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Research Article

Complementary Feeding Knowledge, Practice, Dietary Diversity and Associated Factors among Mothers of Children 6-23 Months in Guto Gida District, Oromia, Ethiopia

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ABSTRACT

The period for complementary feeding is crucial for growth, development and overall health of infants and young children. Lack of awareness in knowledge and practices towards complementary feeding among mothers will lead to improper practice of complementary feeding which may causes of children malnutrition, slower in recovery after illness and death. Hence, this study was aimed to assess complementary feeding knowledge, practice, dietary diversity and associated factors among mothers of children 6-23 months of age in Guto Gida District, Oromia, Ethiopia. Community based cross sectional study design was conducted among 410 mothers who had children aged 6-23 months in the study area. Cluster and simple random sampling techniques were used to select the required sample. A face to face interview was conducted to collect data using semi-structured and structured questionnaire. In addition, focus group discussion was also included in this study. The collected data was coded, organized and entered in to SPPSS windows version 22.0 and analyzed by using frequency, percentage and multi-logistic regression model. The result of this study revealed that about two-third (66.3%) of the respondents had good knowledge whereas nearly half (52.2%) of the mothers had good practices toward complementary feeding. The minimum dietary diversity identified from this study was 27.3%. Education levels of mothers had significant effect on mothers' knowledge on complementary foods. In addition, age of mothers, mother occupation and wealthy index of the family had a significant effect on mothers' complementary feeding practices. Furthermore, age of children, birth orders of children, wealthy index and educational level of mothers had a significant effect on dietary diversity of children. The overall findings were indicative of the problems of mothers' knowledge and feeding practice toward complementary foods, and dietary diversity of 6-23 months of age children. Therefore, all possible interventions should be applied by all the concerned bodies to improve mothers' knowledge and practice towards complementary foods, dietary diversity of children and thus to improve child survival.

Keywords: Associated factors; Complementary Foods; Dietary Diversity; Infants and Young children; Knowledge; Practices

INTRODUCTION

The early stages of a child's life, when all parts of the infant are growing physically, mentally and socially are very important, which requires an optimal supply of energy and nutrients to the body [1, 2]. Therefore, adequate and balanced supply of nutrients is highly required to prevent malnutrition which can affect the health and development of the child, and impairs the intelligence, educability and productivity of the baby. It also leads to a heightened risk of chronic non-communicable diseases in the later life [3].

Children should receive adequate, safe and appropriate complementary foods from six months onwards while

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continuing to be breastfed until two years of age [4]. From six months onward, when breast milk alone is no longer sufficient to meet all the nutritional requirements, infants enter a particularly vulnerable period of CI during which they make a gradual transition to eating family foods [5].

Mothers' knowledge about nutritious meals for the children influences how the child is fed. In many developing countries infants and young children are most vulnerable to malnutrition because of lack of knowledge on how to feed a child [6].

Inappropriate feeding practices during the first two years of life are a major cause of undernutrition in young children. The number of global deaths and disabilities, adjusted life years caused by undernutrition constitutes the largest proportion of any risk factors in children under the age of five [7].

Dietary diversity is defined as the number of different foods or food groups consumed over a given reference period [8]. The consumption of a varied diet suggests a possibility of infant/young child to having taken a balanced diet which is an important aspect in the child's nutritional status. Minimum dietary diversity was established based on the number of food groups consumed by infant/young child in the previous 24 hours prior to the data collection.

Globally, severe acute malnutrition is the leading cause of death in under-five children. The greatest risk of undernutrition occurs during intrauterine life, infancy and early childhood which makes the first 1000 days a window of opportunity to address malnutrition [3]. The main predisposing factors of malnutrition among under five years old children include household food insecurity, inadequate health and sanitation services, limited knowledge of the mothers/caregivers on proper feeding practices such as exclusive breastfeeding, complementary feeding, appropriate food type and mix and also limited time for mothers available for their care during pregnancy, care or feeding for infants and children [9]. Hence, good knowledge of the mothers/caregivers on proper infant and young child feeding practice is very crucial to maintain, promote the health and nutritional status of the children [10 - 12].

