Prevalence of Bottle Feeding Practice and Its Associated Factors among Mothers of Infants Less than Six Months at Addis Ababa Public Health Centers, Addis Ababa, Ethiopia, 2022

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ABSTRACT

Introduct on: Bottle feeding practice should be avoided due to its influence on optimal breastfeeding and its effect associated with morbidity and mortality resulting from diarrheal disease, infant and child illness, and malnutrition. This study is aimed to assess the prevalence of bottle feeding practice and its associated factors among mothers of infants less than six months in Addis Ababa.

Methods: An institution based cross-sectional study was conducted among 456 mothers who had infants less than six months in Addis Ababa public health facilities. Data were collected through interview, entered using Epi info version 7.1 and exported to statistical package for social science version 26 for analysis. Variables with p-value <0.2 in bivariable binary logistic regression analysis were entered to multivariable logistic regression analysis. Finally, variables with p-value <0.05 in multivariable logistic regression were taken as significant factor.

Results: The overall prevalence of bottle feeding practice in this study was 39%. Being male infant (AOR=0.589; 95% CI: 0.381, 0.911), infant hospitalization (AOR=2.114; 95% CI 1.246, 3.588), cesarean section delivery (AOR=2.817; 95% CI: 1.764, 4.496), late initiation of breastfeeding (AOR=5.526; 95% CI: 3.121, 9.786) and not having information on breast feeding (AOR=4.13; 95% CI 2.21, 7.73) were statistically significant factors associated with bottle feeding practice.

Conclusion: The magnitude of bottle feeding practice is high in Addis Ababa. Being male infants, infants hospitalized, cesarean section delivery, late initiation of breastfeeding and not having information on breast feeding were significant factors for bottle feeding practice. Greater efforts to promote breastfeeding should be targeted towards women with sub-optimal breastfeed.

Keywords: Bottle feeding; Prevalence; Associated factors; Malnutrition; Breastfeeding

INTRODUCTION

Adequate nutrition during the first two years of a child's life is essential to lower morbidity and mortality, reduce the risk of chronic diseases, normal development and the future well-being of the child [1]. The World Health Organization (WHO) recommends optimal infant and young child feeding practices which includes early initiation of breastfeeding within an hour of birth, exclusive breastfeeding up to six months of age, introduction of complementary feeding at six months and continuing breast feeding up to 2 years or beyond and ensuring proper use of breast milk substitutes [2].

Bottle feeding is an infant feeding modality that has been in existence since ancient times and currently a significant number of infants are being fed via a bottle with either breast milk or breast milk substitutes (formula) [3]. Globally, 59% of infants and around 85% of infants within Australia by five months of age are being fed with either breast milk or formula using bottles [4]. Breastfeeding is declining in almost all over the world despite its nutritional and immunological advantages. Improper breastfeeding practices may significantly compromise the health, development and survival of infants, children, and mothers [5]. Worldwide it causes 820,000 children and 20,000 maternal deaths in a year. It has been also found that non-exclusive breast feeding (bottle feeding) in the first 6 months of life results in 1.4 million deaths and 10% of the disease burden in children younger than 5 years [6].

Bottle feeding practices in infancy and childhood led to the high prevalence of malnutrition, increased morbidity and mortality in children in the developing world. Malnutrition accounts for around two-thirds of all deaths among children under the age of five worldwide. Each year more than 10 million children die as a result of malnutrition; 98% of these deaths occur in underdeveloped countries. Death rates in third world countries are lower among breastfed babies and breastfed babies have lower infections than formula fed babies [7].

In Ethiopia suboptimal breastfeeding practices are the most contributor around 70,000 infant deaths per year; 24% of the total infant death annually and that be significantly prevented by nutrition interventions such as exclusive breastfeeding [8]. Bottle feeding is one of the major causes of diarrhea among the infants. The rate of bottle feeding practice keeps on increasing among the mothers with infants older than four months due to early weaning [9]. The major reasons for bottle-feeding practice include insufficient breast milk, the need to go back to work, maternal work load and illness,

delayed ANC follow up, caesarean section mode of delivery and improper birth spacing [10,11]

Even though, WHO recommends avoidance of bottle feeding, there is a current shift from traditional feeding practice(bottle feeding) towards shorter breast feeding and introduction of bottle feeding in developed countries and urban communities of developing countries [12]. Practice of bottle feeding and associated factors are rarely addressed in urban community of Ethiopia including Addis Ababa. So, this study aimed to fill this gap and assess the prevalence of bottle feeding practice and associated factors among mothers of infants less than six month in Addis Ababa, Ethiopia.

