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Original Research Article

COLOSTRUM AVOIDANCE AND ASSOCIATED FACTORS AMONG MOTHERS OF CHILDREN AGED LESS THAN 12 MONTHS IN KOMBOLCHA TOWN, SOUTH WOLLO ZONE, ETHIOPIA.

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Abstract

Background: Despite the importance of early initiation of breastfeeding and exclusive breastfeeding, colostrum avoidance is practiced in Ethiopia. In Ethiopia, the problem of malnutrition begins early in life, primarily during the first 12 months due to sub-optimal breastfeeding practice including colostrum avoidance. However, there is a paucity of information on social and environmental factors associated with colostrum's avoidance.

Objective: To assess Colostrum avoidance and associated factors among mothers of children aged less than 12 months in Kombolcha town South Wollo Zone, Ethiopia, 2017.

Methods: A community-based cross-sectional study was employed. 414 mothers of children aged less than 12 months were selected by systematic sampling technique. The data were collected by using interview-based structured questionnaire. Descriptive statistics, binary and multiple logistic regression analysis were employed to identify the factors associated with colostrum avoidance practices. Variables with a p-value < 0.0 5 with 95% confidence interval were identified as statistically significant factors.

Result: The prevalence of colostrum avoidance was (11.4%) in Kombolcha town. The reasons for colostrum avoidance were; yellow color (4%), its dirtiness (14%), due to causing illness for neonates (74%) and thickness (8%). The most common type of prenatal foods given was water (30%); Honey (4%), animal milk (51%), tea (4%) and others (like butter, formula foods) (9%). Regarding behavioral factors of colostrum avoidance; of the total respondents 30.3% had good knowledge about colostrum feeding and 60.1% had a positive attitude towards colostrum feeding. Illness of index child, the area of residence, counseling on timely initiation of breastfeeding, participation in pregnant women forum, husband employment and cultural beliefs were positive predictors of colostrum avoidance practice.

Conclusion & Recommendation: Colostrum avoidance is practiced in Kombolcha town. Illness of index child, counseling on timely initiation of breastfeeding, the area of residence, participation in pregnant women forum and cultural beliefs were important positive predictors of

colostrum avoidance practice. Promotion of behavioral and tradition change, intensive nutrition education program by giving special emphasis to mothers and children, promotion of counseling on timely initiation of colostrum feeding, important nutrition education for rural, should be implemented strongly in the health care system.

Keywords: Ethiopia, Kombolcha, colostrum, Mothers.

Introduction

Globally child mortality is high as compared to other age groups and more than 75% occurs in developing countries. Scientific evidence has reviled early feeding of colostrum to the newborn remained as the key to tackle infant nutrition and also the survival of infant [1, 2, 3]. The practice of colostrum feeding is very important to enhance mothers to exclusive breastfeeding and improve child health [4, 5, 7].

Ethiopia tried to reduce child mortality through intensive child life-saving strategies. Although the proportion of neonatal deaths still remains high. Discard of colostrum in the first three days after birth increase risk of infection and corresponding death among neonates [6].So this study identified common reasons to colostrum avoidance and suggest possible solutions.

Colostrum is the first liquid which is thick, sticky, and clear to yellowish in color that contains proteins, vitamin A, and maternal antibodies. Therefore, it is considered as baby's first immunization [9, 13]. In spite of this fact, colostrum is discarded as unclean and bad for the infant's health [10, 15]. Some cultures believe that the colostrum is not good for the baby. The causes of this miss belief are not well understood and will vary between communities. Mothers may be advised to hand express the colostrum and discard it rather than feeding it to the newborn baby [12]. This study provides level and determinates to discard colostrum in kombolcha town, Ethiopia.

Preventing the practice of discard of the first milk in first three days can help to prevent neonatal deaths [16]. In Ethiopia, the problem of undernutrition begins early in life, primarily during the first year due to colostrum avoidance and inadequate breastfeeding. It contributes to the country's high neonatal mortality [18].The risk of death as a result of infection increases with increasing discard of first milk and delay in initiation of breastfeeding within one hour [17].

Although breastfeeding is almost universal across Ethiopian ethnic groups and geographical areas, it does not always meet world health organization recommendations [11, 19]. From the Ethiopian Demographic Health Survey of 2015 Report showed that 27% of infants were given prelacteal feedings within the first three days of life [20]. However, there is a paucity of information on social and environmental factors associated with colostrum's avoidance.

