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Minimum acceptable diet and associated factors among children aged 6–23 months during fasting days of orthodox Christian mothers in Gondar city, North West Ethiopia

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Abstract

Background: Nutritional improvement through appropriate feeding practices is critical for young children's healthy growth and development. Even if children are exempted from fasting, their diets are influenced by the widespread fasting practices of their Orthodox Christian mothers. However, scientific evidence on a minimum acceptable diet (MAD) among children aged 6–23 months during the fasting period was limited. Therefore, this study aimed to assess the minimum acceptable diet and associated factors among children aged 6–23 months during the fasting period among Orthodox Christian mothers in Gondar city, Northwest Ethiopia.

Method: A community-based cross-sectional study was conducted during the fasting season (Lent) from March 8, 20,121 to April 8, 2021. A total of 738 Orthodox Christian mothers with their children were selected by multistage sampling. A structured questionnaire was used to collect data among mothers to assess children's MAD status. The degree of association between independent and dependent variables was assessed by using an odds ratio with a 95% confidence interval. Those variables with a *p*-value of less than 0.05 in the multivariable analysis were considered as a significant factor for MAD among children aged 6–23 months. Data were presented using texts, tables and figures.

Results: The overall prevalence of MAD among children aged 6–23 months was 19.4% (95% CI: 16.40%–22.20). Having household wealth index of rich and middle (AOR = 4.39, 95% CI: 2.26, 8.50) and (AOR = 3.25, 95% CI: 1.69, 6.22), respectively, children aged from 12–17 months (AOR = 2.66, 95% CI: 1.43, 4.92) and 18–23 months (AOR = 5.39, 95% CI: 2.93, 9.95) respectively, Children who lived with a family member who consumed any time without keeping the fasting time (AOR = 1.79, 95% CI: 1.13, 2.83) and mothers of young children who were married (AOR = 4.13, 95% CI: 1.29, 13.23) have significant association with MAD.

Conclusion: The practice of minimum acceptable diet was inadequate. Age of child, wealth status, marital status, and presence of family member who fed without keeping fasting time were significantly associated factors for MAD among children aged 6–23 months. Advocacy for appropriate feeding practice and meeting the MAD for children aged 6–23 months during the fasting period should also be strengthened targeting the unmarried women and

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those with poor households and giving awareness for mothers in collaboration with the respective religious leaders is highly recommended.

Keywords: Minimum acceptable diet, Children, Fasting, Orthodox Christian, Ethiopia

Introduction

Children under the age of two suffer from poor health and growth due to insufficient quantity and quality of supplemental foods and poor child feeding practices [1]. Suboptimal infant and feeding practices is highly common in low and middle-income countries resulting in a significant increase in mortality and morbidity [2, 3]. Suboptimal feeding practice is the leading cause of childhood malnutrition in developing countries which results in poor physical and mental development and childhood illnesses and death especially in infants and young children aged between 6 and 23 months [4–7].

Appropriate feeding practice is vital for young children aged between 6 and 23 months as it is a critical window for optimal growth and development of the child [8]. Children aged between 6 and 23 months are also at a higher risk of malnutrition, as breast milk alone is insufficient to provide all nutritional requirements, requiring the initiation of complementary feeding [7, 9]. In children under the age of two, nutritional diversity and meal frequency behaviors are determinants of health and growth as they are at risk for malnutrition, disease, and death [10].

Minimum acceptable diet is one of the most important indicators for evaluating infant and young child feeding (IYCF) practice that combines standards of dietary diversity and feeding frequency by feeding status [11]. Minimum acceptable diet is a useful proxy for inadequate nutrient intake, but is not valid for assessing nutrient intake or risk for overweight and obesity [12].

Meeting minimum dietary diversity (MDD) and minimum meal frequency (MMF) criteria have been difficult in many low-income countries, including Ethiopia, especially in the areas where there is food insecurity [13]. Global reports indicate that less than one-fourth of children aged 6–23 months receive the minimum acceptable diet for children aged 6 to 23 months was 8.6% in Dembecha [4], 6.1% according to Ethiopian demographic and health survey (EDHS) report [14], 8.8% in two agro-ecological zones of rural Ethiopia [15], 21.1% in Wolaita Sodo [16], and 8.4% in Gorche District [14, 17]. The magnitude of minimum dietary diversity (MDD), minimum meal frequency (MMF), and minimum acceptable diet in Southern Ethiopia were 3.8, 49.8, and 3.1%, respectively [18].