MATERIALS AND METHODS

Study Area and Period

The study was conducted from July 1, 2022 to July 30, 2022 in public health centers of Addis Ababa, Ethiopia. Addis Ababa has almost 4 percent of the Ethiopian populations with 11 per cent of under five years children [13]. The total population of Addis Ababa is 3,602,000; 1,134,150 are under five children according to 2019 projection based on the 2007 census [14]. In Addis Ababa there are around 116 health centers in eleven sub cites [15].

Study design: An institutional based cross sectional study design was conducted.

Study Population and Eligible Criteria

All mothers who have infants less than six months in Addis Ababa were considered in the study. Those mothers who have infants less than six months at selected health center were included in the study. Mothers who have repeated visits during the study period will be excluded from the study.

Sample Size Determination

The sample size required for the study is calculated using epi info application or the formula of simple proportion estimation:

$$n = n = (Z_{\alpha/2})^2\,(p)\,(1-p)/d^2$$

Where;

n=The minimum sample size required.

P=Proportion of bottle feeding associated factor in study done at woldia hospital, maternal age 35-50 years (23.4%) [16].

$Z_{\alpha2}$=Standard normal value at (1-α) 95.

Confidence level=95%.

Margin of error (d)=5%.

Design effect (de)=1.5 is used.

The sample size "n" for associated factor of bottle feeding $=(1.96)^2(0.234)(1-0.234)/(0.05)^2=275$, since study uses multi stage sampling, 1.5 design effect was used then the sample size would be 414. The final sample size after addition of 10% non-response rate was 456.

Sampling Technique

Multi stage sampling technique was employed to include study participants in to the research. First from a total of 11 sub cities three sub cities were selected using simple random sampling technique. Since 20% to 30% of the study population represents the total population, average 25% of Sub Cities (SC) was used to represent the population.

In the first stage of sampling, 25% of eleven sub cities (three sub cities) Areda, Kolife Karanio and Nifas silk lafito sub cities were selected by using simple random sampling technique. These three sub cities have a total of 27 health centers (Areda=7, Kolife Karanio=9 and Nifas silk lafito=11); 25% of 27 (seven) were used to allocate study participants in each selected sub cities. The seven Health Centers (HC) (Areda=2, Kolife Karanio=3, Nifas silk lafito=3) are allocated according to the number of health centers in each sub cities.

In stage second sampling, Beta and Simegn Kebede health center from Areda sub city, woreda 1, 3 and 4 health center from Kolife Karanio sub city and woreda 2, 5 and 10 HC from Nifas silk lafito sub city were selected by lottery method.

The registration of mothers who have infant less than 6 months on expanded program of immunization register was used to get list of children from each health centers. Sample from each health center was determined by using proportion allocation to the sample size.

Finally, systematic random sampling technique was used to select a representative population in the immunization unit. The sampling interval (K) was established by dividing the average number of women who visited the immunization unit in the previous two months before data collection (average n=2660) by the sample size, which produced K=2660/456=6. Women were recruited daily by simple random sampling technique using the lottery method, and the next respondent was selected by adding a sampling interval to the number of the selected women. The same procedure was done on subsequent days until the required sample size was reached.

Proportional Allocation

In three selected sub cities there were 2660 children less than 6 months of age. Out of this 335 in Beta health center, 277 in Simegn Kebede health center from Areda sub city, 360 in woreda 1 health center, 431 in woreda 3 health center and 245 from woreda 4 health center of Kolife Karanio sub city and 365 in woreda 2 health center, 347 woreda 10 health center and 300 from woreda 5 health center of Nifas silk lafito sub city.

Based on proportional allocation to size, 456 study subjects were distributed to Beta health center (57), Simegn Kebede health center (47) from Areda sub city; woreda 1 health center (42), woreda 3 health center (74) and woreda 4 health center (62) of Kolife Karanio sub city and woreda 2 health center (63), woreda 10 health center (60) and 300 from woreda 5 health center (51) of Nifas silk lafito sub city.

