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DETERMINANTS OF BREAST FEEDING PRACTICES AMONG MOTHERS ATTENDING PUBLIC HEALTH FACILITIES, MEKELLE, NORTHERN ETHIOPIA; A CROSS SECTIONAL STUDY

Hailemariam Berhe*[1], Bazie Mekonnen [2], Alemayehu Bayray [1] and Haftu Berhe [1]

Department of Nursing, College of Health Sciences, Mekelle University [1], Mekelle, Ethiopia
Department of Nursing and Midwifery, College of Health Sciences, Addis Ababa University [2], Mekelle, Ethiopia

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Correspondence to Author:

Hailemariam Berhe

Department of Nursing, College of Health Sciences, Mekelle University, Mekelle, Ethiopia

E-mail: aidhbk@gmail.com

ABSTRACT

Background- Breastfeeding and good nutrition for children are essential for achieving the Millennium Development Goals, particularly the goals relating to child survival. Even though, most mothers in Ethiopia breastfeed their babies, they do not always follow the recommendations of the "National Strategy for Infant and Young Child Feeding".

Objective- The aim of this study was to assess determinants of breastfeeding practices among mothers' of children aged less than 24 months attending governmental maternal and child health clinics in Mekelle town.

Methods- Institution based cross sectional study was carried out among five health facilities selected using simple random sampling technique. Data was collected by interviewer administered structured questionnaire and it was entered, cleaned and analyzed by using SPSS for windows version 16.0. The proportion was used to describe the results and it was presented in the form of figures, tables and texts. The binary logistic regression model was used to test the association between dependent and independent variables.

Result- A total of 361 mothers with their index child were interviewed. The ever breastfeeding rate in this study was 98.9%. The timely initiation rate of breastfeeding and exclusive breastfeeding were 77.9% and 60.8%, respectively.

Conclusion and recommendation-: A range of characteristics affects the practice of timely initiation of breastfeeding and exclusive breastfeeding. Coordination, strengthening and sustaining of the existing strategies and approaches for further improvement of optimal breastfeeding practice is recommended.

INTRODUCTION: The World Health Organization has described breastfeeding as an unequaled way of providing ideal food for the survival, healthy growth and development of infants and young children; it is also an integral part of the reproductive process with important implications for the health of mothers. As a global public health recommendation (according to WHO and UNICEF), infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond [1, 2].

It is also recommended that breastfeeding should begin within one hour after birth. Feeding of colostrum should be promoted and prelacteal feeds discouraged. Breastfeed on demand, that is, as often as the infant wants, day and night, at least 8 times in 24 hours will provide more milk as suckling stimulates milk production 2.

If breastfeeding is continued on-demand until 2 years of age or beyond it continues to be an important source of energy (35-40% of energy needs), protein and micronutrients.

In addition, continued breastfeeding along with complementary foods during this period results in a decreased risk of morbidity and mortality especially in populations with high risk of contamination [3].

Adequate nutrition during infancy and early childhood is essential to ensure the growth and development of children to their full potential. Thus, optimal infant and young child feeding practices rank among the most effective interventions to improve child health [4].

The period from birth to two years of age is important for optimal growth, health and development, especially since it is during this period that children are particularly vulnerable to growth retardation, micronutrient deficiencies, and common childhood illnesses [4, 5].

Despite the recommendations, worldwide, only 39 percent of newborns are put to the breast within one hour of birth, and only 37 percent of infants less than six months of age are exclusively breastfeed in 2008 ([6, 7].

Reviews of studies from developing countries showed that infants who are not breastfed are 6 to 10 times more likely to die in the first month of life than infants who are breastfed [8].

Recent studies in Nepal and Ghana (2008) suggested that the initiation of breastfeeding within the first hour of birth could prevent about 20% of neonatal deaths [9, 10].

All in all, breastfeeding interventions have the potential to prevent 13 percent of all under five deaths in developing areas of the world, ranking it as the most important preventative approach for saving the life of millions of children; out of this 23% of deaths are preventable as a result of continued breastfeeding in the 6-24+ months age group. While, appropriate complementary feeding practices would result in an additional 6% reduction in under five mortality [6, 8, 11].

Cognizant of its impact on health, breastfeeding and good nutrition for children are recognized as essential for achieving the Millennium Development Goals, particularly the goals relating to child survival, such as reducing child mortality by two third between 1990 and 2015 and eradicating extreme poverty and hunger [12, 13].

There are several reasons for poor breastfeeding practices in Ethiopia, including traditional and cultural beliefs, low education levels, heavy workload of mothers and place of delivery [14, 15].

According to the Ethiopian demographic and health survey 2005, in Tigray regional state the Percentage of children who started breastfeeding within 1 hour and within 1 day of birth was 52.9 and 73.7 respectively. In addition, the percentage who received a pre-lacteal feed was 30.6 [5].