World health organization (WHO) recommends breastfed children aged 6–23 months should eat

animal-source diets and vitamin A-rich fruits and vegetables on a daily basis. As a result, the minimum acceptable diet for breastfed infants comprises four food groups (grain or tuber-based staple, animal-source food, vitamin A-rich fruit and vegetable) [11]. Children who are not breastfed should be fed four or five times a day, with one or two snacks as desired. Meal frequency is used to estimate the amount of energy consumed from foods other than breast milk. As a result, feeding frequency indicators for non-breastfed children comprise both milk feeds and solid or semi-solid feeds [11, 19].

In Ethiopia where Orthodox Christians make up about half of the population [20], Ethiopian Orthodox Christians practice extensive fasting, with common people fasting for at least 110–115 days per year and priests and other church officials fasting for a total of 220 days [21]. On fasting days in the Ethiopian Orthodox Tewahedo Church (EOTC), all food and drink are abstained from until noon or late. Even though, animal source foods (ASFs) supply high-quality protein, energy, and a variety of micronutrients to young children and play an important role in their growth, cognitive development, and health [22], ASFs, including milk and eggs, are avoided entirely during fasting times in the EOTC [23].

Although children exempted from following the fasting rule, their diets are influenced by the widespread fasting practices [24], some mothers do not prepare their food from animal sources as it could contaminate utensils for cooking family foods [25]. Studies also reported that mothers/caregivers' fasting practice as one of the contributing factors not to attain the recommended child dietary diversity [24–26]. Due to fear of utensil contamination during family food preparation, mothers/caregivers who did not feed their children a diet containing animal products during fasting season were less likely to feed the required dietary diversity [26].

Nutritional improvement through appropriate complementary feeding practices is critical for young children's healthy growth, development [26–28]. This study was mainly focus on Orthodox Christian mothers, since their practice of fasting affects the nutritional status of their children. Evidence on a minimally acceptable diet and associated factors in children aged 6–23 months, particularly during fasting times, is limited. As a result, the purpose of this study was to determine the

prevalence of a minimum acceptable diet and its associated factors among children aged 6–23 months in Gondar, Ethiopia, during the fasting seasons.

Methods

Study design, and setting

A community-based cross-sectional study was conducted during the fasting period from March 8, 2021, to April 8, 2021. This study was conducted in Gondar City, north-west Ethiopia. Gondar City is found 180 Kilometers from Bahirdar, and 748 km from Addis Ababa. It had a population of 351, 675 divided into 10 sub-cities and 24 kebeles (smallest administrative units in Ethiopia) [29]. The majority of the inhabitants practiced Ethiopian Orthodox Christianity, with 90.2% reporting that as their religion, while 8% of the population said they were Muslim and 1.1% were Protestant.

Study population, sample size and sampling procedures

Infants and young children aged 6–23 months with mothers / caregivers who were orthodox religion followers and available during data collection period were included.

The sample size was calculated using the single population proportion formula by taking the level of confidence at 95%, margin of error of 3%, design effect of 2, non-response rate of 10%, and expected prevalence of 8.6% from study conducted to assess minimum acceptable diet practice in 2019 at Dembecha, North West Ethiopia [4]. Also we calculated a sample size for factors by, education, maternal knowledge, and consumption of ASF was considered by using double population proportion formula. Finally by comparing the sample size for prevalence and factors, the larger sample size (738) that is the first the prevalence's sample was taken.

Regarding the sampling procedures, a multistage sampling technique was employed and a total of seven kebeles were selected from a total of 24 kebeles using simple random sampling technique. From the total selected kebeles total sample size was allocated proportionally from each kebele. Systematic random sampling was used to select children with their mothers in the study area. The registered infants and young children aged between 6 and 23 months with their mothers at the health center were used as a sampling frame. Whenever more than one eligible respondent was found in the same selected household, only one respondent was chosen using the lottery method.

Variables

Dependent variables

Minimum Acceptable diet (Adequate / in adequate).

Independent variables

Socio-demographic and economic factors

Maternal age, marital status, ethnicity, number of Children, family size, parental education, parental occupation, wealth index, HH food security.

