infant health benefits of breastfeeding also influence the decision to breastfeed, poor or negative attitudes toward breastfeeding have been shown also to be barriers to initiating and sustaining breastfeeding (Berg and Ball, 2008).

Promoting EBF for the first six months requires involvement of all stakeholders from the national level to community and family level. Tanzania has made some efforts to encourage EBF. These include implementing the National Strategy of infant and young child nutrition, adopting the International Code of Marketing of Breast Milk Substitutes and Designated Products to National Regulations for Marketing of Breast Milk Substitutes and Designated Products. The national regulations provide a legal framework for the provision of safe and adequate nutrition for infants, through the protection, promotion and support of breastfeeding. It also safe guard proper use of breast milk substitutes, when these are necessary on the basis of adequate information through appropriate marketing and distribution.

In these efforts the government enacted the Employment and Labor Relation Act No. 6 of 2004 which provides for 84 paid days maternity leave for an employee who gives birth to one child and 100 days paid maternity leave for an employee giving birth to more than one child without forfeiting annual leave. The employee is also entitled of two hours paid breastfeeding break per day during working hours when she resumes at work.

Although there has been a great deal of research into predictors of EBF in different areas, none has been done in the study area. Since there is limited local data on the predictors of exclusive breastfeeding in the study area, this community based study which explores the predictors of exclusive breastfeeding from mothers with children aged 6 to 12 months in Mkuranga District may help the district in planning community based intervention to promote EBF.

PROBLEM STATEMENT

Exclusive breastfeeding for the first six months of life is now considered as a global public health goal that is linked to reduction of infant morbidity and mortality, especially in the developing world (WHO, 2009). Despite substantial efforts to promote optimal child feeding practices in Tanzania, the prevalence of EBF in infants of 0-6 months has never reached 90% as recommended by World Health Organization

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(Agunbiade and Ogunleye, 2012). The Data available shows that, EBF from 0 to 6 months is 50%. Furthermore, 81% of infants aged less than two months were on exclusive breastfeeding but the proportion declines to 51% among infants between 2-3 months and 23% among those aged 4-5 months. Median duration of EBF is therefore 2.4 months (TDHS, 2010).

Exclusive breastfeeding for the first six months of life is important in developing countries wherein there exists a high burden of disease and low access to clean water and sanitation. Poor EBF practices among mothers in the community is associated with increased infant deaths due to acute respiratory infection and diarrhoea as well as from other infectious diseases (WHO, 2009). Predictors of exclusive breastfeeding vary widely between and within countries. They include urban or rural disparities, age, employment status, higher education, knowledge about breastfeeding techniques, positive attitudes towards EBF and intent to exclusively breastfeed before delivery. Other predictors are partner living with the woman, mode of delivery, birth weight of the infant, health system practices and community beliefs. These factors have all been shown to influence the prevalence of EBF in different areas (Nkala and Msuya, 2011).

Information on the predictors of EBF is, however, limited in different areas in Tanzania including rural settings like Mkuranga District. Thus, this study, aimed at determining the EBF predictors among women with children between 6-12 months of age in this particular district. The study findings provide important information to feed the efforts aimed at promoting EBF in the district.

2.0 METHODOLOGY

Area of study

Mkuranga District is one of the six districts that form the Coast Region. The district is divided into 4 administrative divisions that are further subdivided into 18 wards. It covers an area of 2,432 square kilometers and has an estimated population of 222,921 people (National Bureau of Statistics, 2013). Most of the residents are peasants and are engaged in subsistence agriculture. The cash crops are cashew nuts, coconuts, pineapples and oranges, while the food crops are mainly cassava, rice and beans.

Study Design

This was across sectional study in design using both quantitative and qualitative methods of data collection. The study included all women with children aged 6 to 12 months in the selected villages. Respondents in the quantitative study were recruited using multi-stage cluster sampling technique. The first stage involved random selection of two divisions among the four divisions, and then one ward was randomly selected from each of the 2 divisions. Then 3 villages were randomly selected from each of the 2 wards, giving a total of 6 villages**.** Women who met the inclusion criteria in the households within these 6 villages were eligible to participate in the study. The research team together with local community leaders did a quick household listing exercise of all eligible women. In the respective village households, a maximum of 50 women from each village were randomly selected from the list assuming that the population was more likely the same in each selected village.

The population for qualitative component were the elderly women (women aged 50 years and above) who lived in the same households with mothers who were purposive selected. These women, based on their roles, their infant feeding experiences and knowledge they can exert influence on mothers' decisions to initiate and continue breastfeeding (Grassley *et al.*, 2008).

A total of 10 elderly women were included in the in-depth interview, 6 from Kisiju division and 4 from Mkamba division. The sample size was limited by saturation point of information. During the household quantitative data collection, elderly women aged 50 years and above who were living in the same households with the postnatal mothers were invited to participate in the in-depth interviews. The saturation point was reached after interviewing 6 respondents from Kisiju division and 4 from Mkamba division.