Data Collection Procedure

Data was collected by face to face interview using semi-structured pretested questionnaire. The questionnaire was administered through face to face interview by five (5) trained data collectors (diploma nurse) and the data collection was supervised by two BSC health workers.

The questionnaire was constructed by adopting and modifying from previous studies. First, the questionnaire was prepared in English then translated into Amharic (local language) and then back to English to check consistency.

The quality of the data collection process was monitored, and clear uniform instructions were given to all data collectors. All data collected as a part of this study was checked by the principal investigator.

Operational Definitions

Exclusive breastfeeding: A mother gives to infant only breast milk.

Maternal illness: Mothers difficulty to breastfeed an infant due to illness (breast illness related problem).

Mixed breastfeeding: If an infant took breast milk with addition of liquid foods like cow milk and formula milk and soft foods.

Adequate knowledge: If a mother answers half and above correctly from questions which are asked to measure bottle feeding knowledge.

Inadequate knowledge: If a mother answers below half correctly from questions which are asked to measure bottle feeding knowledge [17]. Late initiation of breastfeeding: Initiation of breast milk after one hour after delivery.

Bottle feeding: Mother uses bottle for Brest milk and or breast milk substitutes (formula or others) [18].

Data Quality Control

In order to assure the quality of the data; a pre-test was conducted on 5% of the sample size at Abinet health center from mothers' infants visiting for immunization before the actual data collection to ensure the completeness and consistency. In addition, one day training was given to data collectors and the supervisor about the aim of the study, about the data collection tools, and how to obtain information [19]. The principal investigator undergoes quality assessment on ongoing supervision each day during data

collection to ensure quality of data by checking filled format for their completeness's and consistency. Data reliability was checked by considering the Cronbach alpha which is greater than or equal to 0.5 and multicollinearity between variables was also checked by considering Variance Inflation Factor (VIF) which is less than 2 which indicates there is no correlation between independent variables [20].

Data Management and Analysis

Data obtained from institution based survey was checked for completeness and inconsistencies, then coded, entered and cleaned in the Epi info version 7.1 and Microsoft excel and analyzed using Statistical Package for Social Sciences (SPSS) version 26. After categorizing and defining variables, descriptive analysis was carried out for each of the independent variables using frequencies, cross tabulation and percentages: Then presented by text, tables and chart.

Binary logistic regression analysis model was used to assess the association between bottle feeding and associated factors [21]. Variables with p-value <0.2 in bivariable binary logistic regression analysis were entered to multivariable binary logistic regression analysis. Finally, variables with p-value <0.05 in multivariable logistic regression were taken as significant factor. Adjusted odds ratio with 95% CI was used to show the strength of association between the dependent and independent variables. Model fitness was tested with Hosmer and Leme show goodness of fit test and fit with a p-value=0.440. In addition, there was no problem of multicollinearity among explanatory variables, with variance inflation factor <3 for all variables [22].

RESULTS

Socio-demographic Characteristics

In this study, a total of 451 study participants were included with a response rate of 98.9%. Among the study participants most of the study participants, 444 (98.4%) were married. Regards to religion more than half 235 (52.1%) were orthodox. Related to occupation, 202 (44.8%) of mothers were house wife (Table 1) [23].

Table 1: Socio-demographic characteristics mothers (respondents) who have infants less than six months old, in Addis Ababa: Ethiopia, 2022.

Variable	Categories (N=451)	Frequency	Percent
Mothers age (years)	18-23	118	26.20%
	24-29	202	44.80%
	30-35	94	20.80%
	Above 35	37	8.20%
Marital status	Married	444	98.40%
	Other	7	1.60%
Religion	Orthodox Christian	235	52.10%
	Muslim	128	28.40%
	Protestant	76	16.90%
	Catholic	12	2.70%
Maternal education	Unable to read and write	31	6.90%
	Primary school	139	30.80%
	Secondary and preparatory	169	37.50%
	Higher education	112	24.80%
Husbands' education	Unable to read and write	8	1.80%
	Primary school	105	23.30%
	Secondary and preparatory	169	37.50%
	Higher education	169	37.50%
Maternal occupation	Housewife	202	44.80%
	Government employ	69	15.30%

	Private organization employee	79	17.50%
	Merchant	76	16.90%
	Daily labor	25	5.50%
Husbands' occupation	Government employ	101	22.40%
	Private organization employee	133	29.50%
	Merchant	141	31.30%
	Daily labour	76	16.90%
Monthly household income	1500 birr-4500 birr	89	19.70%
	4501 birr-7500 birr	162	35.90%
	7501 birr-10000 birr	127	28.20%
	Above 10001 birr	73	16.20%

Note: Others=Single and divorced

N=Number.