Child Characteristics

Age, sex, birth order, child illness, breastfeeding.

Utilization of health care services

ANC, place of delivery, PNC, immunization.

Nutrition information

Being exposed to Medias like TV, Radio.

Operational definitions

Complimentary food (CF)

Any solid, semi-solid, or soft food, whether manufactured or locally prepared, suitable as a complement to breast milk or infant formula, when either becomes insufficient to satisfy the nutritional requirements of the infant [30].

Minimum dietary diversity (MDD)

Those children 6–23 months of age who receive foods from four or more food groups during the previous day considered to have adequate MDD and if they receive less than four or more food groups during the previous day are considered as having inadequate MDD. The seven food groups used for tabulation of this indicator were: grains, roots, and tubers; legumes and nuts; dairy products (milk, yogurt, and cheese); flesh foods (meat, fish, poultry, and liver/organ meats); eggs; vitamin A-rich fruits and vegetables; and other fruits and vegetables [31].

Minimum meal frequency (MMF)

Those children both breastfed and non-breastfed 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 was considered as having adequate MMF, otherwise they will be considered as having inadequate MMF [4].

Minimum acceptable diet (MAD)

MAD is considered as adequate if children's received the minimum acceptable diet (both minimum dietary diversity and minimum meal frequency) during the previous 24 h, otherwise it is considered as inadequate [4].

HFIAS (household food insecurity access scale):- was assessed from FANTA (Food and Nutrition Technical

Table 1 Socio demographic and economic characteristics of parents and their children aged 6–23 months, Gondar City, North west Ethiopia, 2021($n = 738$)

Variables	Mean with SD	Frequency	Percentage
Mother age(years)	29 ± 10		
18–26		205	27.8
27–31		342	46.3
32–43		191	25.9
Marital status			
Married		677	91.7
Single		28	3.8
Separated		15	2.0
Divorced		13	1.8
Widowed		5	0.7
Mother Educational status			
Unable to read and write		68	9.2
Able to read and write		52	7
Primary school (1–8)		185	25.1
Secondary school (9 – 12)		265	35.9
Collage and above		304	41.2
Mother occupation			
House wife		497	67.3
Government employed		95	12.9
Private employee		30	4.1
Merchant		60	8.1
Daily laborer		56	7.6
Father occupation			
Government employed		267	36.2
Private employee		194	26.3
Merchant		137	18.6
Daily laborer		78	10.6
Family size			
Less than three		265	35.9
Four to nine		473	64.1
Decision making			
Mothers not involved		507	68.7
Mothers involved		231	31.3
House hold food security			
Insecure		135	18.3
Secure		603	81.7
Wealth index			
Poor		240	32.5
Middle		246	33.3
Rich		252	34.1
Age of the child(in months)	14.8 ± 5.2		
6–11		242	32.8
12–17		224	30.4
18–23		272	36.9
Sex of the child			
Male		389	52.7
Female		349	47.3
Child living status			
Living with only their mother		61	8.26
Living with both mother and father		677	91.73

Assistance) 2007 with nine main question, HFIAS divided into food secure if the summations were ≤ 1 point out of 27 scores while the household food security level of the summations ≥ 2 points out of 27 scores were considered as food insecure [32].

Wealth index

It is a composite measure of a household’s cumulative living standard. Generated with a statistical procedure known as principal components analysis, the wealth index places individual households on a continuous scale of relative wealth tertile (rich, middle, and poor) [33].

Nutrition information

Those who have exposed to medias like TV, Radio was considered as having nutrition information while others who have not exposed to media were considered as not having nutrition information.

Data collection tools, procedures, and quality control

The primary data on the practice of Minimum acceptable diet and associated factors was collected from mothers with a child aged 6–23 months and followers of the Orthodox Christian religion. The data collection tools were adopted from the FANTA tool and different kinds of literature. Five public health officers have participated as data collectors and two public health officers were participate as supervisors. An interviewer-administered questionnaire was used to collect data. The questionnaire was prepared in English and translated to Amharic by the local language expert and retranslated to English. A 5% pre-tested structured and standardized questionnaire was used to assure data quality. Training was given for the data collectors and supervisors for two days. The completeness of the questionnaire was checked before data entry.