Inclusion and Exclusion Criteria for Qualitative Study Population

All elderly women aged 50 years and above living in the same households with the postnatal mothers were potential respondents for the study. Women who were not living in the same households with the postnatal mothers regardless of their support to these mothers were not included in the study.

Study Instruments

A structured interview schedule was used for the quantitative data collection. This instrument had four sections. The first section comprised of questions that elicited respondents' background information such as age, level of education, place of childbirth, occupation and marital status. The second section focused on child information while the third section concentrated on questions on exclusive breastfeeding whereas the last section elicited mothers' knowledge on breastfeeding including questions on importance of breastfeeding, recommended time for initiating breastfeeding, recommended duration for exclusive breastfeeding, pre-lacteal feeding, what helps the mother to increase

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the flow of milk and knowledge on how to express breast milk. Also factors perceived as encouraging or discouraging exclusive breastfeeding as well as challenges of breastfeeding were included.

For the qualitative data, an interview guide for in-depth interviews with elderly women was used. The main themes related to initiation of breastfeeding, support given to breastfeeding mothers and what these elderly women do in promoting breastfeeding.

Data Collection and Procedures

Participants were first informed about the study and its aim, and those who agreed to participate were included in the study. Face-to-face interviews were conducted at participant's home, at a private spot away from other family members for confidentiality. The information was collected using Kiswahili version of a structured interview schedule because Kiswahili is a major language used in the study area.

Using an interview guide, 10 in-depth interviews with key informants (elderly women) were conducted by the researcher. All these interviews were conducted in Kiswahili language as this is the national medium of communication and people in the Coast Region are usually fluent in this language.

Study Variables

The dependent variable of the study was exclusive breastfeeding. The independent variables for the survey included socio-demographic characteristics such as age, marital status, occupation, level of education and number of children. Others were family influence, knowledge, sources of advice and breastfeeding support. On the other hand, the independent variables for the key informants were breastfeeding experience, knowledge and their roles on support provide to postnatal mothers.

Data Processing and Analysis

The data was cleaned and entered into Epi Info version 3.5.4 in duplicate on daily basis in order to correct any errors encountered during interviews. The duplicates of data files were validated against each other to further verification.

Data was entered and analyzed using Epi Info version 3.5.4 computer software. Respondents who were housewives, peasants and other (students) were coded as unemployed while respondents who were self employed, employed or doing small business were coded as employed in the bivariate analyses. Furthermore mothers who were single, widowed, divorced and separated were coded as living single.

Odds ratio (OR) and their 95% confidence intervals (CI) were used to assess the strength of association between several predictors of EBF. All of the predictors with p- value of < 0.05 in the bivariate analysis were included in the regression model. Multiple Logistic regressions have been performed to get independent predictors for exclusive breastfeeding. A p-value of < 0.05 was taken as significant.

Breastfeeding knowledge covers different issues such as knowledge on the importance of breastfeeding, recommended EBF duration, time for initiating breastfeeding, pre-lacteal feeding, knowledge on things which help mothers to increase the flow of breast milk and knowledge on how to express breast milk. The responses on knowledge were coded as "adequate knowledge" if a mother provided a correct response regarding the specific issue or mentioned at least two possible answers among the pre-listed responses regarding the issue in question. The knowledge response was coded as inadequate if a mother provided none or only one correct response regarding that issue.

Pre-lacteal feeds are those foods given to newborns before breast milk or before breastfeeding is established while breastfeeding social support include all types of support mothers receive after birth in their household which influence breastfeeding.

The in depth interview information was analyzed using content analysis approach. Firstly, the information was translated into English by the researcher. Both English and Kiswahili versions were given to a linguist to ensure proper and actual translation. Subsequently, the field notes were used to verify the translation to preserve the meaning of the participants' words. Data has been examined and categorized by respondent opinions. Finally the information under major and sub-categories was presented through summaries and narrative text based on the study objectives. The qualitative information has also been used to clarify and enhance the quantitative results.

Ethical Considerations

Ethical approval to conduct this study was received from the Research Ethics Committee of the Muhimbili University of Health and Allied Sciences. Permission to conduct the study in the district was provided by the District Medical Officer. At all levels, participants were briefed on the study objectives and their consent was received by giving verbal approval before administering any of the research protocols. In addition, all the participants were informed of their right to withdraw their participation in the study at any stage. All the information was handled confidentially. Feedback of the study results will be provided to the Regional and District Medical Officers, who would be expected to use the findings in designing effective EBF promotion programs in the district.

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Study Limitations

This study was a community-based survey whereby interviews were conducted from house to house. Due to the fact that, infants up to 12 months of age are estimated to be only 4% of the total population, getting 300 mothers with children aged from 6 to 12 months taking into account the limited time was difficult. For this reason a margin of error of 7% was used instead of the commonly used 5% level.

3.0 RESULTS

This chapter presents results from interviews of 300 mothers with children aged 6 -12 months and also in-depth interview from 10 elderly women aged 50 years or more. All respondents who were requested to participate in this study agreed to participate.