An estimated of 32% or 186 million children below five years of age in developing countries are stunted and about 10% or 55 million are wasted [6]. In Ethiopia, 57% of all under-five deaths are highly associated with abrupt cessation of breastfeeding and infectious diseases but it is closely linked to gap of knowledge on how to feed appropriately [13]. In addition, Ethiopia Demographic and Health Survey reported in 2017 that about 38% of children under age 5 were stunted, 10% were wasted and 24% were under weight. Furthermore, the feeding practice of 7% of children aged 6-23 months met the minimum acceptable dietary standards and 14% of children had an adequate diverse food consumption. Furthermore, inappropriate complementary feeding practices of mothers of 6-23 months was indicated as 49% [14].

The lack of dietary diversity is a particularly severe problem among poor populations of developing countries because their diets are predominantly based on starchy staples and often include little or no animal products and few fresh fruits and vegetables. These plant-based diets tend to be low in a number of micronutrients, and the micronutrients they contain are often in a form that is not easily absorbed. Other aspects of dietary quality problems such as high intakes of fat, salt, and refined sugar in developed countries is becoming a concern for developing countries [15].

Therefore, the ultimate aim of this study was to assess complementary feeding knowledge, practice, dietary diversity and associated factors among mothers of children 6-23 months in Guto Gida district of Oromia, Ethiopia. The finding of this study will help District and Zonal health office to set their target with feasible interventions in the study area. It also reports on the existing gap for organizations and health workers working in the area, how to solve the problem, and how to design mechanisms for the next planning by providing information about mothers' knowledge and practice on complementary feeding, and dietary diversity of children.

METHODOLOGY

Study area and period

The study was conducted from February 2018 to January 2019 in Guto Gida district, which was located at 331 km away from Finfine to the West direction. Guto Gida district comprises of 20 rural kebeles and two towns with a total population of 86,598 and a total of 6,314 infants/young children of 6-23 months.

Study Design and Population

Community-based cross-sectional study was conducted. The source population was mothers who have children in age group of 6–23 months who had been living in Guto Gida district. The study population was mothers who had children in the age range of 6–23 months that were selected to participate in the study. The mothers who were permanent resident of the study area were included in the study. Those mothers whose infants/young children were mentally or chronically ill were excluded from the study.

Sample size and sampling techniques

The required sample size was determined by using single population proportion formula considering the 49% estimated level of inappropriate complementary feeding practices of children aged 6-23 months in the study area as stated in Ethiopia Demographic and Health Survey 2012.

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$$n = \frac{(Z\alpha/2)^2.p.q}{d^2}$$

Where; n = sample size

Zα/2 = the value of the standard vitiate at a given level of significance to be read from

statistical table (at 95% level of confidence, Zα/2 = 1.96)

d = margin of error (5% = 0.05)

p = 49% estimated level of inappropriate complementary feeding practices of children aged

6-23 months as stated in Ethiopia Demographic and Health Survey,

2012 (p= 0.49) (EDHS, 2012).

q = 1-p and hence, q = 0.51

$$n = \frac{(1.96)^2 \times 0.49 \times 0.51}{(0.05)^2} = 384 + (10\% \text{ expected unresponsive mothers})$$

n = **384** + 38 = 422

Three types of sampling techniques were selected for the study. These were cluster sampling, simple random sampling and systematic random sampling. Based on geographic location and the distance away from the city, the district was categorized in to four different clusters; namely Uke, Nekemte, Eba and Lugo cluster. From each cluster one or two kebeles was/were selected by simple random sampling techniques by considering the number of kebeles included in the cluster. Accordingly, the selected kebeles were Uke Rural and Mada Jalala from Uke cluster, Nagasa and Jiregna from Nekemte cluster, Gari from Eba cluster and Meti from Lugo cluster. By considering the numbers of children in the selected kebeles, the proportion of participants were determined. Therefore, from all these kebeles, a total of 410 mothers that had 6-23 months of children were interviewed with the prepared structured and semi-structured questionnaires by systematic randomly sampling techniques in the selected kebeles.

Variables and Measurements

The dependent variables of the study were mothers' knowledge and practice on complementary foods, and dietary diversity of 6-23 months of age children whereas the independent variables were the socio-demographic factors like head of house, religion, ethnic group, family size, wealthy index of the family, age of mothers, age at first marriage of mothers, occupation of mothers, educational level of mothers, occupation of fathers, sex of child, age of child and birth order of child.

