

# Determinants of exclusive breastfeeding in Kilimanjaro region, Tanzania

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**Abstract:** *Background:* Exclusive breastfeeding (EBF) practice is safe and simple intervention in improving child health and growth. However the practice of EBF is still low especially in developing countries. *Objective:* The objective of this paper is to assess the factors associated with EBF among women with infants' aged 0-5 months in Kilimanjaro region. *Methods:* This was a population based cross sectional study conducted between June 2010 and March 2011 in Kilimanjaro region to investigate local factors for adverse child development. A structured questionnaire was used to collect socio demographic data, breastfeeding history and reproductive information from mothers. Recall since birth was used to estimate EBF prevalence. Multivariable logistic regression was used to assess the factors associated with EBF among women with infants' aged 0-5 months in Kilimanjaro region. *Results:* Out of 462 women, 95% (n=437) were still breastfeeding their infants during the study period. About 29% of mothers with infants aged 0-5 months reported to practice EBF during the study period. In multivariable logistic regression, advise on breastfeeding after delivery (adjusted odds ratio, AOR (2.1; 95% CI: 1.2, 3.6), mothers with infants aged 2-3 months [AOR=0.5; 95%CI: 0.3, 0.8] and mothers with infants aged 4-5 months [AOR=0.1; 95%CI: 0.1, 0.2] remained associated with EBF of 0-5 months. *Conclusion:* Intervention using women who have succeeded to practice exclusive breastfeeding to educate other women who are lactating may be one of the strategies that may help to increase the practice of EBF in Kilimanjaro region.

**Keywords:** Exclusive Breastfeeding, Health Care Advice, Kilimanjaro, Tanzania

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## 1. Introduction

World Health Organization (WHO) recommends optimal breastfeeding practices to promote healthy growth and development of the child [1]. The practices include initiation of breastfeeding within one hour after delivery, exclusive breastfeeding (EBF) up to six months of the infants' life and after six months complementary feeding with adequate nutritious foods and continued breastfeeding up to the age of two years after birth [1]. Early initiation of breastfeeding i.e. breastfeeding within 24hours after birth is reported to prevent infections and 22% of neonatal death [2]. EBF i.e. giving infant breast milk only for the first six months of the infants life [1] has many health benefits for the child and mother.

The benefits of EBF for the child are well documented including prevention of acute respiratory infections (ARI) and diarrhea which are the leading cause of under five deaths [3-7]and for the mother, EBF is reported to delay return to fertility, reducing the risk of ovarian and breast cancer and postpartum haemorrhage [1].

Tanzania is one of the countries that have been implementing programs to promote proper breastfeeding practices. The programs include baby friendly hospital initiative adopted since 1992, prevention of mother to child transmission of HIV (PMCTC) adopted since 2004 and national guidelines for infant and young child feeding since 2003. Despite these efforts EBF is not widely practiced; only 50% of infants are exclusively breastfed up to six months [8].

This shows that infants are introduced to complementary feeding before reaching the age of six months.

Antenatal care attendance, place of delivery, skilled birth attendance utilization, breastfeeding education, alcohol, education level, maternal age and area of residence are among factors that have been shown to influence EBF practices [9-13]. These factors vary between developed and developing countries and within the country. This study aim to assess the determinants of exclusive breastfeeding among women with infants aged 0-5 months in Kilimanjaro region.

## 2. Materials and Methods

This population based cross sectional study was part of a larger study that was conducted from June 2010 to March 2011 involving mothers with children aged 0-36 months in all 7 districts of Kilimanjaro region. The larger study was conducted to determine the developmental norms of children and investigate local risk factors for poor child development in Kilimanjaro region [14]. The region has a population of 1,376,702, of whom 335,790 are women of reproductive age (15-49 years) and 42,661 infants. The region has an annual population growth rate of 1.6% [15]. The largest part of this population lives in the rural areas (75%) and depends on agriculture and livestock keeping. There is wide coverage by health facilities that provide reproductive and child health services including antenatal care, delivery, postnatal care (family planning and immunization) growth monitoring and preventive activities.

According to the 2010 TDHS report, attendance for reproductive health services is high; antenatal (ANC) coverage is 100%, delivery in the health facility 86.7% and postnatal care 48.4% compared to the national level of 96%, 50% and 30% respectively. In addition, 55.2% of infants are breastfed within one hour of birth, 92.7% within 24 hours after birth, and the median duration of EBF is 2.4 months [8].

Multi-stage proportionate to size sampling was used to select participants from all seven districts of the region. A standardized questionnaire was used to collect socio-demographic, reproductive, breastfeeding history and partner information during the interview. Estimation of EBF was based on recall since birth. The methods used for this study have been elaborated elsewhere [9, 14]. The analysis for this part of the study was limited to women who had ever breastfed, and with infants aged 0-5 months at the time of interview.