The findings of the study will serve as a source of information and hypothesis generation for the interested researchers in the area and might also help to influence the regional and national policymakers to develop appropriate plan and intervention program. This, in turn, may help to reduce the mortality and morbidity rate of infant in Ethiopia Although colostrum's avoidance is widely practiced in Ethiopia, the factors were not well studied in Ethiopia , Therefore, this study attempted to fill this information gap and come up with recommendations on possible intervention for colostrum avoidance and associated factors in Kombolcha town, south wollo Zone, Ethiopia.

Method and Materials

Study area, design, period and population

A community-based cross-sectional study design was employed in selected kebeles of Kombolcha town from February15-March 15, 2017. Kombolcha Town is one of the cities of South Wollo zone, Eastern part of Amhara region, North East Ethiopia. It is located at 365 KM North from Addis Ababa and 510 KM East from Bahirdar. Based on the information from Kombolcha town administration health department, the town has 6 rural and 5 urban totally 11 kebeles. The total population at the end of 2016 CSA estimated to be 137,496 among which 52.3% (72004) were women and 3.3% (4634) were mothers of children aged less than 12 months. Source population was all mothers of children whose age is less than 12 months in Kombolcha town. The study population was selected mothers of children whose age was less than 12 months from the source population. Mothers of children whose age was < 12 months reside in selected kebeles of Kombolcha town at least for the last six months prior to this study were included and mothers of children whose age was < 12 months who were with mastitis underwent mastectomy, severely ill mothers, mentally ill mothers, were excluded in this study.

Sample size determination and Sampling procedure

Sample size was determined by using the single population proportion formula by considering where P=13.5% proportion of colostrum avoidance, Z = 95% Confidence level, d = 5% and 10% non-response rate (9). Therefore, the sample size was **189.** For adequacy of a sample size to determine associated factors, Epi info 7 was used to calculate the sample size for two independent variables which were assumed to be highly associated in the literature (20). Finally, the sample size 394 which was calculated using double population formula and by adding 5 % non-respondent then finally **414** subjects were taken the largest sample size to make representations. Five kebeles were selected using simple random sampling method. The list of mothers of children whose age was less than 12 months in selected kebeles or the sample frame for the 5 selected kebeles was taken from health extension workers and the study units were identified using systematic sampling method.

Data collection procedure and Quality control

The data was collected through face to face interview using structured questionnaires which were adopted from Ethiopian Demographic and Health Survey and the national nutrition survey questionnaire. The pre-test was conducted in 5% of the sample size of the mother of children aged <12 months in a similar area in not selected kebeles to establish the accuracy of questions and clarity and to determine the length of interviews. After review of the instruments, all suggested revisions were made before being administered in the actual study. Eight data collectors who had Diploma in nursing and two supervisors who had BSc degree in public health and have previous experiences were recruited to participate in the study. Training was given for data collectors for one day to ensure the completeness and consistency of information during data collection. The investigators and supervisors were made a thorough check before receiving the filled questionnaire from each data collector. There was meeting at the end of data collecting time for discussion. When the mother was not found during data collection three visits were made before taken as non-respondent.

Data analysis and interpretations

Data cleaning was performed to check for accuracy, consistencies, and values. The investigator with an experienced data clerk

entered the data using Epi Data version 3.02 and exported to SPSS 20 statistical package for analysis. Descriptive statistics were used to describe socio-demographic and economic characteristics of the study population and the magnitude of Colostrum avoidance practices. Then bivariate logistic regression techniques were done to see the crude association between the independent variables and the dependent variable and the strength of association was expressed in odds ratio (OR). Eventually, result from bivariate analysis of $p < 0.25$ was moved to multivariate analysis and done through backward logistic regression technique to control the effects of confounding and to identify predictors of Colostrum avoidance practices. A P value of <0.05 was used as the criterion for statistical significance.

Knowledge: By using index measurement, the graph was skewed to the right, so the data was not distributed symmetrically; I used the median index to classify mothers with good knowledge and poor knowledge.

Attitude: By using index measurement, the graph was distributed symmetrically; so I used the mean to classify mothers with a positive attitude and negative attitude.

Colostrum avoidance: based on the content of questioner asking the mother whether she discarded or avoided colostrum's or not within the first three days after birth.

Prelactal feeding: based on the content of questioner asking the mother whether she gave or not gave water or other liquid other than colostrum's within the first three days after birth.