Knowledge – The mother was considered as a good knowledge on feeding her child when the respondent woman identified correctly at least six correct or true statements out of eight statements (70%) prepared about child feeding knowledge [16].

Practice – The respondent exercises a good practice when the respondent woman identified correctly at least six correct or true statements out of eight statements (80%) prepared about child feeding practice [16].

Minimum dietary diversity - Children 6–23 months of age who received foods from four or more food groups of the seven food groups (1) grain, root, and tubers, (2) legumes and nuts, (3) dairy products, (4) meat and animal products (5) poultry products (6) vitamin A-rich fruit and vegetables, and (7) other fruit and vegetables] are used to have minimum dietary diversity [8].

Data Collection Methods

The questionnaire items were developed from similar studies and amended in accordance with the study area. Structured and semi-structured questionnaire was prepared with English language and translated to Afan Oromo for data collection purpose. Data were collected by trained data collectors and supervisors under the supervision of the principal researcher. The questionnaire was pre-tested out of the study area. The interview was administered in Afan Oromo language (local language). The data quality was assured by performing strong supervision by immediate supervisors. The supervisors also checked the completeness and consistency of questionnaires on daily basis. The principal investigator had also rechecked the completed questionnaires to maintain quality and has supervised five percent of the surveyed households to confirm whether the houses were interviewed in the intended way.

Ethical clearance

Ethical clearance was obtained from Wollega University Research Review Committee. A necessary permission and support was also obtained from Guto Gida District Health office and local admiration of District. An informed verbal consent was obtained from the study participants and the privacy of the participants and confidentiality of the information were assured.

Stastical analysis

Raw data was cleaned, coded and entered into the computer using Statistical Package for Social Sciences (SPSS) for further analysis. Data on maternal socio-demographic characteristics, Mothers' knowledge and feeding practice on complementary foods were summarized using descriptive statistics of frequency and percentages. Multi-logistic regression was employed as well for testing of bivariate and multivariate relationships. The crude and adjusted odds ratio together with its corresponding 95% confidence intervals was computed. P- value < 0.05 was considered to declare a result as statistically significant in this study.

RESULTS

Socio-demographic factors

A total of 410 mothers that had infants/young children of 6-23 months were interviewed from the district. One hundred fifty (36.6%) of the respondents belonged to the age group of 26 - 30 years and 378 (92.2%) of the respondents were Oromo and 32 (7.8%) were Amhara in ethnic group. Nearly half, 202 (49.3%), had children in the age group of 9 to 17 months and 166 (40.5%) of which were with 2-3 birth order. About 162 (39.5%) of the respondents had no formal education. Three hundred ninety-two (95.6%) of the mothers were married and living with

their husbands and 314 (80.1%) of the interviewed mothers' husbands were farmers. Two hundred eighty-four (69.3%) of the responding mothers were followers of Christian protestant. Two hundred fifty-eight (62.9%) had family size of 3-5 members and 232 (56.6%) of the mothers were from middle wealth index. (Table 1).

Table 1: Socio-demographic characteristics of mothers in Guto Gida District, Oromia, 2019.

Variables	Categories	Frequency	percentage
Ethnic group	Oromo	378	92.2
	Amhara	32	7.8
	Gurage	0	0
	Other	0	0
Religion	Christian Orthodox	78	19
	Protestant	284	69.3
	Muslim	38	9.3
	Catholic	10	2.4
	Other	0	0
Wealthy index	Low	170	41.5
	Middle	232	56.6
	High	8	2.0
Marital status of mothers	Single	12	2.9
	Married	393	95.6
	Separated/ divorced	2	0.5
	Widowed	4	1
Head of house	Male	392	95.6
	Female	18	4.4
Family size	2	8	2.0
	3-5	258	62.9
	6-8	138	33.7
	>8	6	1.5
Age of mothers	16-20	44	10.7
	21-25	146	35.6
	26-30	150	36.6
	31-35	68	16.6
	>36	2	0.5
Age at first marriage of mothers	16-20	212	53.3
	21-25	174	43.7
	26-30	12	3.0
	31-35	0	0
	>36	0	0
Educational levels of mothers	No formal education	162	39.5
	Elementary school	172	42
	Junior high school	50	12.2
	Preparatory high school	16	3.9
	Above college diploma	10	2.4

Table 2: Socio-demographic characteristics of mothers in Guto Gida District, Oromia, 2019 (Continued).