### 2.1. Data Analysis

Data were analyzed using Predictive Analytical Soft Ware (PASW) version 18. Exclusive breast feeding was measured using report of exclusive breastfeeding from the mother. Mothers who did not introduce liquids/semisolids to their infants aged 0-5 months were categorized to have practiced exclusive breastfeeding. Descriptive statistics were used to summarize the data. Logistic regression analysis was performed to control for confounders and all factors with a p value of <0.05 in the univariate logistic regression were

included in the multivariate analysis model.

### 2.2. Ethics

The study received clearance from National Institute of Medical Research (NIMR) certificate number 938. Permission to conduct the study was sought from Regional and district medical offices and from each respective village government. All women who participated in the study gave their written informed consent.

## 3. Results

### 3.1. Socio Demographic Characteristics of Respondents

A total of 462 mother infant pairs were included in this analysis; 82.7% (n=382) were living in the rural areas, 85.7% (n=396) of the mothers were married or cohabiting and 56.9 % (n=263) had 2-4 children (Table 1). Their age ranged 16-45 years; median age of 27.0 (SD=6.7). The mean infant age was 3.15 (SD=1.40) and 51.1% (n=236) of the infants were males.

**Table 1.** Socio demographic characteristics of women and their partners in Kilimanjaro, n=462.

Variable	N	%
Mother		
Age		
15-24	167	36.1
25-34	200	43.3
35-49	95	20.6
Education level(n=461)*		
None/primary incomplete	24	5.2
Primary complete	384	83.1
Secondary or higher	53	11.5
Marital status (n=461)*		
Married/cohabiting	396	85.7
Single	57	12.3
Separated/divorced/widowed	8	1.7
Number of children (n=461)*		
one child	114	24.7
2-4 children	263	56.9
5+ children	84	18.2
Partners information		
Age (n=396)*		
15-24	42	9.1
25-34	199	43.1
35-49	155	33.5
Education level (n=432)*		
None/primary incomplete	13	2.8
Primary complete	323	69.9
Secondary or higher	96	20.8
Residence		
Rural	382	82.7
Urban	80	17.3

\*-variable with missing information

### 3.2. Breastfeeding Practices

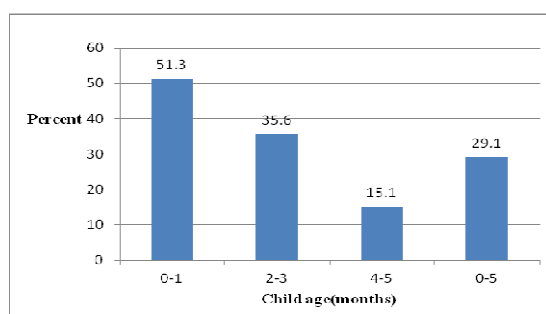


Figure 1. Exclusive breastfeeding prevalence by age

About 29% (n=135) of the mothers with infants aged 0-5 months reported to practice EBF during the study period, Figure 1. Ninety five percent of mothers (n=437) were still breastfeeding their infants at the time of interview. Seventy seven percent of mothers (n=355) reported to have initiated breastfeeding within one hour after delivery.

Predominant feeding was practiced by 54% (n=248) of the mothers. Infants were given water at the mean age of 57 days.

### 3.3. Factors Associated with Exclusive Breastfeeding

Table 2. Factors associated with exclusive breastfeeding in Kilimanjaro, N=462.

Variable	N	n (% practiced EBF)	Crude OR (95% CI)	Adjusted OR (95% CI)
Mothers information				
Age				
15-24	167	46(27.5)	Reference	-
25-34	200	62(31.0)	1.2(0.8-1.9)	
35-45	95	27(28.4)	1.0(0.6-1.8)	
Years of education (461)*				
Less than seven years of education	24	5(20.8)	Reference	-
Seven years of education	384	113(29.4)	1.6(0.6-4.3)	
Secondary and above	53	16(30.2)	1.6(0.5-5.2)	
Alcohol intake (461)*				
No	284	81(28.5)	Reference	-
Yes	177	53(29.9)	1.1 (0.7-1.6)	
Area of residence				
Rural	382	115(30.1)	Reference	
Urban	80	20(25)	0.8(0.4-1.3)	-
Health related information				
Place of delivery (460)*				
Hospital	429	128(29.8)	Reference	-
Home	31	7(22.6)	0.7(0.3-1.6)	
Assistance during delivery (459)*				
Assisted by skilled birth attendant	430	128(29.8)	Reference	-
Assisted by traditional birth attendant	17	4(23.5)	0.7(0.2-2.3)	
Assisted by others(alone, neighbours)	12	3(25.0)	0.8(0.2-3.0)	
Attendance during ANC(461*)				
No	7	1(14.3)	Reference	-
Yes	454	134(29.5)	2.5(0.2-21.1)	
Advice on breastfeeding during ANC attendance(449)*				
No	137	28(20.4)	Reference	
Yes	312	103(33.0)	1.9(1.2-3.1)	1.7(0.9-3.0)
Advice on breastfeeding after delivery(460)*				
No	191	39(20.4)	Reference	
Yes	269	95(35.3)	2.1(1.4-3.3)	2.1(1.2-3.6)
Child characteristics				
Child gender				
Male	236	72(30.5)	Reference	-
Female	226	63(27.9)	0.9(0.6-1.1)	
Child age in months				
0-1	77	41(51.3)	Reference	
2-3	179	63(35.6)	0.5(0.3-0.9)	0.5(0.3-0.8)
4-5	206	31(15.1)	0.2(0.1-0.3)	0.1(0.1-0.2)