Data processing and analysis

The data was entered into Epi info version 7.0 and exported to SPSS version 20 for further data processing and analysis. To demonstrate the relationship between dependent and independent variables, a binary logistic and a multivariable logistics regression analysis was performed. Variables that had a *p*-value less than 0.2 in bivariable logistic regression were entered into a multivariable logistic regression to determine the effect of independent variables on dependent variables. Odds ratio with a 95% confidence interval to ascertain the association between independent and dependent variables was used. Finally, a *p*-value of less than 0.05 was used to declare Stastical significance [34].

Table 2 Health care service characteristics among children aged 6–23 months and their mothers at Gondar City, North Wet Ethiopia, 2021 (*n* = 738)

Characteristics	Frequency	Percentage
Number of ANC		
No ANC	13	1.8
One to three	76	10.3
Four and above four	649	87.9
Birth place		
Government health facility	713	96.6
Home delivery	22	3
Private health facility	3	0.4
Birth order		
First	299	40.5
Second to third	352	47.7
Fourth to fifth	77	10.4
Above sixth	10	1.4
Birth Interval (in months)		
12–35	133	18.0
36–59	141	19.1
60 and above	167	22.6
vaccination status		
Not started	3	0.4
Defaulter	25	3.4
Started	348	47.2
Completed	362	49.1
Currently breast feed		
Yes	651	88.2
No	87	11.8
Postnatal care service		
Yes	335	45.4
No	403	54.6
Time of CF initiation		
Before 6 month	206	27.9
At 6 month	482	65.3
After 6 month	50	6.8
Current illness		
RTI	120	16.3
Fever	36	4.9
Diarrhea	33	4.5
Abdominal pain	16	2.2
Vomiting	13	1.8
Other	20	2.7

ANC Antenatal care, CF Complementary feeding, RTI Respiratory tract infection

Ethical consideration

Ethical clearance was first obtained from the institutional review board of Institutes of public health, college of medicine and health sciences, University of Gondar. Written permission was taken from Gondar administrative office. Before the data collection begins,

written informed consent was taken from each study participant (mothers/caregivers). The data collectors were informed each study participant about the purpose and anticipated benefits of the research project and the study participants were informed of their full right to refuse or completely reject part or all of their part in the study. All methods were carried out in accordance with relevant guidelines and regulations.

Results

Socio-demographic and economic characteristics of the study population

A total of 738 infants and young children aged between 6 and 23 months with their mothers were enrolled in the study. More than half (52.7%) of children were children were females and more than one-third (36.9%) were in the age between 18 and 23 months. The mean age of children was 14.8 ± 5.2 months. Majority (91.7%) of women were married. Two hundred and sixty-seven (36.3%) of fathers were government employed. Six hundred three (81.7%) of respondents were from food secured households, and about one-third (32.0%) of respondents were from low wealth index households (Table 1).

Health care service related characteristics

During pregnancy, around 649 (87.9%) mothers received ante-natal care service four, and above times. Seven hundred and thirteen (96.6%) mothers were

delivered in health facility. While, more than half of mothers (54.6%) did not receive post natal care. Six hundred fifty one (88.2%) of children were breastfed (Table 2).

Nutrition and fasting related characteristics

About one third (35.6%) of mothers of children had got information on young child dietary practice. Seven hundred eight (95.9%) of children lived in a family who were not consumed animal source foods. Two third (59.6%) of children lived in a family who consumed food at any time without keeping the fasting time (Table 3).