Variables	Categories	Frequency	percentage
Occupation of mothers	House wife	382	93.2
	Government employee	4	1.0
	Private work	12	2.9
	Merchant	10	2.4
	Daily laborer	2	0.5
Occupation of fathers	House wife	316	80.5
	Government employee	8	2.0
	Private work	38	9.5
	Merchant	12	3.0
	Daily laborer	20	5.0
Sex of child	Male	210	51.2
	Female	200	48.8
Age of children	6-8 months	84	20.5

	9-17 months	202	49.3
	18-23 months	124	30.2

Mothers' knowledge on complementary foods

The knowledge status of the mothers was assessed based on their self-responses. As a result, the majority of respondents 262 (63.9 %) had known the correct definition of complementary foods but only 44 (10.7%) had known the correct definition of balanced diet. All the respondents 410 (100%) had known the correct time for initiation of complementary foods for infants (6 months of age) and the time for cessation of children breast feeding (minimum for 24 months) and more than one-third 150 (36.6%) of the respondents had started complementary feeding of their infants with cow milk. More than two-fifth 171 (41.7%) of respondents had known the risk of late complementary foods initiation for infants and three-fourth of the respondents 310 (75.6%) had known the appropriate feeding utensils (feeding bottles, bowl and spoon) during feeding of complementary foods for their children. One-third 138 (33.7%) of respondents had poor knowledge on complementary feeding of their infants/young children (Table 2).

Table 2: Mothers' knowledge on complementary foods in Guto Gida District, Oromia, 2019.

Aspects of knowledge on complementary foods	Frequency	Percentage
Definition of complementary foods	66	16.1
The addition of solids only to breast feeding	262	63.9
Introduction of semi-solids and solids to a child's diet with continued breastfeeding	30	7.3
Adding infant formula to a child's meal	52	12.7
Don't know	410	100
When initiation of complementary foods for infants	0	0
6 months	0	0
<2months	0	0
3-5 months	0	0
7-9 months	0	0
10-12 months	0	0
When breast feeding had stopped		
After 24 months	410	100
6 months	0	0
8-10 months	0	0
12-14 months	0	0
18-23 months	0	0
Complementary foods given while initiation		
Semi-solid (porridge)	138	33.7
Solid	10	2.4
Cow milk	150	36.6
Packaged and bottled foods	2	0.5
Family type foods	90	22.0
Foods specially prepared for infants	20	4.9
Know correct definition of balanced diet		
Yes	44	10.7
No	366	89.3
Preparing infants/ young children complementary foods from different crops		
Yes	216	52.7
No	194	47.3

Table 2: Mothers' knowledge on complementary foods in Guto Gida District, Oromia, 2019 (Continued).

Aspects of knowledge on complementary foods	Frequency	Percentage
Risk of late complementary foods initiation		

Better development	10	2.4
Malnutrition	157	38.3
Loss of appetite	171	41.7
No risk	72	17.6
Increased height	0	0
Complementary feeding utensils		
Feeding bottle	94	22.9
Bowl and spoon	216	52.7
Hand feeding	100	24.4
Other	0	0
Overall level of knowledge		
Good knowledge	272	66.3
Poor knowledge	138	33.7

Mothers' complementary feeding practice

More than half 242 (59%) of the respondents had fed their children 2-3 times complementary foods per day and majority the respondents 396 (96.6%) had fed their children by themselves. Majority 262 (64.4%) of respondents had feed their children at any time when the infant/young child gives a cue and about 276 (67.3%) of the respondents had feed slowly and patiently when their children losses appetite. Most 350 (85.4%) of the respondents had provided the food that was thick enough to stay on spoon for their children. More than half 216 (52.7%) of the respondents had used bowl and spoon for feeding of their infants/young children and about 36 (8.8%) of the respondents never wash and sterilize children feeding utensils. Nearly half 196 (47.8%) of the respondents had poor practices in feeding of complementary foods for their infants/young children (Table 3).

