

# Appropriate Complementary Feeding Practice and associated factors among mothers with children age 6- 23 months in Faggeta-Lekoma District, Northwest Ethiopia: community- based cross - sectional study

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## Research note

**Keywords:** appropriate Complementary feeding practice, Children aged 6–23 months, Ethiopia

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## **Abstract**

Abstract Objective : the aim of the study was to assess appropriate complementary feeding practices and associated factors among mothers with children of age 6 - 23 months in Faggeta-Lekoma District, Northwest Ethiopia. Result – A total of 593 study subjects were included in the study. The magnitude of appropriate complementary feeding practice was 10.6%. Majority (67.1%) of the mothers timely initiated complementary feeding at 6 months. About 60% of mothers fulfill the minimum meal frequency feeding to their children, the day preceding the survey. Only 12.3 % mothers offered four or more food groups to their child Mother's education: high school and above [AOR=3.12(95%CI 1.43, 6.81)], postnatal care visit [AOR=5.30 (95%CI 2.69, 10.42)], Age of a child: 18-23 months [AOR=3.98 (95%CI 1.55, 10.22)] were significantly associated with appropriate complementary feeding practice. Keywords : appropriate Complementary feeding practice, Children aged 6–23 months, Ethiopia

## **Introduction**

The first 2 years of life are critical time to promote optimal child growth and development (1,2). After the age of sixth month, the energy and nutrient content of breast milk alone is not enough to meet nutritional requirement of the growing infant (3,4).

The World Health Organization (WHO) recommends that Infants should be exclusively breastfed for the first six months of life. Thereafter, they should receive nutritionally adequate and safe complementary foods at 6 month, while continuing to breastfeed for up to two years or beyond to achieve optimal growth, development and health (5-7).Different studies also supports and proves the current infant feeding recommendations for better growth during infancy and early childhood(8).

Appropriate complementary feeding after the age of 6 month is very essential for prevention of respiratory Infections, diarrhea, stunting, acute malnutrition, micronutrient deficiencies(9). Additionally, appropriate complementary feeding during this period has especial importance to improve cognitive and psychosocial development, productivity and economic status during adult life (10).

Suboptimal (inadequate) infant feeding practices are the major causes for childhood under nutrition in developing countries (11, 12). Malnutrition is the cause for 45% of child death in 2015 globally and one third of the malnourished children were found in Africa (13). Inappropriate feeding practices (inappropriate breast feeding and inappropriate complementary feeding) are responsible for 13% and 6% of child mortality respectively (9).

The development of successful interventions to improve child-feeding practices, in particular, requires appropriate instruments that can adequately assess current Feeding practices and assessing the factors which have effect on the feeding practice (14).There is little information on appropriate complementary feeding practice( CFP) in Ethiopia. Furthermore, there is no study done on the study area hence this study sought to assess the appropriate complementary feeding practices and its associated factors among children aged 6–23 months who reside in Faggeta-Lekoma District, North Ethiopia.

## Methods

Community-based cross-sectional study was done from September 9 to September 28, 2017 in Faggeta lekoma district, Amhara region, Ethiopia. The district has 27 kebeles (25 rural and 2 urban kebeles). This study was done among 6 kebeles of the district. The study population was all mothers who have children aged 6-23 months living in the study area for at least 6 months. Only One mother who was unable to speak (with problem of speaking) was excluded. Sample size was determined both using single population proportion formula ( $[n = [(Z_{\alpha/2})^2 * P(1-P)] / d^2]$ ) and by considering the predictor variable (table 1).