Practice of minimum acceptable diet

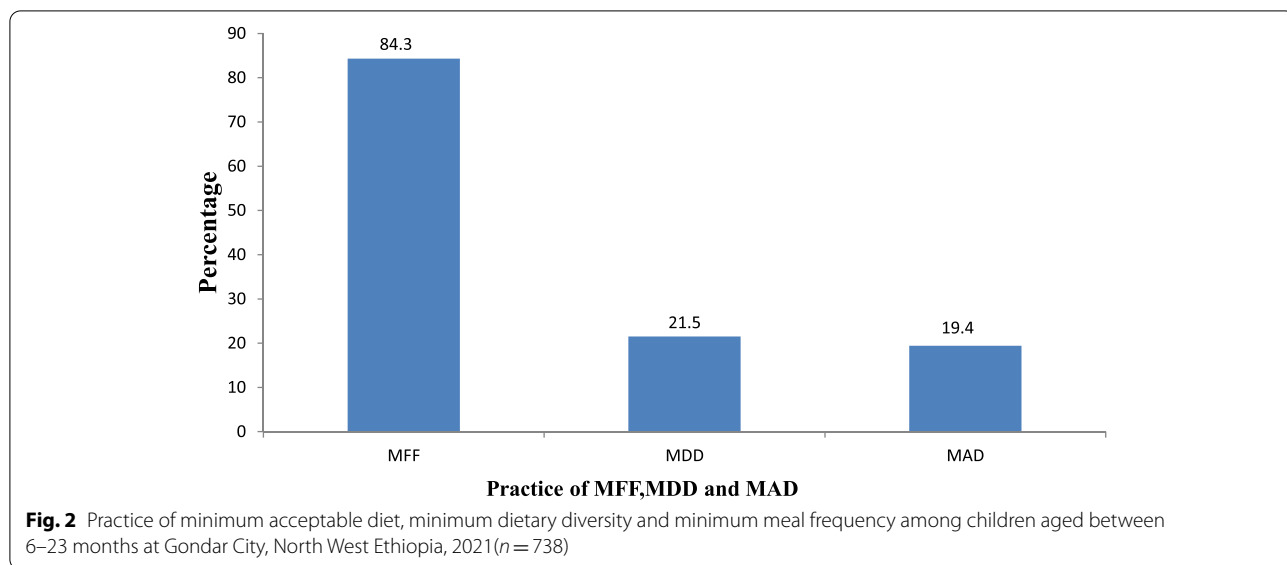
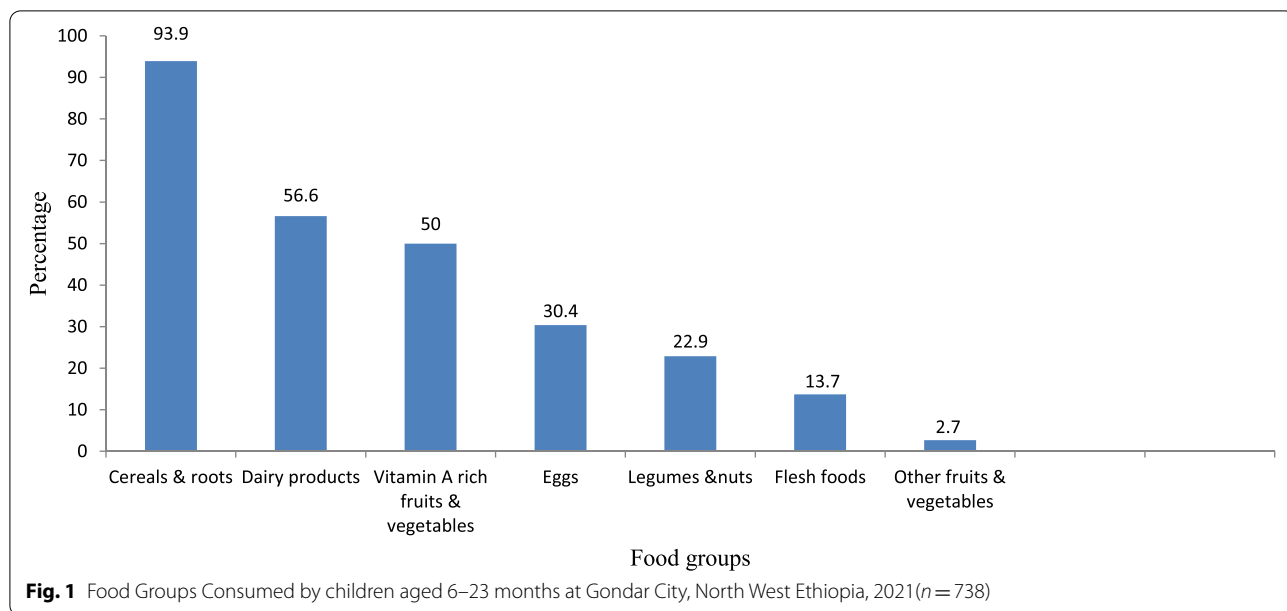
From all children, Six hundred ninety three (93.9%) of children received cereals and tubers followed by dairy products which were consumed by more than half of (56.6%) of the children (Fig. 1). Six hundred twenty two (84.3%) of children received minimum meal frequency. One hundred fifty nine (21.5%) of children received minimum dietary diversity and one hundred forty three (19.4%) with 95% CI (16.4%, 22.2) children had minimum acceptable diet (Fig. 2).