Table 3: Mothers' complementary feeding practice in Guto Gida District, Oromia, 2019.

Aspects of feeding practice on complementary foods	**Frequency**	**Percentage**
Complementary feeding frequency per day		
< 2 times	20	4.6
2-3 times	242	59.0
4-5 times	106	25.9
More than 5 times	42	10.2
When the infant/ young child is feeding		
At scheduled time	82	20.0
Any time the child gives a cue	264	64.4
When family eating	64	15.6
Who feed the infants/young children		
Caregiver	10	2.4
Mother	396	96.6
Child himself	4	1.0
Other	0	0
Wash and sterilize child feeding utensils		
Some times	178	43.4
Always	196	47.8
Never	36	8.8
Children feeding when loss of appetite		
Feed slowly and patiently	276	67.3
Give favorite foods	126	30.7
Feed the child forcefully	2	0.5
Reprimand the child	6	1.5
Thickness of child food		
Same as other people in the family	46	11.2
Thick enough to stay on a spoon	350	85.4
Watery, similar to breast milk	14	3.4
Complementary feeding utensils		
Feeding bottle	94	22.9

Bowl and spoon	216	52.7
Hand feeding	100	24.4
Other	0	0

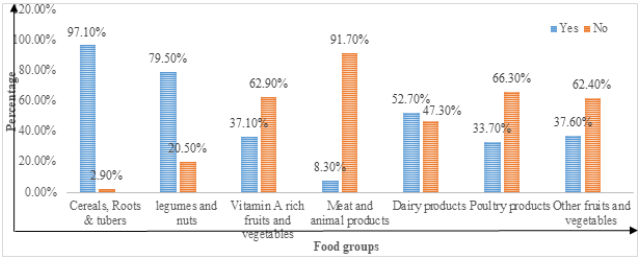
Table 3: Mothers' Complementary Feeding Practices in Guto Gida District, Oromia, 2019 Continued).

Aspects of feeding practice on complementary foods	Frequency	Percentage
Types of foods given for infant and young children		
Semi-solid	138	33.7
Solid	10	2.4
Cow's milk	150	36.6
Packaged foods	2	0.5
Special foods prepared for children	90	22.0
Family foods	20	4.9
Overall Level of Practice		
Good practices	214	52.2
Poor Practices	196	47.8

Food groups consumed by children 6-23 months in Guto Gida District

Majority 398 (97.1%) of the respondents replied that they had fed foods prepared from grains, roots and tubers, about 326 (79.5%) had fed foods prepared from legumes and nuts, and about 216 (52.7%) of the respondents had fed dairy products for their children over the past 24-hours dietary recall of the interview date. Furthermore, more than one-third 154 (37.6%) of the mothers had fed other fruits and vegetables and about 152 (37.1%) of the respondents had fed vitamin A rich fruits and vegetables for their children. In addition, 138 (33.7%) of the respondents had fed poultry products for their children. On the contrary, only 34 (8.3%) of the respondents had fed meat and meat products food groups that are sources of iron for their children over the past 24- hours of the study date. (Figure 1).

Figure 4.1: Food groups consumed by 6-23 months of age children in GGD, Oromia, 2019.



Dietary diversity of 6-23 months infants/young children

Out of the 410 mothers interviewed, 112 (27.3%) responded that they have provided complementary food prepared of four and more food groups which meet the minimum dietary diversity of infants/young children (Table 4).

Table 4: Dietary diversity of children 6-23 months aged in Guto Gida District, Oromia, 2019.

Food groups consumed	Frequency	Percent
≥ 4 food groups	112	27.3
< 4 food groups	298	72.7

Factors associated with mothers' knowledge on complementary foods

Educational levels of mothers had a significant effect on mothers' knowledge on complementary foods. Mothers with no formal education, elementary school and junior high school were less likely knowledgeable than mothers learnt above college diploma with a significant P- values of 0.000, 0.001, 0.003; AORs of 0.061, 0.086, 0.074 and CI of (0.012, 0.312), (0.017, 0.426), (0.013, 0.406) respectively.