Monthly income: will classify based on the terciles of Ethiopian civil service 18 level salary scale as low (monthly income of less than or equal to 817 ETB), medium (monthly income of 818 to 196 8 ETB) and higher (monthly income of greater than or equal to1969 ETB).

Result

Socio-demographic characteristics of mothers and infants.

A total of 414 mother-child pairs were included in the study, resulting in a response rate of 414(100%).Among all study participants, 236(57%) were 26-35years of age, 366(88.4%) married, 122(29.5%) had a primary level of education, 307(73.4%) were housewife in occupation.(**Table 1**).

Regarding behavioral factors of colostrum avoidance; of the total respondents, 278(67.1%) had good awareness about colostrum, 167(30.3%) had good knowledge about colostrum feeding and 249(60.1%) had a positive attitude towards colostrum feeding.

From the total respondents 335(80.9%) had ANC follow up more than one , 167(40.3%) had good relationship with their health professional, 274(66.2) delivered their child at health center/clinic, 244(54.1%) delivered female children, 305(73.7%) delivered through normal spontaneous 86(16.4%) of the children had illness within 3 days of delivery,249(60.1%) had difficulties in breastfeeding, 141(34.1) had to counsel on initiation of breastfeeding and 200(48.3) had no participation in pregnant women forum (**Table 2**).

Colostrum Avoidance and Common Prenatal Feeding

The magnitude of Colostrum avoidance and prelatial feeding practice in the study population among the total respondents 47(11.35%) was avoided colostrum within three days after delivery for their infants (**Figure 1**). The reasons for colostrum avoidance were; 2(4%) yellow color, 6(14%) its dirtiness, 35(74%) due to causing illness for neonates, 4(8%) thickness. The most common type of prenatal foods given was water 14(30%); Honey 2(4%), animal milk 24(51%), tea 2(4%), others (like butter, formula foods) 5(9%).

Bivariate and Multiple Logistic Regression Analysis

Possible association between colostrum avoidance and mothers age group in 36-45 years, rural residents, mother's with unemployed husband, female index child, , illness of index child, tradition and breastfeeding problem, counseling on timely initiation of breast feeding, participation on pregnant women forum, Muslim, Heard about importance of colostrum, were statistically significant in bivariate logistic analysis: Multivariate logistic regression statistically significant difference was found in colostrum avoidance to Area of residence, Illness of index child, believe Prelactal food is good to the neonate culturally, Participation in Pregnant women forum and Counseling on timely initiation of breastfeeding. Knowledge and attitude had no association with colostrum avoidance in this study.

Mothers who lived in rural were 86% [AOR 0.14, 95% CI: 0.043-0.445] more likely to avoid colostrum as compared to urban residents. Mothers with sick child were77% [AOR 0.23, 95% CI: 0.008-0.067] more likely to avoid colostrum as compared to Mothers without a sick child. Mothers who did not get counseling on timely initiation of breastfeeding were 4 times [AOR 4.00, 95% CI: 1.463-10.889] more likely to avoid colostrum as compared to Mother who did get counseling on timely initiation of breastfeeding. Mothers who had unemployed husband were 3 times [AOR 3.23, 95% CI: 1.055-9.914] more likely to avoid colostrum as compared to Mother who had employed husband. Mothers who did not Participation in Pregnant women forum were 5 times [AOR 4.65, 95% CI: 1.600-13.637] more likely to avoid colostrum as compared to mothers who participated during pregnant women forum. Mothers who believe Prelactal food is good to the neonate culturally were 86% [AOR 0.14, 95% CI: 0.051-0.364] more likely to avoid colostrum as compared to mothers who did not believe (**Table 3**).

Discussion

The prevalence of colostrum avoidance in Kombolcha-town was found to be (11.4%). This figure is consistent with Raya kobo, Ethiopia (13.5) [39]; but higher than the prevalence of colostrum avoidance reported from Kersa district, South-eastern Ethiopia (8.5%) [51]. The national prevalence of colostrum avoidance was reported as 39.8% [50]. Colostrum avoidance is lower in Kombolcha as compared with the prevalence found in Delhi (83.1%) [31] And Maharastra and Gujarat (85.7%) [34].The reported variation could be due to the difference in the population character, health service access, geographic distribution and culture and also Colostrum avoidance practice was less prevalent than the national prevalence of colostrum avoidance (39.8%) this could be due to the difference in culture, study design and setting (studies were institution based). The Higher rate of colostrum avoidance practice was reported from Afambo district of Afar region (34.9%). [38].This could be due to the difference in the involved population (ethnicity), their culture (norm).