Socio-Demographic Characteristics of the Study Population

A total of 300 women participated in the study, with the mean age of 27 years SD $\pm$ 7, range between 15-47 years while a tenth of them were teenagers. The highest proportions of the mothers were married/cohabiting (79.6%), had only primary education (55.7%), were peasants (56.0%) and had one to three children (57.0%) as shown on Table 1.

Table 1: Socio-demographic characteristics of mothers with children aged 6 -12 months

Variable	Number	Percentage
Age (years)		
15 – 19	32	10.7
20 – 24	84	28.0
25 – 29	72	24.0
30 – 34	60	20.0
≥ 35	52	17.3
Education		
Primary school	167	55.7
None	113	37.7
Secondary school	16	5.3
Adult education	4	1.3
Marital status		
Married/ Cohabiting	239	79.6
Single	47	15.7
Divorced/ Widowed	13	4.7
Number of children		
1-3 children	171	57.0
4 – 6 children	103	34.3
7 and above	26	8.7
Occupation		
Peasant	168	56.0
Housewife	64	21.3
Petty business	61	20.3
Employed and others	7	2.3

*Others represent students

Age and sex of respondent's children

The ages and sex of the children of mothers who participated in the survey are displayed on Table 2. Data showed that more than half of the children (57.7%) were aged between 10-12 moths and that there were slightly more female children (53.7%).

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Table 2: Distribution of the age and sex of the children

Variable	Number	Percentage
Age (months)		
6 – 7	63	21.0
8 – 9	64	21.3
10-12	173	57.7
Sex		
Female	161	53.7
Male	139	46.3

Breastfeeding practices among mothers with children aged 6 to 12 months

The highest proportion of mothers 81.3% (244) initiated breastfeeding within one hour after birth; while 23 (7.7%) of them did not remember the time they started breastfeeding their infants. Among the 56 mothers who delayed breastfeeding, the main reasons attributed to this were that the mother was sick (55.4%) followed by 30.4% whose main reason was delayed breast milk secretion.

Pre-lacteal feeding was given to 6.0% of the infants and the most common pre-lacteal feed was plain water as shown on Table 3. The elderly women also emphasized this during the in-depth interview. They insisted that the child should be given warm water for cleansing the throat and remove the dirty in the stomach. Glucose water was another commonly mentioned pre-lacteal feed (33.3%).

"Normally I give warm water to clear and make the throat wet since breast milk at that time is heavy and may dry the throat. This water also helps to remove the dirty in the stomach. In addition, warm water speeds the removal of the dark stool from the intestines of the infant." (KI, 2)

With the exemption of 4 mothers, all the others (98.7%) reported to feed their infants colostrums, the initial milk that comes out of their breast. However, only 21out of 300 mothers (7%) breastfeed their infants exclusively for the first six months. Majority of mothers (45%) exclusively breastfeed their children for 2-3 months; and this was also revealed in the key informant interviews as narrated.

"No, how can a baby survive for six months with breast milk only? They need some cassava porridge, because, it has smooth particles for a child to swallow." (KI, 1)

Table 3: Breastfeeding practices among mothers with children aged 6 to 12 months in Mkuranga District

Variable	Number	Percentages
Initiation of breastfeeding		
Within one hour	244	81.3
2 -4 hour	33	11.0
Don't know	23	7.7
Total	300	100.0
Reasons for delay initiation		
Delay milk secretion	17	30.4
Sick mother	31	55.4
Sick child	4	7.1
Other	4	7.1
Total	56	100.0
Giving pre-lacteal feeds		
Yes	18	6.0
No	282	94.0
Total	300	100.0
Types of pre-lacteal feeds		
Plain water	11	61.1
Glucose water	6	33.3
Cows' milk	1	5.6
Total	18	100.0
Feeding colostrums		
Yes	296	98.7

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No	4	1.3
Total	300	100.0
Exclusive breastfeeding		
Below 2 months	51	17.0
2 -3 months	134	44.7
4 -5 months	94	31.3
At 6 months	21	7.0
Total	300	100.0

Reasons for mothers' not exclusive breastfeed for the first six months

Among 279 mothers who reported not to have exclusively breastfed their children for the first six months of life, their main reasons included baby crying excessively (67%) followed by insufficient breast milk (21.9%). Furthermore, 47.3% decided on their own to introduce other foods while 38.7% reported to have been advised by their mothers/mother in law. Slightly over a tenth (11.1%) of them were advised by their partners as shown on Table 4.

Table 4: Reasons for not exclusively breast feed for the first six months of life and the sources of advice on early complementation (n = 279)

Variable	Number	Percentage
Main reasons		
The baby was crying	187	67.0
Breast milk not sufficient	61	21.9
The baby was growing	25	9.0
Mother/Child was sick and resume to work	6	2.2
Total	279	100.0
Source of advice		
Self	132	47.3
Mother/mother-in-law	108	38.7
Partner	31	11.1
Health workers and others	8	2.8
Total	279	100.0

*others include mother's sister and her sister in law

Knowledge on breastfeeding among mothers with children aged 6 to 12 months

Questions on mother's knowledge were asked to elicit the knowledge on specific issues regarding exclusive breastfeeding. Regarding the recommended time for exclusive breastfeeding, 65% (195) of respondents said that a baby should be exclusively breastfed for the first 6 months of life while a sizeable proportion (10%) was not able to mention the time as shown in Figure1.