Factors associated with mothers' complementary feeding practice

Age of mother, occupation of mother and wealthy index had a significant relationship on mothers' complementary feeding practices. Mothers 16-20 years aged were less practicing on complementary foods of children than mothers of >36 years of age with a P-value of 0.035, AOR of 0.598 and CI of (0.164, 2.177). Furthermore, mothers that were involved in private work were four times more likely practicing on feeding of complementary foods to their children than daily laborers mothers with a significant P-value of 0.027, AOR of 4.548 and CI of (1.191, 17.378). In addition, mothers from low wealthy index were less likely practicing on complementary foods of feeding their children than mothers from high wealthy index with a significant P-value of 0.048, AOR of 0.19 and CI of (0.037, 0.988).

Factors associated with 6-23 months infants/young children dietary diversity

wealthy index, age of child, birth order of child and educational levels of mothers had a significant relationship on dietary diversity of children. Infants and young children from low wealthy index family were less likely consumed ≥ 4 food groups based on 24-hours dietary recall than that of from high wealthy index with a significant P-value of 0.007, AOR of 0.092 and CI (0.016, 0.528). Furthermore, infants and young children with 2-5 birth orders fed ≥ 4 food groups 8 times than that of infant and young children with birth orders > 5 with a significant P-value 0.008, AOR of 8.331 and CI of (2.757, 25.173).

It was also stated in the table 4.10 that infants with age groups 6-8 months were less likely fed ≥ 4 food groups than young children 18-23 months of age groups with P-values of 0.000, AOR of 0.14 and C.I of (0.056, 0.348). In addition, infants and young children from mothers with no formal education were less likely consumed ≥ 4 food groups than that of from mothers of above college diploma education levels with P-value 0.003, AOR 0.023 and CI (0.002, 0.268).

DISCUSSIONS

The early stages of a child's life, when all parts of the infant are growing physically, mentally and socially are very important, which requires an optimal supply of energy and nutrients to the body [1, 2]. Inappropriate feeding practices during the first two years of life cause the risk of undernutrition, illness and mortality in infants and young children [7]. Complementary foods are additional foods which are provided in addition to breast milk in order to fill the energy gap demanded by the children for proper growth and development. Therefore, the objective of this study is to assess complementary feeding knowledge, practice, dietary diversity and associated factors among mothers of children 6-23 months in Guto Gida District, Oromia, Ethiopia.

The finding of this study revealed that that two-third 272 (66.3%) of the respondents had good knowledge on complementary foods while feeding their children whereas about one-third 138 (33.7%) of the respondents had poor knowledge on complementary foods which was consistent to the study conducted at Nukuru municipality, kenya which was 38% [17]. The finding from this study was higher than similar studies conducted at Enemay district, North West Ethiopia [18]. This deviation may occur due to the study areas and socio-demographic factors like educational levels of the study areas.

The finding also showed that more than half 214 (52.2%) of the respondents had good practices in complementary feeding of children whereas about 196 (47.8%) of the respondents had poor practices in feeding of complementary foods. The finding from this research was consistent with the study conducted at Dejen District, North West Ethiopia was 48% [19]. The finding was higher than the study conducted at Harar which was 45.6% [20] and lower than the study conducted at Enemay district, North West Ethiopia which was 59.5% [18].

Depending on the 24-hours dietary recall of mothers of children 6-23 months of ages in GGD, majority 298 (72.7%) of the respondents had fed their children < 4 food groups whereas only 112 (27.3%) of the respondents had given ≥ 4 food groups. Thus, the minimum dietary diversity indicated from this research study was 27.3%. The finding from this study was nearly consistent with the study conducted at Assela, Ethiopia which was indicated as 23.6% [21]. The finding was lower than the study conducted in Dejen district, Amhara region which was shown as 42.1% [19], higher than the study conducted in Enemay district, North West Ethiopia was 8.5% [18].

Educational levels of mothers had a significant effect on mothers' knowledge on complementary foods. Mothers with no formal education, elementary school and junior high school were less likely knowledgeable on complementary foods than mothers learnt above college diploma. This finding was consistent with the study conducted in Nigeria that was addressed as at the individual level, greater education for mothers contributes to new skills, beliefs and choices about sound health and nutritional practices that directly influence the proximate determinants of child health [22].