The study showed that Mothers who lived in rural were 86% more likely to avoid colostrum as compared to urban residents. The report is consistent with Nepal shows [43]. The possible explanation might be rural mothers are reluctant to receive infant feeding information and unaware of infant harmful feeding because they might believe that they are enough experienced about infant care.

The study showed that mothers with a sick child were 77% more likely to avoid colostrum compared with mothers without a sick child. The report is lower with a study

from Pregnant Women in a Teaching Hospital in Nepal [43]. The other possible explanation is that sick children are relatively lower interest to sack mother milk and the difference in health care system and avail of maternal support with community-based newborn care in Ethiopia.

The study showed that Mother who did not get counseling on timely initiation of breastfeeding were 4 times more likely to avoid colostrum as compared to Mother who did get counseling on timely initiation of breastfeeding. The report is less as compared to study from Colostrum feeding practice among mothers at Debre Berhan Town, Ethiopia [46].This might be due to mothers who did not get counseling on timely initiation would miss the information on colostrum feeding and may be the difference in the information source.

Mothers who had unemployed husband were 3 times more likely to avoid colostrum as compared to Mother who had employed husband. Mothers who did not Participation in Pregnant women forum were 5 times more likely to avoid colostrum as compared to mothers who participated during pregnant women forum. This can be participation in discussion about health during pregnancy may increase awareness to the importance of colostrum to the neonate. Knowledge about colostrum and attitude had no association with colostrum avoidance in this study. This may be due to no much difference about information source to colostrum to study participants in kombolcha town.

Conclusion

Colostrum avoidance is practiced one from ten mothers among mothers of children aged less than twelve months in Kombolcha town. This makes breastfeeding practices sub-optimal in the town. Illness of index child, the area of residence, counseling on timely initiation of breastfeeding, participation in pregnant women forum, Husband employment and traditional beliefs were important positive predictors of colostrum avoidance practice. The reasons of colostrum avoidance were breastfeeding problem, maternal medical illness, tradition, motivation by family members to avoid. The most common prenatal food was; animal milk followed by honey.

Recommendation

The findings from this study are intended to inform policymakers, local planners, other health professionals, mothers and community leaders about the colostrum avoidance practices. They can initiate new strategies and programs that respond to the community needs, which will, in turn, improve infant feeding practices as aimed at reducing infant morbidity and mortality. The study, therefore, makes the following recommendations aimed at minimizing colostrum avoidance practice.

For MOH and Regional health bureau:

Effective information, education, and communication (IEC) strategies should be implemented strongly by the MOH and Regional health bureau to apply avoidance of harmful traditional believe strategy at all levels: household, community, health facility, district and national, focusing on prevention of colostrum avoidance practice is recommended. The factors associated with colostrum avoidance practice should be taken into account while designing an intervention and, targeted, specific, and community-oriented promotion of colostrum feeding.

For Kombolcha town administration health office:

should work on promoting behavioral change communication activities on disadvantages of colostrum avoidance and Interventions should be aimed at not only mothers, but also include their family members and local cultural practice and should be implemented at all levels:

household, community, health facility and community-based by health extension workers. Special emphasis on nutrition education in the importance of breastfeeding, including colostrum for rural mothers.

For Health personnel:

Better to give intensive nutrition education program for those Mother's especially aged between 36-45 who did not know the demerit of colostrum on avoidance, who attend health facility for delivery, immunization, and antenatal care and other services. Giving appropriate counseling on timely initiation of breastfeeding, and doing better for the prevention of childhood illness.

For researchers:

Further study on deep-rooted cultural beliefs to colostrum avoidance with focus group discussion is crucial to explore traditional causes of colostrum avoidance.

Lists of Abbreviation: - ANC-Antinatal Care, AOR -Adjusted odds ration, CS-Ceserian section, CSA-Central Statistics Agency, EDHS-Ethiopian Demographic and Health survey, HEW-Health extension worker, IRC-Institutional Research committee, IYCF-Infant and Young Child Feeding Guideline, MOH- Ministry of Health, PI- Principal Investigator, UK-United Kingdom, UNICEF-United Nation's Children Fund, US- United States, WHO-World Health Organization, WU-Wollo University.

Ethical Approval and Consent to Participate

Ethical clearance was obtained from institutional Research Committee of Wollo University, College of medicine and health science. Official letters were submitted to Kombolcha town administration health department. The importance and purposes of the study were explained & informed consent was ensured from each participant. In addition, confidentiality was maintained. Keeping privacy at all levels of the study. Participants who were unwilling to participate in the study & those who wish to stop their participation at any stage were informed to do so without any restriction.