Obstetric and Health Service Utilization Factors

In this study, 449 (99.6%) mothers had antenatal care in their previous pregnancy. During their antenatal care follow up, 87 (19.6%) of women did not receive counseling about infant feeding practice. The majority of the respondents 437 (96.9%) were give birth at health institution and 14 (3.1%) were give birth at home. From 356 (78.9%) of mothers received postnatal care, 289 (69.2%) had received counseling on infant feeding up to six months (**Table 2**).

Table 2: Obstetric and health service utilization characteristics of study participants in Addis Ababa, Ethiopia, 2022.

Variable	Response (N=451)	Frequency	Percent
Infant age	0-3 months	332	73.60%
	4-6 months	119	26.40%
Infant gender	Male	268	59.40%
	Female	183	40.60%
Numbers of children	1	196	43.50%
	2-5	254	56.30%
	Six and above 6	1	0.20%
Birth order	First	195	43.20%
	Second	180	39.90%
	Third	59	13.10%
	Fourth and above	17	3.80%
Birth interval from preceding birth	1-2	94	36.40%
	3-4	119	46.10%
	Above 4	45	17.40%
ANC follow up	Yes	449	99.60%

	No	2	0.60%
Receive infant feeding counseling during ANC visit (N=449)	Yes	362	80.60%
	No	87	19.40%
Place of delivery	Health institution	437	96.90%
	Home	14	3.10%
Mode of delivery	Cesarean section	120	26.60%
	Spontaneous delivery	331	73.40%
Infant hospitalization	Yes	87	19.30%
	No	364	80.70%
PNC follow up within 45 days of delivery	Yes	356	78.90%
	No	95	21.10%
Receive infant feeding counseling during PNC visit (N=356)	Yes	289	79.20%
	No	76	20.80%

Note: N=Number.

Prevalence of Bottle Feeding Practice

Prevalence of bottle feeding practice was 39% (95% CI 35, 44). The following Figure shows the prevalence of bottle feeding practice among mothers who have infants less than six month (**Figure 1**). Among respondents who used bottles for feeding, 103 (58.9%) used formula, 30 (20.8%) used expressed breast milk and 5(3.5%) used caws milk. In this study in luential bodies of mothers to start bottle fed were health professional 67 (30.7%), husbands 40 (18.3%) and mothers 17 (7.8%) (**Table 3**).
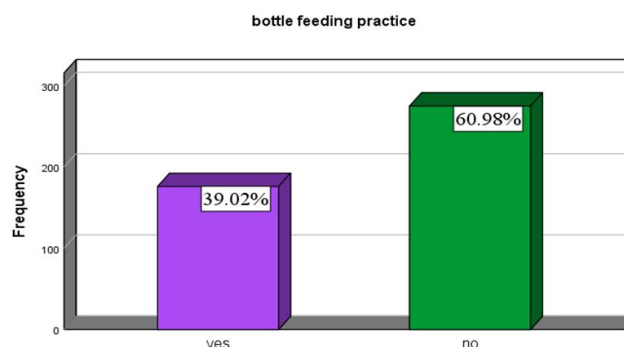

Figure 1: Percent distribution of prevalence bottle feeding practice' among mothers who have infant less than six months old in Addis Ababa, Ethiopia, 2022.

Table 3: Bottle feeding related practices of mothers who have infants less than six months old in Addis Ababa: Ethiopia, 2022.