This study is aimed therefore at assessing the determinants of breastfeeding practice among mothers of infant and young children attending governmental maternal and child health clinics in Mekelle town.

METHODOLOGY:

Study setting: The study was carried out in Mekelle town, Tigray regional state, northern Ethiopia, which is located at 783km from the capital Addis Ababa. The total population of Mekelle town is estimated to be 215,546 according to the 2007 population and household survey. The dominant religion is orthodox Christian followed by Muslim. There are private and governmental health facilities in the town. There are 8 health centers, one referral hospital and three general hospitals owned by government and 4 general hospitals, 38 clinics owned by private organizations.

The study was conducted from October, 2010 to May, 2011. Institution based cross sectional study design was used and the study population was all mothers of children aged 0 to 24 months attending government owned MCH clinics during the study period.

The sample size for this study was calculated using a formula for a single population proportion.

Five health facilities were selected by simple random sampling from the total of 10 health facilities that was providing MCH service during the study period. Study subjects were obtained proportionally to the client flow from each facility and interviewed using systematic sampling technique.

Structured questionnaire was developed according to the WHO guideline for feeding infants and young children. Five nurses and one supervisor were trained for two days by the principal investigator about the purpose of the study and how to interview the subjects. Interviewer administered face to face data collection technique was implemented in the selected health facilities and it took 12 days. The dependent variables were **the timely initiation of breastfeeding** and **Exclusive breast feeding** and the independent variables were:

Socio-demographic variables- Age, marital status, residence, occupation, maternal educational status, ethnicity, religion, monthly income, spouse educational status, information access, sex of the child and age of child

Health service related factors- Attendance of antenatal care services, number of antenatal visits, Provision of advice on breastfeeding by healthcare staff during ANC, postnatal care service

Obstetrics and Medical variables- Place of delivery, birth attendance, Mode of delivery, birth order, Parity and birth interval.

To assure the quality, the research questionnaire was prepared in English version and translated into Tigrigna (local language) and back to English by two different experts for consistency. Data collection was carried out by trained nurses with a similar previous experience in doing so. Ten percent of the collected data were checked by the supervisor daily for completeness and finally the principal investigator had monitored the overall quality of data collection. The questionnaire was pre-tested on 10% of the calculated sample size in health facility which was not selected in the study (Quiha health center) preceding the actual data collection period.

The data were checked for completeness, inconsistencies, then coded, entered, cleaned and analyzed in SPSS for windows version 16.0. A binary logistic regression analysis was made to obtain odds ratio and the confidence interval of statistical associations. The strength of statistical association was measured by adjusted odds ratios and 95% confidence intervals.

The study was conducted after getting ethical clearance from Addis Ababa University, College of Health Science, Department of Nursing and Midwifery research committee. Support letter was obtained from Addis Ababa University to Tigray Regional Health Bureau and from Tigray regional health bureau for respective health institutions.

RESULT:

Socio-demographic Characteristics: In this study, a total of 361 mothers whose children aged 24 months and less were interviewed making the response rate to be 100%. The mean (±SD) age of mothers was 26.2 (±5.3), the median and modal age was 25 years. The largest ethnic group was Tigray, 345 (95.6%) followed by Amhara, 15 (4.2%). Study subjects were also asked about their husband's educational status, 315 (91%) have attended formal education (**Table 1**).

TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF MOTHERS ATTENDING MCH CLINICS, MEKELLE TOWN NORTHERN ETHIOPIA, 2011

Variable	Number	Percent
Mother's age		
15-19	24	6.6
20-24	124	34.3
25-29	116	32.1
30-34	61	16.9
35+	36	10.0
Total	361	100.0
Current marital status		
Married	331	91.7
Single	10	2.8
Widowed/Divorced	8	2.3
Separated	9	2.5
Cohabited	3	0.8
Total	361	100.0
Religion		
Orthodox	321	88.9
Muslim	33	9.1
Protestant	4	1.1
Catholic	3	0.8
Total	361	100.0

Ethnicity		
Tigray	345	95.6
Amhara	15	4.2
Other*	1	0.3
Total	361	100.0
Mothers' educational level		
No education	117	32.4
Primary (1-8)	87	24.1
Secondary and higher (9+)	157	43.5
Total	361	100.0
Mother's occupation		
Housewife	205	56.8
Government employee	84	23.3
Day laborer	29	8.0
Business woman	30	8.3
Private Organization	11	3.0
Other **	2	0.6
Total	361	100
Monthly income		
<=500	54	15.0
501-1000	113	31.3
>1000	163	45.2
Don't know	31	8.6
Total	361	100.0

* Sltie; **student, farmer

Obstetrics and Health Service related Variables: Study subjects were asked about their history of ANC visits during pregnancy for the current child, three hundred thirty two (92%) of them received ANC service at least once (**Table 2**).