Availability of Data and Material: the datasets during and/or analyzed during the current study is available from the corresponding author on reasonable request.

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Competing interests: - The authors declare that they have no competing interest.

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Table 1: Socio-demographic characteristics of mothers of children aged less than12 months in Kombolcha town, south wollo Zone, Ethiopia, 2017 (N=414)

Variables	**Categories**	**Frequency(N=414)**	**Percentage (%)**
Age of mothers	15-25	153	37
	26-35	236	57
	36-45	25	6
Marital status	Single	34	8.2
	Married	366	88.4
	Divorced	14	3.4
	No formal education	92	22.2
Maternal educational level	1-4 Grade	57	13.8
	5-8 Grade	122	29.5
	9-10 Grade	67	16.2
	11-12	27	6.5
	college and above	49	11.8
Maternal religion	Christian	149	36.0
	Muslim	265	64.0
	private employee	10	2.4
Maternal occupation			
	government employee	46	11.1
	daily laborer	14	3.4
	Merchant	36	8.7
	Farmers	4	1.0
	house wife	304	73.4
Household income level	Low income	66	15.9

	Medium income	143	27.3
	High income	235	56.8
Area of residence	Urban	289	69.8
	Rural	125	30.2
Household head	No	320	77.3
	Yes	94	22.7
Husband occupation	Farmer	83	20.6
	Merchant	69	16.7
	Government employee	106	25.6
	Private employee	75	18.1
	Daily laborer	75	18.1
	Others	6	1.4

Table 2: Maternal health service utilization of mothers of children aged less than12 months in Kombolcha town, south wollo Zone, Ethiopia, 2017 (N=414)

Variables	**Frequency**	**Percent (%)**
ANC utilization		
One ANC	79	19.1
>One ANC	335	80.9
Place of delivery		
Hospital	135	32.6
Health center/Clinic	274	66.2
Home	5	1.2
Sex of child		
Male	190	45.9

Female	224	54.1
Prolonged Labor		
1-12Hrs	307	74.2
12-24Hrs	87	21.0
>24Hrs	20	4.8
Mode of delivery		
CS delivery	62	15.0
Normal Spontaneous delivery	305	73.7
Illness of index child	47	11.4
NO	346	83.6
YES	68	16.4
Counseling on timely initiation		
NO	141	34.1
YES	273	65.9
Participation in pregnant women forum		
NO	200	48.3
YES	214	51.7

Table 3: Factors associated with colostrum avoidance among mothers of children aged less than 12months in Kombolcha town, South Wollo Zone, Ethiopia, 2017.

Variables		Colostrum avoidance		COR(95% CI)	AOR (95% CI)
		No	Yes		
Area of residence	Urban	268	21	3.35[1.804-6.227]**	0.14[0.043-0.445]**
	Rural	99	26	1	1
Age	15-25	133	20		0.23[0.052-1.035]
	26-35	216	20	0.24[0.089-0.638]*	1
	36-45	18	7	1	
Religion	Muslim	227	38	0.38[0.186-0.804)*	1.01[0.301-3.418]
	Christian	140	9	1	1
Husband occupation	Unemployed			0.77[0.618-0.966]*	3.23[1.055-9.914]*
	Employed			1	1
Heard about importance of colostrum	No	64	16	0.41[0.211-0.792]**	0.76[0.192-2.994]
	Yes	303	31	1	1
Colostrum is good to newborn	No	26	12	0.32[0.156-0.656]*	1.53[0.508-4.629]
	Yes	341	35	1	1
Sex of child	Male	180	10	3.56[1.720-7.375]**	0.391[0.138-1.110]
	Female	187	37	1	1
Illness of the index	No	332	14	22.4[10.93-45.73]**	0.23[0.008

child	Yes	35	33	1	-0.067]** 1
Counseling on timely initiation of breastfeed	No Yes	116 251	25 22	0.410.220-0.751]* 1	3.99[1.463 -10.89]** 1
Participation in Pregnant women forum	No Yes	171 196	29 18	0.54[0.29-1.01]** 1	4.67[1.600 - 13.637]** 1
Prelactal food is good culturally	No yes	274 93	17 30	5.19[2.742-9.858]* 1	0.14[0.051 -0.364]** 1

1=reference *P<0.05 **P<0.01