Variable	Response	Frequency	Percent
Initiation of breast feeding.	Immediately after birth	122	27.1
	After one hour	131	29
	When mother feels comfort	103	22.8
	I did not feed breast milk	95	21.1
Kinds of fluid you feed if not breast feed (N=144)	Caws milk	5	3.5
	Formula milk	109	75.7
	Expressed breast milk	30	20.8
Youngest infant currently feed	Breast feeding	275	61
	Bottle feeding	176	39

Bottle feeding (N=451)	Yes	176	39
	No	275	61
Duration of bottle feed (N=156)	0-3 months	134	76.1
	4-6 months	42	23.9
Influence to bottle feed (N=218)	Own decision	92	42.2
	Mother	17	7.8
	Husband	40	18.3
	Health professionals	67	30.7
	Friends or family	2	0.9

Bottle Feeding Related Factors

All mothers have breastfeed their current infant for a certain period of time. From total, 122 (27.1%) mothers initiated breast milk to infant immediately within one hour of birth and 131 (29%) mothers initiated breast milk to infant after one hour of birth, whereas 103 (22.8%) initiates breast feeding after mother feels comfort after delivery. In this study, Influential bodies of mothers to start bottle feeding were health professional 67 (30.7%), husbands 40 (18.3%) and mothers 17 (7.8%).

The following diagram also shows the reason why mother who have infants less than six month practice bottle feeding (n=209) (**Figure 2**).
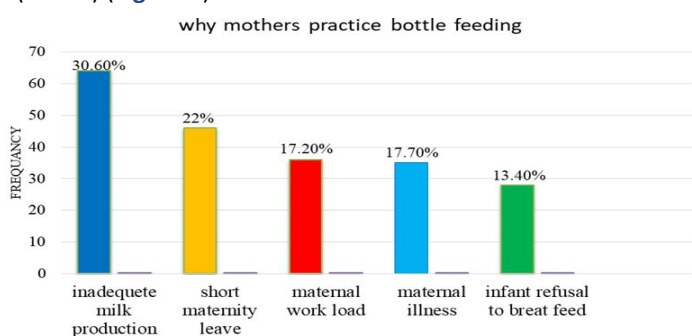

Figure 2: Percent distribution of reasons to practice' bottle feeding among mothers who have infant less than six months old in Addis Ababa, Ethiopia, 2022.

Mothers' Knowledge and Information Source of Bottle Feeding

Around two third (61.4%) of mother's who have infant less than six month have adequate knowledge on bottle feeding, whereas 38.6% of mother's who have infant less than six month haven't adequate knowledge on bottle feeding [24].

Regarding to information about bottle feeding 352 (78.3%) mothers was informed about bottle feeding from different sources (**Table 4**).

Table 4: Information and source information on bottle feeding among mothers who have infants less than six months old in Addis Ababa: Ethiopia, 2022.

Variable	Response	Frequency	Percent
Have you ever heard bottle feeding	Yes (informed)	353	78.30%
	No (not informed)	98	21.70%
Source of information on bottle feeding (N=353)	Mass media	66	18.70%
	Health facilities	136	38.50%
	Friends and family	149	42.20%

	Books and leaflets	2	0.60%
Maternal knowledge on bottle feeding	Inadequate knowledge	174	38.60%
	Adequate knowledge	277	61.40%

Factors Associated with Bottle Feeding Practice

Binary logistic regression model was used to determine the association between independent variables with dependent variable. Variables which were associated with bottle feeding practice in the bivariable binary logistic regression analysis (p<0.2) were; gender of infant, initiation of breast milk, mothers education, place of delivery, mode of delivery, monthly household income, infant hospitalization, information herd about bottle feeding and mothers knowledge about bottle feeding. Variables which were associated in bivariable binary logistic regression analysis were tested in the final multivariable binary logistic regression analysis to see their significant association with bottle feeding practice.

By using backward likelihood ratio method multivariable logistic regression analysis; infant gender, infant hospitalization, mode of delivery, heard about bottle feeding and initiation of breast milk were remained significant in the final model. Model fitness was tested with Hosmer and Lemeshow Goodness of fit test and fit with a p-value =0.440. In addition, there was no problem of Multicollinearity among explanatory variables, with variance inflation factor <3 for all variables. After adjusting confounding variables the finding of this study revealed that the odds of bottle feeding practice among mothers having infants less than six months who had male infant were 59% less likely to bottle feed than infants of female gender AOR=0.589 (95% CI: 0.381, 0.911).