**Table 1: Sample size determination for appropriate CFP and associated factors in Faggeta Lekoma District, Northwest Ethiopia 2018**

Variables	Assumption	Total sample size
Appropriate CF practice	Prevalence(P)=10.75%, marginal error 4% , CI=95%	223
literacy rate/Education level	OR=3.84, P=72.3%, power=80%, CI=95% Ratio=1:1	288
Age of child (in age group)	OR=4.2, P=67%, power 80%, CI=95% Ratio=1:1	202
Antenatal care(ANC) follow up	OR=2.8, P =66.7%, power 80%, CI=95% , Ratio=1:1	156

The higher sample size which is 288 was taken. By considering design effect of 2 and 5% for non response a final sample size of 605 was considered. After proportionally allocation of the expected sample size in to the selected 6 kebeles, study subjects were selected by simple random sampling method by using lists from the health post registration book.

### Data collection methods and quality assurance procedures

Data were collected using pretested, structured interviewer administered questionnaire. Pretest was done on 5% of mothers. For the data collection five diploma nurses as data collectors and 2 BSc nurses as supervisors were recruited. Two days training was given to data collectors and supervisors. To measure the feeding frequency and dietary diversity 24 hour food intake recall method was used.

### Complementary feeding practice indicators

**Timely introduction of complementary feeding:** children 6-23 months of age who started complementary foods at 6 month (16).

**Minimum dietary diversity:** children 6–23 months of age who receive foods from four or more food groups during the previous day. The seven food groups are: grains, roots and tubers; legumes and nuts;

dairy products (milk, yogurt, cheese); flesh foods (meat, chicken and liver/organ meats); eggs; vitamin A rich fruits and vegetables; and other fruits and vegetables (16).

**Minimum meal frequency:** children 6–23 months of age who receive solid, semi-solid or soft foods the minimum number of times or more (minimum is defined as: two times for breastfed infants 6–8 months; three times for breastfed children 9–23 months; and four times for non-breastfed children 6–23 months) in the previous day(16).

**Appropriate Complementary Feeding Practices:** if the mother responds correctly all the above three indicators (if initiated Timely, fed Minimum dietary diversity and gave Minimum meal frequency) (17, 18).

## Data management and analysis

Data were coded and entered into Epi-info version 3.5.1 and exported into statistical package for social sciences (SPSS) Version 21.0 software for analyses. To identify factors associated with appropriate complementary feeding practice, first a bivariable logistic regression was performed. Those significant variables in the bivariable analysis ( $p$ -value  $< 0.2$ ) were incorporated into the multivariable logistic regression.

# Results

## Socio-demographic characteristics

Out of 605 mothers, 593 respond to the questionnaire making the response rate 98%. The mean ( $\pm$  SD) age of mothers and children was 29.13 ( $\pm$  6.17) years and 16.28 ( $\pm$  5.88) months respectively. Three hundred twenty one (54.1%) of the respondents were in the age range of 25-34 years followed by those in the age range 35-49 years which accounts for 143 (24.1%). Majority of the respondents were farmers in occupation which accounts 80.4% (Table 2).

## Maternal and child health services variables

Three hundred four (51.3%) of the children were in the age group of 18-23 months. Regarding to the ANC visit, 91(15.3%) of the mother's didn't attend ANC visit during their pregnancy time. About 40.3% of mothers give birth their last child at health facility and 37.9% had received postnatal care at least once (Table 2).

Table 2: Socio-demographic, Maternal and child health services related characteristics of mothers with children 6-23 months of age (n=593) in Faggeta Lekoma District, Northwest Ethiopia

Variable	Frequency	Percentage
Age of the mother		
15-24	129	21.8
25-34	321	54.1
35-49	143	24.1
Religion		
Orthodox	591	99.7
Protestant	2	0.3
Education status of the mother		
No formal education	408	68.8
Primary education	113	19.1
Secondary and above	72	12.1
Mother's occupation		
Farmer	477	80.4
Housewife	63	10.6
Merchant	24	4
Civil servant	17	2.9
Other	12	2.1
Place of residence		
Rural	493	83.1
Urban	100	16.9
Fathers' education status		
No formal education	287	50.6
Primary education	196	34.6
Secondary and above	84	14.8
Age of the child(months)		
6-11	142	23.9
12-17	147	24.8
18-23	304	51.3
Sex of the child		
Male	305	51.4
Female	288	48.6
ANC visit		
Yes	502	84.7
No	91	15.3
Advise about CFP during ANC visit(n=502)		
Yes		
No	319	63.5
No	183	36.5
Place of delivery		
Home	354	59.7
Health institution	239	40.3
Postnatal care visit		
Yes	225	37.9
No	368	62.1