TABLE 2: DISTRIBUTION OF OBSTETRICS AND HEALTH SERVICE RELATED VARIABLES OF MOTHERS ATTENDING MCH CLINICS, MEKELLE TOWN NORTHERN ETHIOPIA, 2011

Variable	Number	Percent
Parity		
1	149	41.3
2-4	193	53.5
5 and above	19	5.3
Birth interval of the baby		
1	4	1.8
2-3	98	45.8
4 and above	112	52.3
Total	214	100.0
History of ANC		
Yes	332	92.0
No	29	8.0
Total	361	100.0
Amount of ANC visit		
1-4	198	59.6
5-8	106	31.9
>8	7	2.1
Don't remember	21	6.3
Total	332	100.0
Health education on BF during ANC		
Yes	287	86.4
No	45	13.6
Total	332	100.0
Place of delivery		
Home	73	20.2
Hospital	160	44.3
Health center	128	35.5
Total	361	100.0
Mode of delivery		
Vaginal	264	91.7
S/C	24	8.3
Total	288	100.0
Birth attendant		
TBA	23	6.4
Health prof.	287	79.5
Relatives	50	13.8
Total	361	100.0
Postnatal follow up		
Yes	275	76.2
No	86	23.8
Total	361	100.0

Mothers were also asked about the information received during ANC visit. For those who had visited ANC facility more than half, 196 (54%) were informed to breastfeed exclusively for six months and not to introduce pre-lacteal feeding. Only 132 (36.5%) of them were informed to initiate breastfeeding within one hour **(Figure 3).**

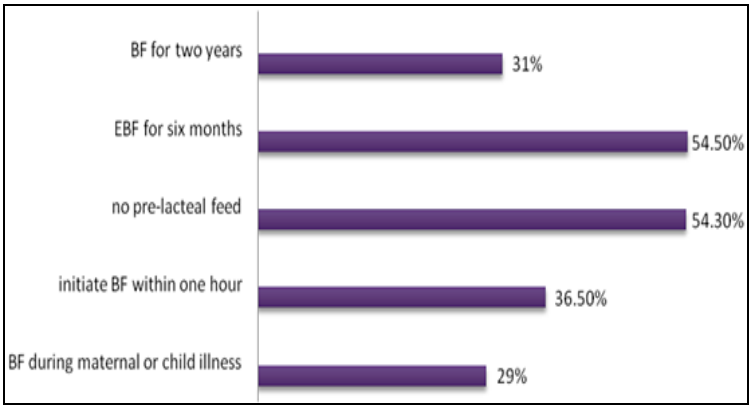

FIGURE 3: DISTRIBUTION OF RSPONDENTS BY THE TYPE OF INFORMATION/ADVICE ON BF AT ANC VISIT MEKELLE TOWN MCH CLINICS NORTHERN ETHIOPIA, 2011

Pattern of Breast Feeding Practice: This study revealed that from the total 361 respondents, 98.9% of mothers practiced ever breastfeeding. For mothers who did not ever breastfeed, the perceived reasons were: mother returning to work (25%), breastfeeding is painful (50%), breasts are too small to feed the baby (25%), breast feeding takes too much time (25%), bottle feeding is enough (25%).

All the study subjects were asked whether they have ever breastfed or not and for those who had ever breastfed they were also asked the time of initiation of breastfeeding to their index child. The result showed that almost 78% initiated breastfeeding within one hour (including one hour) after delivery and around 18 % of them initiated breastfeeding within the period 1 hour to 1 day. Only 15 (4.2%) of the mothers initiated breastfeeding in the period of 1 to 3 days.

The distribution of timely initiation of breastfeeding versus the history of ANC visit was assessed, accordingly from the total mothers who attended ANC service, two hundred sixty three (80%) of them initiated within one hour and only 12 (3.6%) of them initiated within 1-3 days. But from those mothers who did not attend ANC service 10.7% of them initiated within1-3 days. As shown on the graph below, having a history of ANC visit, higher proportion of mothers initiated BF within one hour but lesser proportion of them initiated after one hour **(Figure 4**).