Mode of delivery was significantly associated with bottle feeding practice. mothers who gave birth through cesarean section were 2.8 times more likely to practice bottle feed than mothers give birth *via* spontaneous delivery AOR=2.817 (95% CI: 1.764, 4.494). Similarly, infant hospitalization after delivery is significant for mothers to bottle feed an infant. Infants who were hospitalized after delivery were almost 2 times more likely to practice bottle feeding than infants who were not hospitalized AOR=2.114 (95% CI: 1.246, 3.588). In addition, time of initiation breast feed was significantly associated with bottle feeding practice. Mothers who initiate breast fed after one hour were 5.5 times more likely to practice bottle feeding than mothers who initiate breast feed immediately after birth (within one hour) AOR=5.526 (95% CI: 3.121, 9.786). Furthermore, mothers who have no information on bottle feeding were significantly associated with bottle feeding practice. Lastly, mothers not having information about bottle feeding were 4 times more likely to practice than mothers not having information about bottle feeding AOR=4.131 (95% CI: 2.208, 7.729) (Table 5).

Table 5: Bivariable and multivariable logistic regression analysis for factors associated with bottle feeding practice among mothers having infant less than 6 months at Addis Ababa health centers, Addis Ababa, Ethiopia, 2022.

Variable		Bottle feeding		COR	AOR	P value
		Frequency				
		Yes	No			
Infant gender	Male	93	175	0.64 (0.436, 0.941)	0.589 (0.38,0.9)	0.017
	Female	83	100	1		
Maternal education	Unable to read and write	10	21	0.476 (0.21,1.10)		
	Primary school	43	96	0.448 (0.27,0.75)		
	Secondary and preparatory	67	102	0.657 (0.40,1.06)		
	Higher education	56	56	1		
Monthly household income	1500-4500 birr	32	57	0.414 (0.22, 0.78)		
	4501-7500 birr	49	113	0.320 (0.18, 0.57)		

	7501-10000 birr	53	74	0.528 (0.29,0.94)	
	Above 10001	42	31	1	
Place of delivery	Health institution	173	264	2.403 (0.66,8.74)	
	Home	3	11	1	
Mode of delivery	Caesarean section	77	53	3.258 (2.14,4.97)	2.82 (1.76, 4.5)	<0.001
	Spontaneous delivery	99	222	1	
Infant hospitalization	Yes	51	41	2.329 (1.46,3.71)	2.11 (1.25,3.59)	0.006
	No	125	234	1	
Time of initiation of breast feeding	After one hour (late)	157	172	4.948 (2.89,8.449)	5.53 (3.12,9.79)	<0.001
	Within one hour (early)	19	103	1	
Have ever heard about bottle feeding	No(not informed)	161	192	4.64 (2.58, 8.36)	4.13 (2.21,7.73)	<0.001
	Yes (informed)	15	83	1	

DISCUSSION

The aim of this study was to assess the prevalence of bottle feeding practice and associated factors among infants less than six months in Addis Ababa public health centers. In this study, the prevalence of bottle-feeding practice was 39% (95% CI: 35-44). This result is consistent with the studies done at East Africa (Comoros), Sudan and Woldia, Ethiopia. On the other hand, the result of this study is higher compared to the national prevalence reported in the 2019 EDHS 22%, studies conducted at Mettu town, Namibia, Nine East and South East Asian countries and Nigeria. The possible reason for this difference might be attributed to study period variation, as there has been increasing advocacy for using formula in this region recently and urbanization. In contrast, the prevalence of bottle feeding in this study is lower than studies conducted at Debrelibanos Ethiopia, Pakistan and Nine East and South East Asian countries (Philippines). The difference might be due to methodological variations between studies, dissimilarities in infant and maternal socio-demographic characteristics and other differences in sociocultural, economical, health and health service utilization characteristics between respondents of the referenced areas and the study place.

The main reasons mentioned by mothers for bottle feeding in this study are insufficient breast milk production for infants (30.6%), short maternity leave (22%), and maternal work load in house and outside house to breast feed (17.2%), maternal illness (17.7%) and infant refusal to breast feed due to childhood illness (13.40%). These results are consistent with other studies done in Holata, Agaro, Namibia, Benghazi Libya, Mauritius and Pakistan.