Factors associated with minimum acceptable diet

From all variables entered to the regression model only maternal age, maternal education, maternal occupation, Father education, father occupation, marital status,

Table 3 Nutrition information and fasting related characteristics of families of children aged 6–23 months at Gondar City, North West Ethiopia, 2021 (n = 738)

Characteristics	Frequency	Percentage
Read newspapers and magazine		
No	569	77.1
One and above times a week	169	22.9
Information on dietary diversity and meal frequency		
Yes	263	35.6
No	475	64.4
Information about when to start complementary feeding		
Yes	722	97.8
No	16	2.2
Information on child feeding		
Yes	264	35.8
No	474	64.2
Animal source foods		
Consume animal source foods	30	4.1
Not consume animal source foods	708	95.9
keeping fasting time		
Consume at any time in fasting	440	59.6
Not consume at any time in fasting	298	40.4



nutrition information, wealth index, complementary feeding demonstration, time of complimentary food initiation, house hold food security, child sex, child age, birth order, current breast feeding status, postnatal care presence of family member who fed ASF and without keeping fasting time were significant for MAD during bivariable regression using *p* value less than 0.2.

In the multivariable logistic regression analysis, age of the child, household wealth status, marital status and presence of family members who fed without keeping fasting time were significantly associated with MAD of children aged 6–23 months.

Children with age from 12–17 months adjusted odd ratio (AOR) 2.66; 95% CI 1.43, 4.92 and 18–23 months AOR 5.39, 95% CI: 2.93, 9.95 respectively were more likely to receive the recommended MAD than younger children. Households with rich and middle wealth index were more likely to feed the recommended MAD to their children AOR 4.39, 95% CI: 2.26, 8.50 and AOR 3.25, 95% CI: 1.69, 6.22, respectively as compared to those with poor wealth index households.

Mothers who were married were more likely to give recommended MAD to their children (AOR = 4.13, 95% CI: 1.29, 13.23) than those who were single mothers.

Table 4 Bivariable and multivariable regression results of MAD for children aged 6–23 months at Gondar City, Northwest Ethiopia, 2021 ($n = 738$)