Age of mother, occupation of mother and wealthy index had a significant relationship on mothers' complementary feeding practices. Mothers from low wealthy index were less likely practicing on complementary foods on feeding their children than high wealthy index mothers. The finding was consistent with the citation that greater household wealthy index and assets directly raise the ability to purchase sufficient quantities of nutritious foods, clean water, clothing, adequately-ventilated housing, fuel for proper cooking, safe storage of food, personal hygiene items and health services [23].

Mothers that were 16-20 years of age interval were less practicing on complementary foods while feeding their children than mothers of age >36 years. This result was reveals with the study conducted at Mbagathi hospital, Nairobi, Kenya [24] that indicated as young mothers were more likely to have malnourished children than the elder mother. This can be associated with the experience the mother had and lack of social support system for the young mothers associated with urbanization.

Mothers that were involved in private work were four times more likely practicing on feeding of complementary foods to their children than daily laborers mothers. The finding was similar with the study conducted at Nairobi, kenya that addresses mothers that were engaged in full time or causal work were associated with improper complementary feeding and care of their children [24].

Wealthy index, age of child, birth order of child and educational levels of mothers had a significant relationship on dietary diversity of children. Children from low wealthy index were less likely fed ≥ 4 food groups than that of high wealthy index mothers. The finding from this study was in contrary to the study conducted at Silti district, Southern Ethiopia [25] and similar to the study carried out in Holeta, Ethiopia [26] which may be dependent on the education levels and other socio-demographic factors.

Children from mothers with no formal education were less likely consumed ≥ 4 food groups than that of from mothers above college diploma education levels. This finding was consistent with that higher education is associated with better quality and quantity in children's diets and also better physical growth in infancy and in later childhood [27].

Infants 6-8 months of age were less likely fed ≥ 4 food groups based on 24-hours dietary recall than that of 18-23 months of age children. This finding was confirmed with the study conducted at Silti district, Southern Ethiopia that indicated children within the age group 6-11months were more likely had unmet minimum dietary diversity status [25].

Infants and young children with 2-3 birth orders were 8 times more likely fed ≥ 4 food groups than that of greater than 5 birth orders. This finding was confirmed with the study that parents are expected to give less attention to older children when there is a new infant/young child who needs much attention and care [28].

Mothers that had good knowledge on complementary foods were more likely practicing good on complementary feeding of their children than that of mothers with poor knowledge. The finding was consistent with the study conducted at Adea Woreda that mothers who had more knowledge on complementary foods were more practicing on complementary foods while feeding their infants and young children 6-23 months of age [29].

Mothers' knowledge that had good knowledge on complementary foods had fed more diversified dietary foods than that of mothers with poor knowledge that was similar to the study conducted in Accra, Ghana [30].

Mothers that had good practices on complementary foods were more likely fed diversified dietary foods for their infants/ young children than that of mothers with poor practice. The finding reveals that mothers who were poor practice on complementary foods were less likely to fed diversified foods for 6-23 month old children as compared with their counterparts [29].

CONCLUSION

The study was conducted at Guto Gida District in order to assess complementary feeding knowledge, practice, dietary diversity and associated factors among mothers of children 6-23 months. The data were collected from 410 mothers of 6-23 months of age children living in the study area. The finding from the study revealed that two-third (66.3%) of respondents had good knowledge and about 33.7% had poor knowledge on complementary foods while feeding their children. More gaps had been observed that only 10.7% of the respondents known the correct definition of balanced diet and about 89.3% had not known the correct definition of balanced diet.

The finding also showed that more than half (52.2%) of respondents had a good complementary feeding practices whereas about 47.8% fell under poor feeding practices on complementary foods while feeding their children. The minimum dietary diversity of children 6-23 months of age in the study district was indicated as 27.3%. It also showed that only 8.3% of respondents had given meat and meat products food group to their infant/young child that were sources of iron.

Education levels of mothers had a significant relationship on mothers' knowledge on complementary foods. In addition to this, age of mothers, mother occupation and wealthy index of the family had a significant effect on mothers' feeding practices on complementary foods. Furthermore, age of children, children birth orders, wealthy index and educational level of mothers had a significant effect on dietary diversity of children.

All members of the society, policy makers, NGOs, local government should work in collaboration with district health office to minimize and remove downsides of mothers on knowledge and practices towards complementary foods, and dietary diversity of the children.

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