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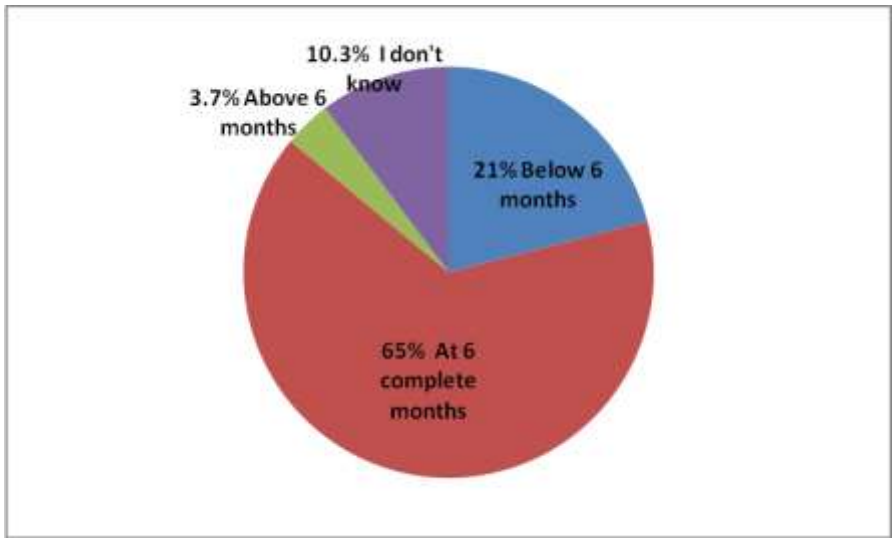

Figure 1: Knowledge on the duration of exclusive breastfeeding

Close to a tenth of the mothers (9.9%) had adequate knowledge on the importance of EBF and 8.9%, who had adequate knowledge on the recommended time for breastfeeding initiation, practiced exclusive breastfeeding to their children. Mothers with adequate knowledge on the importance of breastfeeding were 1.7 times more likely to practice EBF for the first six months compared to those with inadequate knowledge. Also mothers with adequate knowledge on the recommended time for breastfeeding initiation were three times more likely to practice exclusive breastfeeding than those with inadequate knowledge (OR = 3.05 and p-value = 0.07).

Respondents were asked a question on how to express breast milk. Results indicate that only one mother was able to explain how to express breast milk and this mother reported to have attended antenatal clinic in a different district. Expressing breast milk was not a common practice in the study area as was negatively commented by the elderly women:

"How can the human breast milk be expressed? This is a new thing for me at this age" (KI, 3)

"No expression of breast milk in our community. If it happens that a mother gets an emergency and has to leave her infant for some hours, we should feed this baby with other drinks like porridge" (KI, 4) Another KI lamented: *"If it happens someone expresses her milk, it will be the talk of the day in the mosque, in water sources and in the entire community"* (KI, 6)

On the other hand, only knowledge on the duration of exclusive breastfeeding (p-value = 0.01) was shown to be significantly association with breastfeeding practice (p-value > 0.05) as shown on Table 5.

Table 5: Knowledge on breastfeeding among the mothers

Knowledge	EBF Number (%)	Not EBF Number (%)	OR (95%CI)	p-value
Importance of breastfeeding				
Adequate knowledge	8 (9.9)	73 (90.1)	1.74	0.24
Inadequate knowledge	13 (5.9)	206 (94.1)		
Recommended time for breastfeeding initiation				
Adequate knowledge	18 (8.9)	185 (91.9)	3.05	0.07
Inadequate knowledge	3 (3.1)	94 (96.9)		
Pre-lacteal feeds				
Adequate knowledge	0 (0)	15 (100)	0.00	0.28
Inadequate knowledge	21 (7.4)	264 (92.6)		
Duration on EBF				
Adequate knowledge	19 (9.7)	176 (90.3)	0.18	0.01
Inadequate knowledge	2 (1.9)	103 (98.1)		

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The Understanding of Elderly Women on Infant and Young Child Feeding

Breastfeeding is recognized as important nutrient for the infant's growth by grandmothers in the study area. In general they spoke in favour of it and agreed that the breastfeeding should be initiated to the child just after birth and colostrum is very important for the health of the child.

"Breast milk is very important for baby just after the delivery; the yellowish milk protects the baby against diseases and helps the baby to grow well. A baby cannot contact so many diseases when it is breastfeeding". (KI, 5)

However grandmothers appeared to have a negative attitude towards EBF. They admitted that they have heard of the recommendation to exclusively breastfeed for six months from mothers who delivered in the health centers. They argue that the child could not survive on breast milk alone for the first six months and they emphasized that the child should be given warm water at least twice a day from the first day after delivery and continue as the child grows because the warm water will help to remove the dirty in the stomach and smoothen the throat.