Short maternal leave (3 months) makes mothers prompted to resort to the supplementation of infant formula before 3 months so that their infants familiarize to bottle feeding during their absence, resumption of work, perception of breast milk insufficiency and infants sucking problem are factors that hiders breast feeding and facilitates for choosing bottle feeding.

According to this study, mothers who gave birth through cesarean section were 2.8 times more likely to practice bottle feed than mothers give birth via spontaneous delivery. This result is in line with studies conducted at Namibia, Libya, Pakistan and India. This resulted due to delayed initiation of breast feeding because of mothers take long time to recover from anesthesia and additional discomfort. Similarly, gender of the infant was significantly associated with bottle feeding practice. An infant who is male was 59% less likely to bottle feed than infants of female gender. This result is similar with studies done in India this is due to mothers belief of males high nutritional requirement construction of gender influence to increase bottle feeding.

Among the various obstetric and health service utilization factors assessed, infant hospitalization was significantly associated with bottle feeding practice. Infants who were hospitalized after delivery were almost 2 times more likely to practice bottle feeding than infants who were not hospitalized. This result is similar with studies done in India, Kassel, eastern Sudan and Ethiopia particularly Holeta and Agaro towns. This may result due infants sucking problem as result of childhood illness that makes them to admit to hospital [25].

Late initiation breast feed was significantly associated with bottle feeding practice. Mothers who initiate breast fed after one hour were 5.5 times more likely to practice bottle feeding than mothers who initiate breast feed immediately after birth (within one hour). This result is in line with studies done in Wuhan, China, Hula (Sidama Ethiopia) and Debra Birhan, Ethiopia. This might be due maternal illness (pain full breast experience), delayed milk secretion, caesarean section mode of delivery, infant inability to suck breast and low counseling service during ANC and PNC.

Access to information seems to affect a mother's decision on infant and young child feeding. Mothers who have no information on bottle feeding was significantly associated with bottle feeding practice. Mothers who haven't information about risk of bottle feeding were 4 times more likely to practice bottle fed than mothers having information about bottle feeding AOR=4.131(95% CI: 2.208, 7.729). This study supports study conducted in in Benghazi, Libya. This may be resulted due to lack of information about benefits of breastfeeding for mother and child and risks followed after bottle feeding like diarrhea and other botte sanitation related infections. Finally, lack of indication on seasonal variation of bottle feeding, inclusion of only governmental health centers and qualitative method of study was limitation this study [26].

CONCLUSION

The overall prevalence of bottle feeding practice high in the study area (39%) as compared to national prevalence (22%). male infant, infant hospitalized, cesarean section delivery and late initiation of breastfeeding. infant hospitalization and late initiation of breast feeding and not having information on bottle feeding were significant factors associated with bottle feeding practice. Therefore, increasing breast feeding practice and avoid bottle feeding practice, provide continuous breastfeeding education, training of health care workers to strengthen maternal and child health services increase maternity leave are recommendations of the study.

ETHICAL APPROVAL

The study was conducted after getting ethical clearance from the institutional review board of Saint Paul hospital millennium medical collage ethical review committee (reference number PML3/757, on 9/6/2022) and Addis Ababa health bureau public health research and emergency management department(reference number A/A/16172/227, on 23/6/2022). In addition, letters of authorization was obtained from Areda sub city health office, Kolife Karanio sub city and Nifas silk Lafto sub cities before contacting the participants. The participants were then fully briefed about the study's purpose and benefits in their local language and obtained informed written consent for both data collection and publication. Confidentiality was maintained through anonymity and privacy measures were taken to preserve the right of the participants throughout the research work including publication. Finally, the selected participants were asked about their willingness to join the study. Any study participant willing to engage in the study and those who wanted to stop an interview at any time were allowed to do so. This study was conducted in accordance with the declaration of Helsinki.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The datasets analyzed during the current study are available from the corresponding author upon reasonable request.

COMPETING INTEREST

The authors declare that they have no competing interest.

FUNDING

AUTHORS' CONTRIBUTION

GB developed the project, manage resource, and perform supervision and investigation. GB, ST, SM, AA3, BM and AB, participated in the methodology. GB, SM, ST, AA2, AA3 in data analysis and conceptualization (developing the initial drafts of the manuscript) and revising subsequent drafts. GB, AA2 and SM prepared the final draft of the manuscript. All authors read and approved the final manuscript.

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