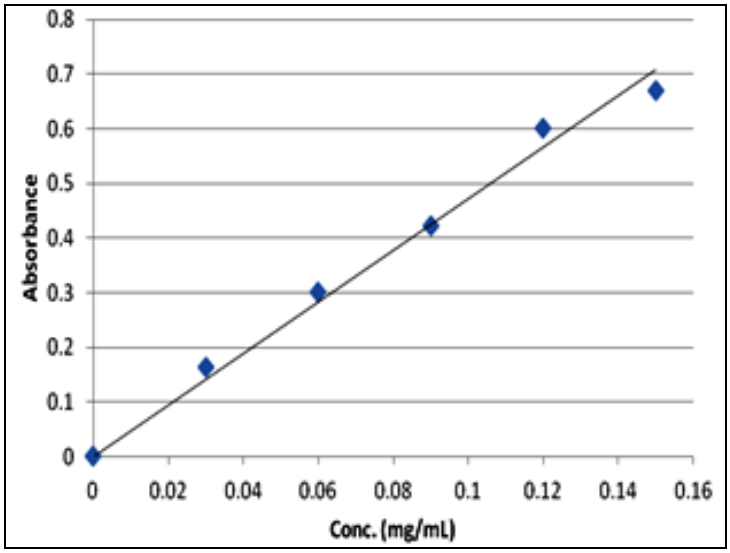

FIGURE 4: DISTRIBUTION OF MOTHERS WHO ATTENDED ANC FROM THEIR TIME OF BREASTFEEDING INITIATION IN MEKELLE TOWN MCH CLINICS, NORTHERN ETHIOPIA, 2011

Among mothers who practiced ever breastfeeding, 64 (18%) of them squeezed and threw the colostrum and 37 (10.4%) of mothers gave pre-lacteal food for their infants. Mothers were asked for the reason of throwing colostrums; 32 (50%) of them reported colostrum is dirty, 24 (37.5%) of them said it creates abdominal cramp, 4 (6.2%) said the baby was unable to suckle the breast because of engorgement and the rest 4 (6.2%) was because the mother undergone operation.

The common pre-lacteal food was Butter reported by 12 (32.4%) of breastfeeding mothers followed by sugar solution and cow milk 10 (27% each). Tradition/culture was the most frequently mentioned reason 13 (35.1%) for the introduction of food for infants during the first three days after delivery followed by breast milk insufficiency 10 (27%) **(Figure 5).**

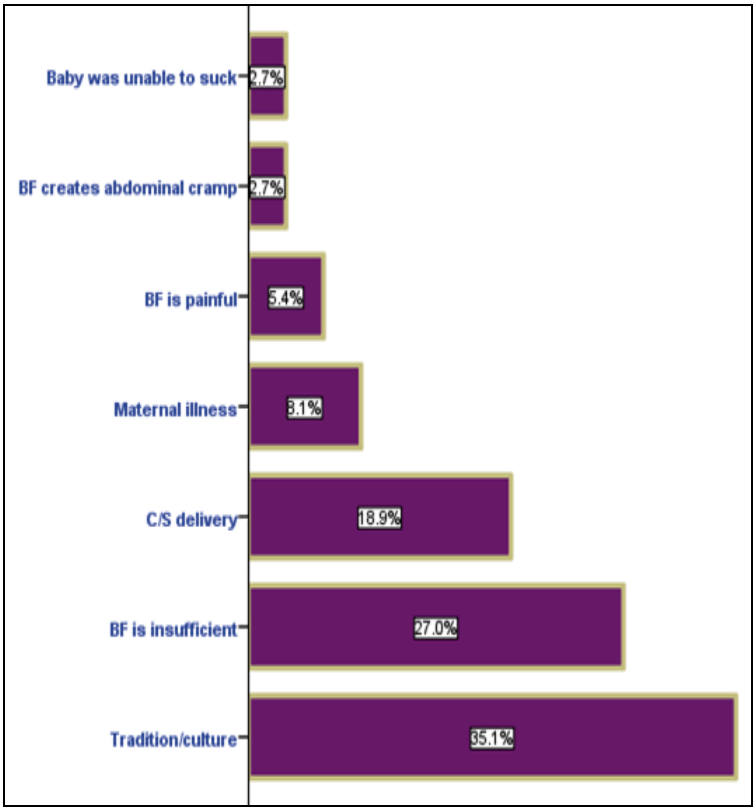

FIGURE 5: REASON FOR THE INTRODUCTION OF PRE-LACTEAL FOOD IN THE FIRST THREE DAYS AFTER DELIVERY AMONG MOTHERS IN MIKELLE TOWN MCH CLINICS, NORTHERN ETHIOPIA, 2011

Regarding to exclusive breastfeeding, one hundred and ten (60.8%) of infants in the age group 0 - 6 months were exclusively breastfed in the last 24 hours of the survey. Those mothers who introduced additional feeding were asked about the types of additional feeding during the last 24 hours prior to the survey and 23 (32.0%) of them introduced cow's milk, 22 (30.9%) sugar solution, 16 (22.5%) porridge, 7 (9.8%) formula milk and 3 (4.2%) juice.

Of the total mothers who had ever breastfed their infant (98.9%), about (95.5%) of them were breastfeeding till the time of the survey. The mean (±SD) and median duration of exclusive breastfeeding, in this population were 3.9 (±1. 4) Earned 4 months respectively.