"Normally I give warm water to clear and make the throat wet. The throat would be otherwise dry, because milk at that time is heavy. The water also helps to remove the dirty in the stomach as well as speeding up the infant to remove the dark stool."(KI, 2)

They believed that the baby is thirsty, the milk is not enough for the baby, and at least they need something heavy to feed their baby that will last much longer. The main complementary food mentioned by all was cassava porridge with the view that the smoothness of this type of porridge is appropriate for the child from first month of birth.

"No,Breast milk alone? How can a baby survive for the six months with breast milk alone? They need some porridge. We normally give cassava porridge because it has smooth particles that can be easily swallowed by a child". (KI, 1)

"It is impossible for the baby to survive for six months on breast milk only, the baby needs other foods. Let us say that when the baby reaches 2–3 months is able to eat, so why not give the baby food like soft porridge". (KI, 9)

"When I advised my daughter to give her baby porridge after 1 month, she refused; she said that she was told at the clinic not to give the baby any food until 6 months. However when the baby reached 2 months she herself prepared cassava porridge for her baby because the breast milk was not enough at that time".(KI, 6)

The elderly women disputed that the problems identified by health workers as malnutrition among children are not really problems caused by poor breastfeeding or feeding practices but rather due to "dirty" breast milk from her/his mother. They argued that nowadays mothers continue with sexual intercourse and breastfeeding their babies at the same time, as opposed to the old past days when breastfeeding mothers completely refrained from sexual intercourse and their babies grew well and healthily.

"The problem of poor health among the children is not due to infant feeding is caused by the bad habits of the young parents, they prefer sex than the health of their children. Sexual intercourse contaminates the breast milk and makes it bad, so it affects the health of the baby". (KI, 5)

They blamed the introduction of family planning as the source of influence of that habit. One elderly woman said that:

"This is not contributed to women alone but even their partners, as they do not consider the health of the children, because 40 days after delivery they start sleeping together. Only those who use condoms protect the breast milk from that dirty but other methods prevent pregnancy but affect the health of the child. This is the major problem in our community"

"The main source of this behavior is the introduction of artificial family planning methods which protect pregnancy without consideration of the young children who feed on their mothers' breasts" (KI, 5).

The issue of continuing breastfeeding when the mother was pregnant was raised. All key informant interviewees argued that a new pregnancy would turn the milk 'poisonous' and hence it would be dangerous to breastfeed the child. On the other hand, they argued that the child should be taken to the tradition healer if the mother is recognized to have continued breastfeeding when she is pregnant otherwise the child would die.

"*The mother should stop breastfeeding immediately when she identifies that she is pregnant, because the breast milk can affect the health of the child at that time"* (KI, 6)

"The child who has been breastfeed when her/his mother is pregnant should be taken to the traditional healer for treatment and cleaning otherwise his/her health will deteriorate or even may die" (KI, 7)

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Role of Elderly Women in Promoting Exclusive Breastfeeding in the Community

As it is shown in the Figure 2, 79.3% of mothers were assisted by elderly women at home after delivery. Even the elderly women admit that the mothers depend a lot on their support from pregnant up to 2 years of child age, so the elderly women are the most important players in transmitting knowledge about breastfeeding to the mothers.