## Complementary feeding practices

Majority (67.1%) of the mothers timely initiated complementary feeding at 6 months. About 60% of mothers fulfill the minimum meal frequency feeding to their children, the day preceding the survey. Only 12.3 % mothers offered four or more food groups to their child meeting the minimum dietary diversity criteria on the day preceding the study. The most commonly given food items to the children in 24 hours preceding the survey were Grain, roots and tubers. From the three combining indicators, overall prevalence of appropriate complementary feeding practices was 10.6 % (95 % CI=8.12, 13.07).

### **Factors associated with appropriate complementary feeding practice**

The variables which were associated in the bivariable analysis (p value less than 0.2) and entered in to multivariable analysis were Mothers education, Husband educational status, place of residence, Number of ANC visit, place of delivery, post natal care visit, Place of residence, Advise about CFP at ANC visit and age of the child. But only Age of the child, post natal care visit and mother's education were remained associated with appropriate CFP in the multivariable analysis. Mothers with secondary and above education were 3 times more likely to practice appropriate CFP than mothers with no formal education [AOR (95%CI) = 3.12 (1.4-6.8)].

Mothers who had post natal care visit were 5.3 times more likely to practice appropriate CFP as compared to mothers who had no post natal care visit[AOR (95%CI) = 5.3(2.69,10.4)]. Children in the age group of 18-23 month were 3.9 times more likely to receive appropriate complementary foods than children in the age group of 6-11 month [AOR (95%CI) =3.98 (1.55 -10.2)](table 3).

Table 3: Factors associated with appropriate complementary feeding practice among mothers who had children aged 6-23 months in Faggeta Lekoma District, Northwest Ethiopia,

Variables	<u>Appropriate CFP</u>		COR [95% CI]	AOR [95% CI]
	Yes	No		
	N (%)	N (%)		
<b>Mothers' education</b>				
No formal education	24(5.9)	384(94.1)	1.00	1.00
Primary education(1-8)	17(15)	96(85)	2.83[1.46-5.48]	1.74[0.8 - 3.7]
Secondary and above	22(30.6)	50(69.4)	7.04[3.67-13.5]	3.12[1.4 - 6.8]*
<b>Husbands' education</b>				
No education	21(7.3)	266(92.7)	1.00	1.00
Primary education(1-8)	20(10.2)	176(89.8)	1.44[0.76-273]	0.62[0.28 - 1.4]
Secondary and above	22(26.2)	62(73.8)	4.49[2.33-8.69]	0.66[0.24 - 1.8]
<b>Place of delivery</b>				
Home	19(5.4)	335(94.6)	1.00	1.00
Health institution	44(18.4)	195(81.6)	3.97[2.25,7.00]	1.9[0.95 - 3.83]
<b>Postnatal care visit</b>				
No	13(3.5)	355(96.5)	1.00	1.00
Yes	50(22.2)	175(77.8)	7.80[4.13-14.7]	5.3[2.69 - 10.4]*
<b>Place of Residence</b>				
Rural	40(8.1)	453(91.9)	1.00	1.00
	23(23)	77(77)	3.38[1.92-5.96]	1.62[0.75 -

Urban				3.84]
<b>Advice at ANC about CFP</b>				
No	13(7.1)	169(92.9)	1.00	1.00
Yes	48(15)	271(85)	2.30[1.21-4.37]	1.32[0.64 - 2.7]
<b>Age of child in month</b>				
6-11	6(4.2)	136(95.8)	1.00	1.00
12-17	13(8.8)	134(91.2)	2.19[0.81-5.96]	2.39[0.82-6.95]
18-23	44(14.5)	260(85.5)	3.83[1.59-9.23]	3.98[1.55 - 10.2]*

\* p < 0.05

## Discussion

In this study the magnitude of appropriate CFP was 10.6 %. This magnitude is higher than results of studies done in different parts of Ethiopia: 7% in Bahir Dar (19). This might be due to study area difference because the study in Bahirdar is only in urban areas by which the mothers of these children could be employed so it can affect the time of initiation of complementary food which is one of the indicators of appropriate complementary feeding practice.