The continued breastfeeding rate at one year was 95.7% and at two years was 65.5%. Respondents were also asked about the frequency of breastfeeding. Two hundred ninety one (85.3%) of them reported breastfeeding beyond 8 times per day.

During the survey 13 (3.6%) of mother weaned (discontinued) breastfeeding their children. Of the total mothers who had weaned breastfeeding during the survey 2(15.4%) of them weaned during the age 6-12months and 11(84.6%) weaned after one year. They described Pregnancy 4(30.70%), believed that it is time to stop 6(46.20%), and returned to work or education 3(23%) as a reason for weaning. The timely complementary feeding rate (complementary feeding for the age 6-9months) in this study was 62.2%.

Timely initiation of breastfeeding was assessed for its association with socio-demographic, obstetric and health service related variables. Bivariate analysis in the binary logistic regression model showed that the residence of mothers was significantly associated with timely initiation of breastfeeding (P<0.05) in which rural residents were 2.3 times more likely to initiate breastfeeding as compared to their counterpart (COR=2. 31 [95%CI=1.076, 4.963]). History of ANC visit was statistically associated with timely initiation of breastfeeding (P<0.01). Mothers who had ANC follow up at least once were 3.4 times more likely to initiate breastfeeding within one hour than those who had no ANC visit (COR=3. 4 [95%CI=1.56, 7.61]). Likewise Place of delivery and mode of delivery was associated with timely initiation of breastfeeding (P<0.001).

Mothers who gave birth at home were 3.5 times more likely to initiate breastfeeding timely than those who delivered at health institutions (COR=3. 5 [95%CI= 2.01, 6.21]); similarly those mothers who experienced normal delivery (vaginal) were 8.5 times more likely to initiate breastfeeding as compared to those who delivered via cesarean section (COR=8. 5 [95%CI=3.5, 20.9]. There was also a difference with regard to delivering assistance; mothers assisted by non health professionals (TBA, relatives) were more likely to initiate timely (COR=3. 44 [95%CI=1.96, 6.02] (**Table 3).**

In the multivariate analysis, adjusting possible confoun ding variables, home delivery (AOR=3. 7 [95%CI= 1.81, 9.33], normal (vaginal) delivery (AOR=14. 4 [95%CI=4.8, 43.7] and non health professionals as a delivery attendant (AOR=3. 5 [95%CI=1.21, 8.53] were positively associated with timely initiation of breastfeeding. On the other hand, maternal age, the child's sex, income, educational level, marital status, employment status, and parity were not statistically associated with timely initiation of breastfeeding in this study. Likewise residence and history of ANC visit were not retained as a significant factor in the multivariate analysis (**Table 3**).

TABLE 3: SOCIO-DEMOGRAPHIC AND OBSTETRIC FACTORS VERSUS TIMELY INITIATION OF BREASTFEEDING AMONG MOTHERS MEKELLE TOWN MCH CLINICS, (N=357), NORTHERN ETHIOPIA, 2011

Variables	Yes	No	AOR [95%C. I]
Residence			
Rural	20(62.5%)	12(37.5%)	2.66[0.58, 12.07]
Urban	258(79.4%)	67(20.6%)	1.0
Mother's age			
15-19	20(83.3%)	4(16.7%)	0.23[0.03, 1.70]
20-24	100(81.3%)	23(18.7%)	0.41[0.13, 1.28]
25-29	90(78.3%)	25(21.7%)	0.63[0.20, 1.93]
30-34	45(75.0%)	15(25.0%)	0.52[0.15, 1.78]
35+	23(65.7%)	12(34.3%)	1.0
Child's sex			
Male	166(79.8%)	42(20.2%)	0.59[0.31, 1.12]
Female	112(75.2%)	37(24.8%)	1.0
Marital status			
Married	256(78.3%)	71(21.7%)	0.42[0.12, 1.42]
Not married	22(73.3%)	8(26.7%)	
Monthly income			
<=500	43(81.1%)	10(18.9%)	1.0
500-1000	90(80.4%)	22(19.6%)	2.17[0.75, 6.23]
>1000	128(79.5%)	33(20.5%)	2.68[0.939, 7.66]

Mother's educational level			
No education	85(73.9%)	30(26.1%)	1.54[0.70, 3.39]
Primary	64(74.4%)	22(25.6%)	
Secondary and higher	129(82.7%)	27(17.3%)	1.0
Employment status			
Employed	183(75.0%)	61(25.0%)	1.02[0.48, 2.20]
unemployed	95(84.1%)	18(15.9%)	1.0
History of ANC visit			
Yes	263(79.9%)	66(20.1%)	2.99[0.86,10.32]
No	15(53.6%)	13(46.4%)	1.0
Place of delivery			
Home	41(57.7%)	30(42.3%)	3.7[1.81, 9.33]***
Health institution	237(82.9%)	49(17.1%)	1.0
Mode of delivery			
Vaginal	229(86.7%)	35(13.3%)	14.4[4.8,43.7]***
S/C	8(33.3%)	16(66.7%)	1.0
Birth attendant			
non health professional	42(58.3%)	30(41.7%)	3.5[1.21, 8.53]*
health professional	236(82.8%)	49(17.2%)	