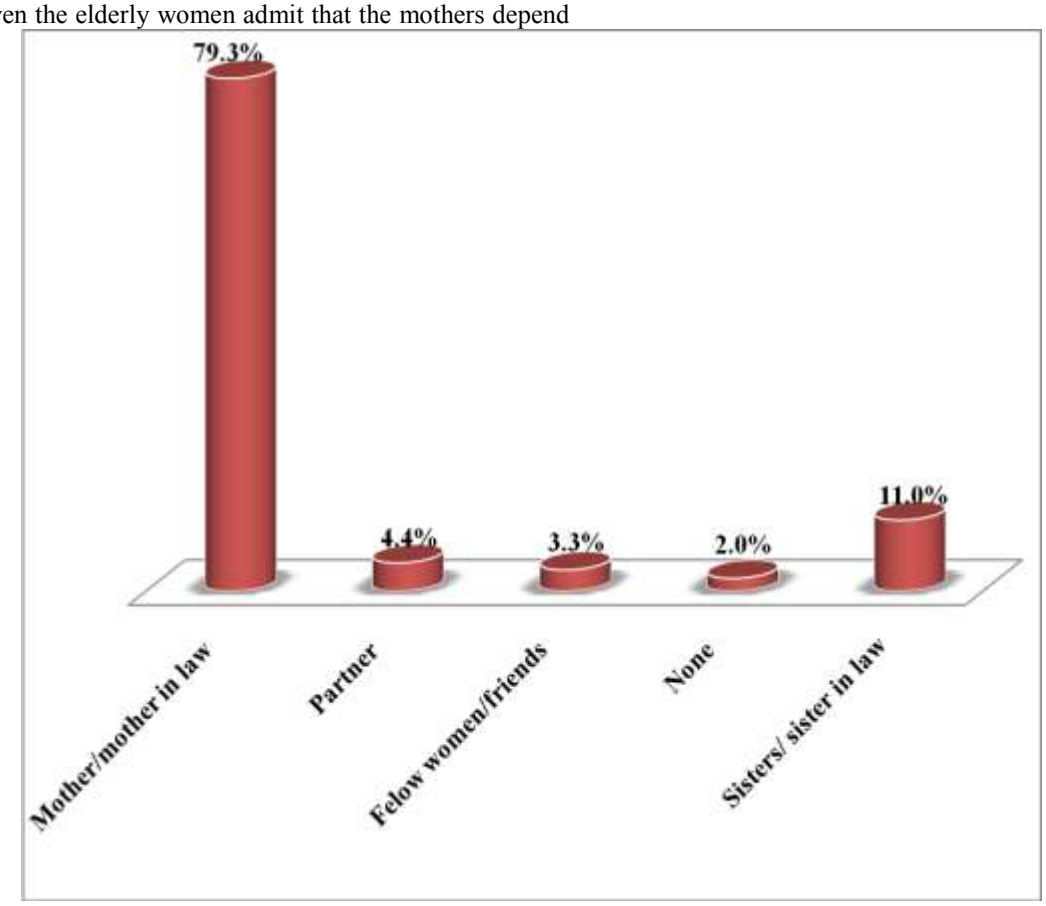

Figure 2: Type of persons assisting mothers after delivery

Association between socio-demographic characteristics and exclusive breastfeeding among the mothers

Employment status, time spent to breastfeed on one breast before shifting to the other and knowledge on how to express breast milk were found to have significant association with EBF in the bivariate analysis (p-value = 0.03 and OR 0.36). Other socio-demographic variables such as maternal education level, place of delivery and method of delivery had no significant association with exclusive breastfeeding. However health facilities delivery and increase in education level decrease the likely to practice of EBF among mothers so remained as protective factors against EBF (OR< 1 but p-value < 0.5).

On the other hand mothers who were either married/cohabiting and those who were not assisted by their mothers or mother in laws and those with four children or more were slightly more likely to practice EBF than those who were not married, assisted by mother/mother in law in the postnatal period and those with one to three children. However, none of these variables had statistically significant association with EBF practice as shown on Table 6.

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Volume: 7 | Issue: 5 | May 2021|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2021: 8.047 || ISI Value: 1.188

Table 6: Association between socio-demographic and other characteristics with exclusive breastfeeding practices (n = 300)

Variables	EBF Number (%)	Not EBF Number (%)	OR (95%CI)	p-value
Education level				
None	11 (9.7)	102 (90.3)	0.52	0.14
Educated	10 (5.3)	177 (94.7)		
Marital status				
Married & cohabited	17 (7.1)	222 (92.9)	1.09	0.87
Living single	4 (6.6)	57 (93.4)		
Occupation				
Employed	8 (12.9)	54 (87.1)	0.37	0.03
Not employed	12 (5.2)	220 (94.8)		
Place of delivery				
Health facilities	19 (7.4)	238 (92.6)	0.61	0.51
Home	2 (4.7)	41 (95.3)		
Mode of delivery				
Normal	19 (7.0)	254 (93.0)	0.94	0.93
Caesarean section	2 (7.4)	25 (92.6)		
Time spent to breastfeed on one breast				
Empty one breast before shifting to the other	13 (38.2)	21 (61.8)	0.05	0.00
Shift to the other breast before empty the first	8 (3.0)	258 (97.0)		
Knowledge on the important of breastfeeding				
Adequate knowledge	8 (9.9)	73 (90.1)	0.58	0.23
Inadequate knowledge	13 (5.9)	206 (94.1)		
Knowledge on EBF duration				
Adequate knowledge	19 (9.7)	176 (90.3)	0.18	0.01
Inadequate knowledge	2 (1.9)	103 (98.1)		
Number of children				
1 – 3 children	9(5.3)	162 (94.7)	0.54	0.17
4 and above	12 (9.3)	117(90.7)		
Support at home after delivery				
Mother/mother in law	16 (6.7)	222 (93.3)	0.82	0.71
Others	5 (8.1)	57 (91.9)		

Predictors of Exclusive Breastfeeding

The multivariate analysis show that, time spent to breastfeed one breast and knowledge on the duration of exclusive breastfeeding was the only significant predictors of exclusive breastfeeding (p-value < 0.01 and 0.02 respectively). Mothers who are empting one breast before shifting to the other breast are 18 times more likely to practice exclusive breastfeeding than those who shift the baby to the other breast before empty the first during breastfeed.

Furthermore mother with adequate knowledge on the duration of exclusive breastfeeding are 5.5 times more likely to exclusive breastfeed her baby for the first six months than those with inadequate knowledge on the duration of EBF as shown on Table 7.