Variables	MAD status		COR (95% CI)	AOR (95% CI)
	Adequate	Inadequate		
Age of mother in years				
18–26	14(15.4%)	77(84.6%)	1	1
27–31	90(18.0%)	409(82.0%)	1.21(0.65–2.23)	1.17(0.57–2.43)
32–43	39(26.4%)	109(73.6%)	1.97 (1.00–3.87)	1.79(0.72–4.50)
Marital status				
Married	138(2.4%)	539(79.6%)	2.87 (1.23–7.29)	4.13(1.29–13.23)
Unmarried	5(8.2%)	56(91.8%)	1	1
Mother Educational status				
Unable to read and write	11(16.2%)	57(83.8%)	1	1
read and write	15(28.8%)	37(71.2%)	2.10 (0.87–5.07)	2.07(0.72–5.98)
Primary (1–8)	27(14.6%)	158(85.4%)	0.89 (0.41–1.90)	1.06(0.42–2.68)
Secondary (9–12)	42(15.8%)	223(84.2%)	0.98(0.47–2.01)	1.25(0.49–3.12)
Certificate and above	48(28.6%)	120(71.4%)	2.07(1.00–4.29)	2.63(0.96–7.16)
Mother occupation				
House wife	90(18.1%)	407(81.9%)	1.68(0.84–3.38)	1.24 (0.55–2.80)
Government	26(27.4%)	69(72.6%)	2.86(1.29–6.37)	0.77(0.29–2.05)
Merchant	17(28.3%)	43(71.7%)	3.00(1.26–7.14)	2.42(0.86–6.76)
Private	10(11.6%)	76(88.4%)	1	1
Wealth index				
Poor	17(7.1%)	223(92.9%)	1	1
Middle	47(19.1%)	199(80.9%)	3.09(1.72–5.57)	3.25 (1.69–6.22)
Rich	79(31.3%)	173(68.7%)	5.99(3.42–10.49))	4.39 (2.26–8.50)
HFSA				
Insecure	18(13.3%)	117(86.7%)	1	1
Secure	125(20.7%)	478(79.3%)	1.70(0.99–2.89)	1.50(0.78–2.89)
Age of the child in months				
6–11	24(9.9%)	218(90.1%)	1	1
12–17	41(18.3%)	183(81.7%)	2.03(1.18–3.49)	2.66(1.43–4.92)
18–23	78(28.7%)	194(71.3%)	3.65 (2.22–6.00)	5.39(2.93–9.95)
Sex of the child				
Female	75(21.5%)	274(78.5%)	1	1
Male	68(17.5%)	321(82.5%)	0.77(0.54–1.11)	0.75 (0.49–1.15)
Birth order				
First	56(18.7%)	243(81.3%)	1	1
Second	38(16.0%)	200(84.0%)	0.82(0.52–1.29)	0.87(0.50–1.49)
Third and Above	49(24.4%)	152(75.6%)	1.39(0.91–2.16)	0.86(0.46–1.60)
Currently breast feed				
No	30(34.5%)	57(65.5%)	1	1
Yes	113(17.4%)	538(82.6%)	0.39(0.24–0.65)	0.81(0.44–1.51)
Postnatal care				
No	56(13.9%)	347(86.1%)	1	1
Yes	87(26.0%)	248(74.0%)	2.17(1.49–3.16)	1.52(0.95–2.43)
Time of CF initiation				
Before 6 month	50(24.3%)	156(75.7%)	1	1
At 6 month	86(17.8%)	396(82.2%)	0.68(0.46–1.01)	0.75(0.46–1.20)
After 6 month	7(14.0%)	43(86.0%)	0.51(0.21–1.20)	0.98(0.36–2.67)

Table 4 (continued)

Variables	MAD status		COR (95% CI)	AOR (95% CI)
	Adequate	Inadequate		
Nutrition information				
No	64(13.5%)	414(86.5%)	1	1
Yes	79(30.0%)	184(70.0%)	2.76(1.89–4.00)	1.68 (1.01–2.81)
complementary feeding demonstration				
No	93(15.0%)	527(85.0%)	1	1
Yes	50(42.4%)	68(57.6%)	4.18(2.72–6.38)	1.98(1.05–3.74)
Other than child ASF consumption				
No	130(18.4%)	578(81.6%)	1	1
Yes	13(43.3%)	17(56.7%)	3.40(1.61–7.17)	1.99(0.77–5.15)
Other than child any time consumption				
No	42(14.1%)	256(85.9%)	1	1
Yes	101(23.0%)	339(77.0%)	1.82(1.22–2.69)	1.79 (1.13–2.83)

* Statistically significant at p -value < .05

AOR Adjusted odd ratio, ASF Animal source food, OR Crude odd ratio, HFSA Household food security access, MAD Minimum acceptable diet

Children who lived with a family member who consumed any time without keeping the fasting time were more likely to receive a minimum acceptable diet (AOR = 1.79, 95% CI: 1.13, 2.83), than those children who were living in houses with no family member consumed any time without keeping the fasting time (Table 4).

Discussion

This study assessed MAD and associated factors among children aged 6–23 months, whose mothers were Orthodox Christians during the fasting season. In this study, about 19.4% of the children surveyed feed MAD. This finding was in line with the study conducted in Myanmar (16.00%) [31] and Delhi (19.70%) [35]. However, it is higher than studies conducted in different parts of Ethiopia such as Tigray (2.30%) [25], EDHS 2016 (6.10%) [14], Dembecha (8.60%) [4] and, East Gojam zone Goncha district (8.40%) [36]. On the other hand the result of this study is lower than other studies from central Amhara (31.60%) [37], Kaski (42.40%) [38], Abu Dhabi (36.20%) [39], Ghana (24.90%) [40] and Bangladesh (23.00%) [41]. The possible reasons for the variation might be due to differences in a study setting, different socioeconomic statuses, and seasonal difference in data collection. Furthermore, this study was conducted among orthodox religion followers during the fasting season, when dietary patterns may be reduced in terms of food diversity and meal frequency, underestimating the findings when compared to other times.