The magnitude of appropriate complementary feeding practice in this study was lower than results of studies done in different parts of Ethiopia: 56.5% in Lasta District (20), 29.3% in oromia (21) and results of studies done in other developing countries, like 47% in Nigeria (22), 33% in Nepal (23). This difference could be explained by higher maternal literacy rate and utilization of institutional delivery in the latter study areas, which are the effective entry points to step up mothers' confidence in challenging the community attitude towards inappropriate feeding practices.

The result of multivariable analysis showed that education status of mothers was associated with appropriate complementary feeding practice. Children within the age group 18-23 months were 3.98 times more likely to feed appropriately as compared to infants in the age group 6-11 months. This result was consistent with the results of studies done in Ethiopia (17), Gana (14). This might be due to myth of mothers that infants could not be able to digest food like meat, egg and vegetables before the age of one year than the older children. Furthermore, some of the mothers could not introduce complementary feeding at six months.

The increased odds of appropriate complementary feeding practice were found among mothers who had postnatal care visit than mothers who hadn't the visit. Similar findings were also reported by the studies done in different parts of Ethiopia (17, 19, 20). This might be due to the fact that during post natal care visit mothers are more likely to get advice and Education on appropriate infant and young child feeding practice hence it can contribute to improved feeding practice of the children.

This study also showed that education status of the mother is important predictor to appropriate complementary feeding practice. Mothers with secondary and above education were 3.12 times more likely to practice appropriate complementary feeding practice than mothers with no formal education. Similar finding were also reported by studies done in different parts of Ethiopia (17, 18, 19). The possible reason for this might be educated mothers can easily access information from different source and could have better understand about importance of appropriate CFP.

## Conclusions

Appropriate Complementary feeding practice was low in Faggeta-Lekoma District. Mothers' education status, Age of the child and mothers postnatal check up were significantly associated with appropriate complementary feeding practice. Increasing the coverage of postnatal care utilization and mothers' education is crucial to practice appropriate complementary feeding practices.

## Limitations

The study showed appropriate complementary feeding practice of children in northwest Ethiopia. To improve the quality of the study different efforts have been made like giving intensive training for data collectors, pretesting the questionnaire and using WHO indicators of complementary feeding. However, this study do have its own limitations like Recall and social desirability bias because frequency, types of foods and time of initiation of complementary food depends on respondent's memory.

## Abbreviations

AOR: Adjusted odds ratio; WHO: World Health Organization; CFP: complementary feeding practice; ANC: Antenatal care; SD: Standard deviation; CI: confidence interval; SPSS: Statistical package for social sciences; COR: Crude odds ratio

## Declarations

### Ethics approval and consent to participate

Ethical clearance was obtained from institutional ethical review board, institute of public health, University of Gondar. Permission letters was obtained from Faggeta Lekoma District Health Office. All participants were informed about the purpose of the study there after written consent was obtained. Confidentiality was maintained by using code numbers other than names.

## **Consent for publication**

Not applicable

## **Availability of data and materials**

Data will be available upon request from the correspondence authors

## **Competing interests**

The authors declare that they have no competing interests

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This study was self sponsored. The principal investigator covers the cost for the study.

## **Authors' contributions**

Conceived and designed the study: AB, TG, GA. Performed the study: AB. Analyzed the data: AB, TG, GA, Wrote the paper: AB, TG, Approved the proposal with some revisions: AB, TG. All authors read and approved the final manuscript

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