*p<0.05, **p<0.01, ***p<0.001; **AOR**- Adjusted odds ratio **CI**= confidence interval

From the socio-demographic variables, age of mothers was not statistically associated with exclusive breastfeeding. But there was a variation in proportion of exclusive breastfeeding among age group of mothers. Seven (77.8%) of mothers who were in the age group 35+ practiced exclusively breastfed followed by mothers in the age group 15-19 (66.7%). The proportion of exclusive breastfeeding was similar among mothers who had monthly income<=500 as those having monthly income 500-1000EBr (64 %% versus 63.9).

Bivariate binary logistic regression analysis showed that, mothers working condition (employed Vs not employed) was found significantly associated with exclusive breast feeding rate. Mothers who were unemployed had 4.8 times higher chance of exclusively breastfeeding for six months as compared with those who were employed (COR=4.83(95% CI=2.54,9.19)); this difference has also maintained in the multivariate analysis (AOR=4.81(95% CI=2.27,10.16)).

Child's age was associated with exclusive breast feeding practice. Infants within the age group 0-1 months were 2.9 times more likely to be exclusively fed as compared to infants in the age group 4-6 months (COR= 2.9(95%CI =1.17, 7.41)). Likewise infants in the age group 2-3 months were 2.5 times more likely to be exclusively breastfed than those in the age group 4-6 months (COR=2.5(95%CI=1.16, 5.71)).

The time of breastfeeding initiation also has association with exclusive breastfeeding. Infants who initiated breast feeding after one hour were 0.4 times less likely to exclusively breastfeed as compared to those who initiated timely (COR=0. 40 (95%CI= 0.12, 0.99)). In the final model (multivariate analysis); emplo yment status, unemployed (AOR=4. 81 [95%CI=2.27, 10.16] and age less than 1 month (AOR=3. 42 [95%CI1.36, 8.59] were positively associated with exclusive breastfeeding practice **(Table 4).**

Variables like current marital status, religion, ethnicity, educational level, media access, mode of delivery and place of delivery were not significantly associated with exclusive breastfeeding. Similarly there was no significant difference in practicing exclusive breastfeeding among prime-para and multi-para mothers & male and female children **(Table 4)**.

DISCUSSION: The purpose of this study was to assess determinants of breastfeeding practice among mothers of children aged less than 24 months in Mekelle town governmental MCH clinics.

The dominance of breast milk over any other nourishment to infant and young children is clearly recognized, and over the years it has become more and more evident that it is the most ideal, safe and complete food that a mother can provide for her child.

TABLE 4: SOCIO-DEMOGRAPHIC AND OBSTETRIC FACTORS VERSUS EXCLUSIVE BREASTFEEDING AMONG MOTHERS MEKELLE TOWN MCH CLINICS, (N=181) NORTHERN ETHIOPIA, 2011

Variables	Yes N (%)	No N (%)	AOR [95%C. I]
Age			
15-19	6(66.7%)	3(33.3%)	
20-24	48(62.3%)	29(37.7%)	0.29[.01,5.83]
25-29	31(54.4%)	26(45.6%)	0.46[.02,9.11]
30-34	18(62.1%)	11(37.9%)	0.19[0.01,3.97]
35+	7(77.8%)	2(22.2%)	1.0
Maternal educational level			
No education	25(64.1%)	14(35.9%)	1.0
Primary	27(67.5%)	13(32.5%)	2.12[0.32,13.64]
Secondary and above	58(56.9%)	44(43.1%)	0.46[0.06,3.13]
Employment status			
Employed	29(39.2%)	45(60.8%)	1.0
Unemployed	81(75.7%)	26(24.3%)	4.81[2.27,10.16]***
Access to Media			
Yes	64(60.4%)	42(39.6%)	1.0
No	46(61.3%)	29(38.7%)	1.18[0.27,5.16]
Monthly income (ETB)			
<=500	16(64.0%)	9(36.0%)	
500-1000	39(63.9%)	22(36.1%)	1.29[0.22,7.33]
>1000	51(58.6%)	36(41.4%)	1.0
Child's age (months)			
0-1	65(64.4%)	36(35.6%)	3.42[1.36,8.59]*
2-3	31(67.4%)	15(32.6%)	2.53[0.89,7.20]
4-6	14(41.2%)	20(58.8%)	1.0
Mode of delivery			
Vaginal	102(59.6%)	69(40.4%)	0.10[0.02,4.87]
C/S	8(80.0%)	2(20.0%)	1.0
Initiation of BF			
Within 1 hr	89(57.4%)	66(42.6%)	1.0
After 1 hr	20(79.2%)	6(20.8%)	0.32[0.09,1.2]