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Table 7: Logistic regression for the predictors of exclusive breastfeeding

Variable	OR	95% CI	p-value
Occupation			
Employed	2.99	(1.20, 7.44)	0.11
Not employed			
Time spent to breastfeed one breast			
Empty one breast before shifting to the other	18.34	(6.76, 49.77)	< 0.01
Shift to the other breast before empty the first			
Knowledge on the duration on EBF			
Adequate knowledge	5.56	(1.27, 24.35)	0.02
Inadequate knowledge			

4.7 Challenges of exclusive breastfeeding among mothers in the community

Lack of correct EBF information/knowledge is the major challenge of exclusive breastfeeding identified by 86.7% of mother s in the study area followed by poor traditions and customs.

Table 8: Challenges of exclusive breastfeeding

Challenges (n = 300)	Yes (%)	No (%)
Lack of correct EBF information/ knowledge	86.7	13.3
Poor tradition and customs on EBF	30.7	69.3
Mother/mother in law influence	13.7	86.3
Partner influence	6.3	97.6
Short maternity leave	0.3	99.7

4.0 DISCUSSION

Breastfeeding practices among mothers with children aged 6 to 12 months in Mkuranga District.

Exclusive breastfeeding for the first six months of the life of a child is now considered a global public health goal that is linked to reduction of infant morbidity and mortality, especially in the developing world (WHO, 2009). In Tanzania breastfeeding is the norm, but exclusive breastfeeding is not widely practiced. Water in addition to breast milk, may be given to quench a baby's thirst or simply by tradition.

The study revealed that only 7% of mothers with children aged 6 to 12 months practiced exclusive breastfeeding for the first six months. The main reasons for early complementation were excessive crying of a child (67%) and insufficient breast milk (21.9%). When a child cried, it was assumed that it was not satisfied with the mother's breast milk and hence crying for more heavy food. Similar findings have also been documented in a study done in Bolivia (McCann and Bender, 2006). When other foods are introduced, the frequency of breastfeeding is reduced leading to decreasing breast milk production and higher likelihood of early cessation of breastfeeding.

This study shows that majority of children started complementation at the age between 2-3 months, and that the initial food was usually cassava porridge. Such early complementary foods apart from being deficient in important nutrients are also likely to be contaminated during preparation in addition to digestive problems. They also reduce the uptake of breast milk which is the only recommended food for such infants. These finding is consistent with that of Tanzania Demographic and Health Survey which show that eleven percent of children below 2 months of age, 33 percent of children age 2-3 months, and 64 percent of children age 4-5 months are given complementary foods (TDHS, 2010).

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Knowledge on breastfeeding among mothers with children aged 6 to 12 months in the community

The knowledge of EBF for the first six months was relatively higher (65%) compared to the practice. This is because mothers lack knowledge on the technique to practice exclusive breastfeeding. WHO asserts that a mother could carry out exclusive breastfeeding comfortably during the first six months if she is supported in initiating breastfeeding within one hour of delivery. She should also understand the correct positioning and how to attach the infant to the breast and when to shift to the second breast after the infant has emptied the first. It is also momentous to assist her to have the knowledge and skills on how to express the breast milk and the importance of breastfeeding the infant frequently during the day and night and to continue to breastfeed even when the infant is sick as well as to increase the breastfeeding regularity during and after illness (Lewallen, 2006).

The majority of mothers lack adequate breast feeding knowledge such on empting the first breast before shifting to other breast, how to express breast milk, sign that show that the baby is well positioned while breastfeeding and the important of breastfeeding. The shortage of knowledge among mothers may contribute to low EBF practices in the community. This was also reported by the study done by Shirima *et al* that, adequate and appropriate knowledge about breastfeeding issues has been shown to be associated with high rates and a longer duration of exclusive breastfeeding (Shirima *et al.*, 2001).

The understanding of elderly women on infant and young child feeding

Grandmothers' own infant feeding experience and knowledge can influence mothers' decisions to initiate and continue breastfeeding or not (Iliff *et al.*, 2005; Grassley and Eschiti, 2008). Family opposition, especially from grandmothers and other elderly women is the major constraint reported by mothers as a deterring factor in practicing EBF (Uchendu *et al.*, 2009).

Result from this study showed that elderly women in Mkuranga District believed that the child should be given water from the first day of birth. Also they report that breast milk alone is not enough for the child for the first six months of birth, that's why they usually advise the mothers to feed their children cassava porridge from first months after birth. This finding is similar to that reported by the Tanzania Demographic and Health Survey which show that, in Tanzania the practice of feeding children with any solid or semi-solid foods starts early in life. Eleven percent of breastfeeding children in the first two months receive some kind of solid or semi-solid foods (TDHS, 2010).

The study revealed that elderly women believed that breast milk cannot be expressed and were surprised by this "new idea". Also they believed that if a breastfeeding woman is engaged in sexual intercourse the quality of her breast milk will deteriorate and therefore breastfeeding will harm the child. This strong negative belief is the main obstacle leading to the misinterpretation of malnutrition problems in the community. The lack of knowledge among elderly women has contributed a lot in impeding promotion of EBF in different areas. For instance, study done in Cameroon observed that even when women had adequate knowledge about the recommendation to EBF for six months, grandmothers are not actively involved in information, education and communication (IEC) activities on EBF and such initiatives largely target mothers (Kakute *et al.*, 2005). Among grandmothers, lack of information on and support for EBF have been reported as a significant barriers to the continuation of breastfeeding (Omari *et al.*, 2003).