Those children having a married mother was positively associated with recommended minimum acceptable diet similar to another study done in Tigray, Ethiopia [42]. The possible reason might be marriage has the important role

in sustaining better life and economic wellness which will contribute to the better wellbeing of children including a minimum acceptable diet.

This study found that children in the 12–17 and 18–23 month age groups were more likely to receive the recommended number and variety of feeds, compared to children aged between 6 to 11 months this finding is similar with studies done in Ethiopia and India [10, 37, 43–46]. The justification for this might be as the child's age increased the chance that they will be exposed to a diversified diet will be increased.

Those mothers with the highest and middle wealth index were more likely to feed the recommended MAD to their children as compared to their low wealth index counterparts. This finding is consistent with study conducted in Ethiopia [26, 36, 44]. The possible explanation of this significance association might be due to the limited food purchasing power to provide diversified diet and adequate amount of food to their children in peoples with lower wealth index. Children from households with a high level of income ate a more diverse diet than those from households with a low level of income.

This study also showed that children who lived with a family member who consumed any time without keeping the fasting time were more likely to receive a MAD than those children who were living in houses with no family member who consumed any time without keeping the fasting time. This might be due to mothers become reluctant to prepare a separate meal as early as possible, even some times mothers may be late to prepare food for their young child up to the mid-day if there is no other person in the house who eat in the morning.

Other important variables like ANC, HFSA, and family size were not significantly associated with having adequate MAD. The possible reason might be that these factors may not have an effect on the child's opportunity to receive MAD as it was mainly on the orthodox Christian mothers and the factors may be mainly related to the fasting practice.

Our study is limited to show the differences by comparing dietary practice of both fasting and non-fasting participants during fasting and non-fasting periods and the study used only 24-h recall method which tells us only one time phenomenon but did not demonstrate dietary habit of the participants. Also the study may not free from social desirability bias in responding to questions on the type and frequency of foods given to children.

Conclusion

The practice of minimum acceptable diet was inadequate. Age of child, wealth status, marital status, and presence of family member who fed without keeping fasting time were significantly associated factors for MAD among children aged 6–23 months. Advocacy for appropriate feeding practice and meeting the MAD for children aged 6–23 months during the fasting period should also be strengthened targeting the unmarried women and those with poor households and giving awareness for mothers in collaboration with the respective religious leaders is highly recommended.

Abbreviations

ANC: Antenatal Care; ASF: Animal Source Food; CF: Complementary Feeding; CSA: Central Statistical Agency; DDS: Dietary Diversity; DHS: Demographic and Health Survey; EDHS: Ethiopian Demographic and Health Survey; HEW: Health Extension Workers; IYCF: Infant and Young Child Feeding; MDD: Minimum Dietary Diversity; MMF: Minimum Meal Frequency; MAD: Minimum Acceptable Diet; MOH: Ministry Of Health; PNC: Post-Natal Care; SPSS: Statistical Package for Social Science; UNICEF: United Nation Children's Fund; WHO: World Health Organization.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s40795-022-00558-z>.

Additional file 1.

Acknowledgements

We would like acknowledge the data collectors, supervisors, and study participants for their dedication and commitment in the data collection process.

Authors' contributions

HB, KAG, MTH, FMA conceived the study, developed the tool, coordinates data collection, carried out the statistical analysis. HB, KAG, MTH, FMA drafted the manuscript. HB, KAG, MTH, FMA finalized the manuscript for publication. All authors read and approved the final manuscript.

Funding

No funding was available for this study.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of the corresponding author. The English version of the data collection tool was available on [supplementary file](#).

Declarations

Ethics approval and consent to participate

Ethical clearance was first obtained from the institutional review board of Institutes of public health, college of medicine and health sciences, University of Gondar. Written permission was taken from Gondar administrative office. Before the data collection begins, written informed consent was taken from each study participant (mothers/caregivers). The data collectors were informed each study participant about the purpose and anticipated benefits of the research project and the study participants were informed of their full right to refuse or completely reject part or all of their part in the study. All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

There is no competing of interests.

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Received: 2 December 2021 Accepted: 7 July 2022

Published online: 10 August 2022

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