*p<0.05, **p<0.01, ***p<0.001; **AOR**- Adjusted odds ratio; **CI**= confidence interval

Breastfeeding will have the intended outcome if it is initiated timely, is being exclusively for the first six months, pre-lacteal feed discouraged and colostrums provided to the neonate and continue to demand feeding up to two years. In this study, it was found that the majority (98.9%) of mothers practiced ever breastfeeding. This result is more or less similar to the study in Ghana, 1998 (49) which was 100%; Cameroon in 2004 (50) 98% and Ethiopian ever breastfeeding rates in 2006 (5) (96%). But it is higher than the ever breastfeeding rate in Nigeria, 2006 (25) (82%), and ever breastfeeding rate in United States of America in 2004 (46) (73.8%).

This high rate of breastfeeding could be due to the fact that breastfeeding is a norm in the society. The timely initiation rate of breastfeeding found in this study was 78%. This finding was better when compared to the study conducted in Turkey, 2000 (18) (35.2%); in Burkina Faso, 2003 (33.3%), in Chad, 2004 (43.3%), and in Colombia, 2005 (48.9%). But this finding is similar to the finding in Eritrea, 2002 (77.9%); in Namibia, 2000 (80.9%) (28). It is also by far better than the result of the study in rural communities of Tigray 2005 (33), in which only 20% of the mothers initiated breastfeeding within one hour and the regional prevalence of timely initiation (52.9%) according to the Ethiopian demographic and health survey, 2005 (5).

The better prevalence rate (78%) of timely initiation of breastfeeding in this study could possibly be explained in terms of a higher proportion of mothers attended ANC which could be the important service delivery point to establish timely initiation of breastfeeding.

In addition, the majority of them delivered via normal vaginal delivery which could help them to initiate breastfeeding early.

Although the global strategy on infant and young child feeding recommends feeding colostrum and discourages pre-lacteal feeds, two hundred ninety three (82%) of mothers gave colostrums to their baby. This finding was consistent with the finding in Nepal, 2005 (22) where colostrum was given as the first fed at 86% of babies, Vietnam, 2002 (30) and south Gonder zone, 2007 (15) in 85.6 %. But by far higher than the data from Nigeria, 1997 (26) were only 24%, in Ethiopia, 2005 (5) 45% of mothers provided colostrums for their babies.

The prevalence of pre-lacteal feeding in this study was 10.4% which is much lower than the Rajasthan (Jaipur) district, India pre-lacteal feeding rate in1997 (17) (65.2%); Nigeria in 2006 (25) (75%); rural communities of Tigray in 2005 (33) (80%); Gursum, Somali region in 2006 (15) (79%), and the Tigray regional prevalence in 2005 (30.6%) (5,) but it is in line with the finding in south Gonder zone, Amhara region in 2007 (15) where the projectile feeding rate was 11.1%. This encouraging result might be justified in terms of the high proportion of respondents from an urban area in which the tradition of introducing pre-lacteal feeding and discarding colostrum would be lower than in rural area.

A study conducted in Gonder university hospital in 2006 (32) found that the commonest pre-lacteal food reported was Butter followed by sugar solution which is in agreement with the current funding as Butter was the commonest pre-lacteal food reported by 32.4% of the mothers followed by sugar solution and cow's milk (27.0% each); it was also consistent with the finding in the rural communities of Tigray in 2005 (33).

This study showed that the prevalence of exclusive breastfeeding for infants less than six months was 60.8%. This result is by far better when compared with the findings from India in 2006 (37) which was 7.8%, in Saudi Arabia, 2010 (20) (12.2%), Timor-Leste, Southeast Asia, 2003 (24) (30.7%), Nigeria in 2006 (21.2%) (25), Ethiopian national prevalence, 2006 (49%) and Adwa town, Tigray 2006 (41.8%) (43, 44). The reason for this might be the result of the current policy implementation on the use of health extension workers in urban areas to promote breastfeeding.

In this study, mothers were asked about the frequency and duration of breastfeeding and it showed that on demand breastfeeding rate was found to be 85.3%. This finding is more or less similar with the finding Kenya, 2010 (31) where on demand breastfeeding was given to 90.6% of babies and with the study in rural communities of Tigray, 2005 (33) where on demand breastfeeding rate was 88% but it is relatively lower than the on demand breastfeeding found from Vietnam, 2002 (30) which was 96.7%. Similarly the continued breast feeding rate at one year and at two years in this study was 95.7% and 65.6% respectively.