The roles of elderly women in promoting exclusive breastfeeding in the community

Mother-in-law's support act as modifiers and insulators for a breastfeeding mother from social and psychological points of view (Agunbiade and Ogunleye, 2012). Ekström *et al* (2003) emphasizes the importance of grandparents support in increasing the duration of breastfeeding. In their study done in Sweden they found that, women whose mother told them about their breastfeeding history breastfed longer than women whose mothers did not. The study suggested that providing an opportunity to grandmothers to discuss their breastfeeding perceptions with mothers was a helpful intervention to support breastfeeding (Ekström et al., 2003).

This study revealed that elderly women are the one who provide support to the mother and new child for the first three months after birth. Close to 79% of mothers were assisted by elderly women at home after delivery. Several studies conducted in African countries have documented the importance of elderly women in childcare and infant feeding. Studies in Mozambique and Malawi, for example, show that baby's grandmothers are particularly influential regarding infant feeding. Generally they highlighted the lack of autonomy and decision making power among young mothers, as decisions on infant feeding significantly in extended family (Bezner *et al.*, 2008; Arts *et al.*, 2010). The community believes a lot on elderly women on the issue related to infant and young childcare including infant feeding, so any efforts geared

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towards promotion of EBF should also targeting that group.

Association Between Socio-Demographic Characteristics and Exclusive Breastfeeding

Exclusive breastfeeding was not influenced by socio-demographic variables in the study area. These included maternal educational levels, age, occupation and marital status. These findings were similar with earlier findings from Morogoro which reported that mothers background factors has no significant association with exclusive breastfeeding (Shirima *et al.*, 2001). Also other study done on Kigoma Region reported that there was no association between several socio-demographic factors (age, education, income, marital status, parity or employment) and EBF (Nkala and Msuya, 2011).

Predictors of Exclusive Breastfeeding Practices Among Mothers

Knowledge on the duration of EBF, employment and the time spent to breastfeed on one breast before shifting to the other had significant association with exclusive breastfeeding in the bivariate analysis. However employment has no significant association when adjusted in the multivariate analysis. The reason for this is probably that employment may depend on education level. Another predictor of EBF was knowledge on the EBF duration. This findings differ with that obtained from study conducted in Kigoma Municipal whereby knowledge about EBF and place of delivery had strong significant association with EBF in multivariate analysis (Nkala and Msuya, 2011).

Most dependent variables studied had no significant association with exclusive breastfeeding in multivariate analysis. The only predictor with strong significant association with EBF was the time spent to empty one breast, whereby mothers who reported to take adequate time to empty one breast were more likely to practice exclusive breastfeeding ($p< 0.01$) as compared to those who shifts their infants to the other breast before empting the first one.

Challenges of Exclusive Breastfeeding Among Mothers in the community

The World Health Organization recommends that women throughout the world should provide only breast milk for their children for the first six months of their life and continue to breastfeed, while introducing complementary foods, until children are two years old or longer (WHO, 2011). Despite this recommendation, only 7% of mothers in the study area do breastfeed exclusively for at least six months. Mothers are faced with multiple challenges as they strive to practice EBF, the major ones relating to lack of correct EBF information/ knowledge and poor tradition and customs on EBF.

Similarly, lack of correct knowledge on EBF was found to be among major challenges of EBF in Turkey, where more than one-third of mothers in the study reported that they stopped exclusive breastfeeding before six months because they believed that their milk would not provide adequate nutrition (Yesildal *et al.*, 2008). In Malawi poor tradition and customs were reported as the challenge of EBF, whereby grandmothers were likely to give supplementary root infusions to infants based on the belief that breast milk alone would not satisfy an infant's hunger (Bezner *et al.*, 2008).

A similar study conducted in Mozambique also found that, lack of knowledge about breastfeeding influenced most women to start practicing mixed feeding, including the introduction of water, traditional medicines and porridge to their babies, before they reached six months of age. Further observations in the same study indicated that women sometimes doubt the feasibility of EBF and lack conviction that a baby can grow healthily until the age of six months on breast milk alone (Arts *et al.*, 2010).

5.0 CONCLUSION AND RECOMMENDATION

Generally majority of mothers in Mkuranga District were not practicing exclusive breastfeeding (EBF) for the first six months. Findings indicate that most mothers had sufficient knowledge on the duration of EBF but they lacked the information on the breastfeeding techniques that promote EBF. The predictors of EBF in the study area were knowledge on the duration of EBF and the time spent to empty one breast, whereby mothers who emptied the first breast before shifting to the other were more likely to practice EBF compared to those who shifted their infants to the other breast before empting the first one. Elderly women played a major role in caring for the mother and newborn after delivery, but they had insufficient knowledge on EBF.

There is a need to introduce community-based interventions aiming at improving exclusive breastfeeding in the district that will incorporate elderly women. This is because such women play active roles in encouraging or discouraging exclusive breastfeeding practices among mothers.

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