\*-variables with missing information

CI-confidence interval

OR-odds ratio

In univariate logistic regression mothers who received breastfeeding advice during ANC odds ratio [OR=1.9; 95% CI: 1.2-3.1] and after delivery [OR=2.1; 95% CI: 1.4-3.3] had higher odds of exclusively breastfeeding than those who did not receive breastfeeding advice. Mothers with infants aged 2-3 [OR=0.5; 95% CI: 0.3-0.9] and mother with infants aged 4-5 months [OR=0.2; 95% CI: 0.1-0.3] months had lower odds of practicing exclusive breastfeeding than mothers with infants aged 0-1 month. Other factors like maternal age, marital status, occupation, area of residence, parity, education level and partners education level were assessed but they were not significantly associated with EBF for the first 0-5 months (Table 2).

In multivariable logistic regression mothers who received advice on breastfeeding after delivery had significantly higher adjusted odds ratio of EBF [AOR=2.1; 95% CI: 1.3-3.6] than those who did not receive breastfeeding advice. Mothers with infants aged 2-3 months [AOR=0.5; 95% CI: 0.3-0.8] and mothers with infants aged 4-5 months [AOR=0.1; 95% CI: 0.1-0.2] had lower odds of EBF than those with infants aged 0-1 months (Table 2).

## 4. Discussion

The findings of this study show poor practice of EBF in Kilimanjaro region. Health worker advice and child age were factors that were associated with EBF practice among women with infants aged 0-5 months.

The prevalence of EBF (29%) among infants aged 0-5 months in Kilimanjaro is low, with only half (51.3%) of those aged 0-1 months being exclusively breastfed. This coverage is off the target of 80% by 2015 as stipulated in the National Road Map Strategic Plan to accelerate the reduction of maternal and child deaths [16]. Optimal breastfeeding practices are estimated to reduce the total of child deaths by 11.6% as reviewed by Black *et al* (2013). Tanzania has managed to reduce under five mortality rate from 158/1000 live births in 1990 to 68/1000 live births in 2011. The target of 56/1000 live births by 2015 might be reached if the strategies to improved child nutrition example EBF are strengthen and scaled up.

A positive finding in this study was the higher prevalence of breastfeeding initiation within one hour after birth. Almost 8 out of 10 women reported to have started breastfeeding within one hour while the TDHS shows breastfeeding within one hour has decreased from 59% in 2004-05 to 49% in 2010 [8,17]. Early initiation of breastfeeding within 24 hours has been associated with reduction of neonatal deaths by 22% [2, 18]. According to countdown report (2013), Tanzania is not on track to reduce neonatal mortality (NMR) as the current NMR is 26/1000 live birth while the target is to reduce NMR to 19/1000 live birth by 2015 [19]. The presence of and advice by skilled health providers are important to encourage women to initiate breastfeeding early.

In this study the odds of EBF decreased with increase in child age. This is similar to previous observations from

TDHS reports. The TDHS 2010 reported that EBF prevalence was 80% among infants aged 0-1 month and fell to 23% in those aged 4-5 months [8]. In this region women receive special postpartum care and this practice might contribute to improving EBF rates for younger infants. It might be that once the infants are older (2+ months) women feel breast milk is not enough and introduce complementary foods as reported in Ethiopia [20]. Or the need to go back to work or income generating activities contributes to early introduction of complementary food [20, 21].

Mothers who received advice on breastfeeding from health care workers after delivery had higher odds of exclusively breastfeeding than those advised by traditional birth attendants (TBA) or family members. Women might have a strong belief on the advice given by health care workers. Health care workers have been reported to be the key information personnel regarding infant and young child feeding and their word is believed to be correct especially in the rural community [22-24].

This study had the limitation; we did not investigate the cultural practices that might influence exclusive breastfeeding in the region. A recall bias on exclusive breastfeeding duration may have affected our study results. Mothers might not remember the exact time when complementary feeding was initiated as the information collected was based on mothers report on breastfeeding history. The strength of this study was that we collected information from the whole of Kilimanjaro region so the results of this study can be generalized to the population.

## 5. Conclusion

The study showed EBF is rarely practiced in this setting and is still far from the 80% stipulated to be achieved by 2015 in the country. The results shows that more effort is needed to promote the practice of EBF in the region. An intervention using women who have succeeded to practice EBF to educate other women groups may be one of the strategies that may help to increase the EBF practice in the region. More research is needed to women knowledge and attitudes regarding EBF and cultural factors that can influence EBF practice in the region.

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## Authors' Contributions

MM, JGU, SEM and BSP participated in study design, MM, THH, JGU participated in data collection. MM, DJD

and SEM analysed and interpreted the results. MM wrote the manuscript and all authors read the manuscript and approved its final version for publication.

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