This finding was much higher than the result from United State of America, 2004 (46) where the continued breastfeeding rate at one year was 20.9% and Egypt, 1997 (51) where the continued breastfeeding rate at one year and at two years was 64.4% and 33.9% respectively. This could be due to the fact that breastfeeding is a common tradition in Ethiopia in general and in the region in particular

In the binary logistic regression mode association test was done to identify the determinant factors of timely initiation and exclusive breastfeeding practices. In this study place of delivery was found to be a significant predictor of timely initiation of breastfeeding ($p< 0.001$). Mothers who delivered at home were 3.7 times more likely to initiate breastfeeding within one hour as compared to those who delivered at the health institution (AOR=3. 7 [95%CI=1.81, 9.33]). This result is consistent with the finding from Guatemala City, Central America, 1999 (16) where children born at home were significantly more likely to initiate within one hour than children born in hospitals.

Likewise it is congruent with the Ethiopian demographic and health survey result, 2005 (5) which showed mothers who gave birth at home had a high chance of initiating breastfeeding within one hour than those delivered at health institution.

This difference by place of delivery could be explained that health professionals may not focus on the initiation of breastfeeding after delivery of the baby rather they may give emphasis on the activities like cleaning, warming, cord tie and other activities which could contribute to the delay of breastfeeding initiation. Other characteristics of the mother, such as History of ANC visit ($P<0.01$) and mode of delivery ($P<0.001$) were factors associated with timely initiation of breastfeeding practices.

This result is congruent with the finding in Nepal, 2006 (23) and Turkey, 2000 (18) were cesarean deliveries were associated with delay in the timely initiation of breastfeeding and in Guinea-Bissau, 1986 (27), where no prenatal care was a determinant factor in delaying breast feeding. The effect of cesarean delivery on the delay of initiation could be explained in such a way that mothers may not be aware to feed their baby post operatively

On the other hand, this study revealed that there was no difference in the timing of breastfeeding initiation by age and educational status. This result is in line with the finding in Turkey, 2000 (18) in which maternal age and educational status had no influence on the timing of breastfeeding initiation. But it contradicts with the finding in Alhassa Saudi Arabia, 2010 (20) where the increased maternal age was positively associated with timely initiation; in Guinea-Bissau, 1986 (27) where young age was a factor to delay initiation; and in Ethiopia 2005 (5) where highly educated mothers were less likely to initiate breastfeeding within one hour.

As to the associated factors with exclusive breastfeeding, the binary logistic regression model showed that employment status, initiation of breastfeeding and child's age were closely associated with exclusive breastfeeding practice.

This finding is in conformity with the result in Guatemala City, 1999 (21) were unemployed mothers were more likely to exclusively breastfeed for six months than employed (women who did not work outside the home were 3.2 times more likely to exclusively breastfeed than women who worked outside the home) but it contradicts with the finding in Ethiopia, 2006 (43) where employment status had no association with exclusive breastfeeding. This difference could be explained that in the current study majority of the respondents were housewife's by occupation. So, they might have higher chance of staying with their baby than those employed.

Age of infants was positively associated with exclusive breastfeeding in the current funding which is in conformity with the result in Ethiopia, 2006 (43) where infants less than 2 months were highly likely to be fed exclusively when compared to age 4-6 months. This may be due to the misunderstanding of mothers in which they may not consider the importance of exclusive breastfeeding but they refer to the ability of the child to take additional food, so as the child's age increases the ability of the child to take additional food also increases.

In this study, there was no association between mother's monthly income and exclusive breastfeeding practices and it disagrees with the study in Saudi Arabia, 2010 (20) where low income mothers were more likely to breast-feed exclusively.

On the contrary, in Ethiopia, 2006 (43) high income mothers were more likely to exclusively breastfeed for six months.

Limitation of the Study:

- A mother may have difficulty of remembering when she initiated breastfeeding for her child; as a result, timely initiation of breastfeeding is subjected to potential recall bias.
- During the determination of exclusive breastfeeding using a 24-hour recall period that measures current status, may cause the proportion of exclusively breastfed infants to be slightly overestimated, since some infants who were given other liquids regularly may not have received them in the 24 hours before the survey.

CONCLUSION: This study revealed that the timely initiation of breastfeeding and exclusive breastfeeding rate was better as compared to the national and regional prevalence. But mothers tend to introduce pre-lacteal foods due to some perceived and traditional practices as18% of them threw the colostrum and 10.4% of mothers gave pre-lacteal food for their infants. Place of delivery, mode of delivery and birth attendant were the independent determinant factors for timely initiation of breastfeeding in the multivariate analysis.

Based on the study, introducing educational programs at health institutions and in the community level; coordination, strengthening and sustaining of the existing strategies, and approaches for further improvement of optimal breastfeeding practices and training to health professionals working in delivery unit to focus on early initiation of breastfeeding and favorable working environment for mothers are recommended.

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