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Minimum Acceptable Diet and Associated Factors Among Mothers of Children Aged Between 6 to 23 Months in Public Health Centres at Addis Ababa, Ethiopia

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Abstract

The deficit provision of a Minimum Acceptable Diet (MAD) to children aged 6–23 months poses a major public health challenge in low and middle-income countries, particularly in Ethiopia. Despite the National Nutrition Program, MAD coverage rose only from 7% to 11% from 2016 to 2019, showing limited progress. This study aimed to assess the prevalence of MAD and its associated factors among mothers with children aged 6–23 months in Addis Ababa. An institution-based cross-sectional study was conducted in selected public health centers from March to April 2023, using a multistage sampling technique to recruit 458 mothers. Data collection was performed via structured, interviewer-administered questionnaires, and analyzed using logistic regression. MAD prevalence was found to be 36.1% (95% CI: 31.7–40.8). Key factors positively associated with MAD included child age (AOR = 2.44; 95% CI: 1.50–3.97), male gender (AOR = 1.97; 95% CI: 1.29–3.02), higher maternal education (AOR = 2.49; 95% CI: 1.16–5.36), and nutrition counseling during antenatal care (AOR = 1.63; 95% CI: 1.04–2.58). These findings highlight the need for targeted educational initiatives and policy efforts to improve MAD practices and address malnutrition.

1. INTRODUCTION

The Minimum Acceptable Diet (MAD) for children 6–23 months old is part of the suite of indicators of infant and young child feeding (IYCF) practices developed by UNICEF and WHO [21]. The Indicators for Assessing IYCF Practices guidelines were revised in 2021, culminating in 17 indicators grouped under breastfeeding indicators, complementary feeding indicators, and other indicators [21]. The MAD indicator is a composite of three indicators composed of the Minimum Dietary Diversity (MDD), Minimum Meal Frequency (MMF), and Minimum Milk Feeding Frequency (MMFF). MAD is defined as the percentage of children 6–23 months of age who consumed a minimum acceptable diet during the previous day [21, 23].

The transition from exclusive breastfeeding to the inclusion of solid, semi-solid, and soft foods, a process known as complementary feeding, is vital for infants starting at six months of age. This 6 to 23-month period is a critical phase for a child's physical and cognitive growth. Adequate feeding practices during this window are essential for optimal development, as they help reduce susceptibility to infections and prevent malnutrition, a leading contributor to mortality in children under five, especially in resource-limited settings [4, 16].

In Ethiopia, the challenge of under-nutrition continues to adversely affect child health outcomes. Key indicators for proper nutrition, such as the Minimum Acceptable Diet (MAD), which combines minimum meal frequency and dietary diversity, reveal significant deficits. Despite national efforts, only 11% of Ethiopian children aged 6–23 months receive a MAD, with the lowest rates observed in rural and impoverished communities [3]. These inadequate feeding practices are often driven by limited maternal awareness, low utilization of antenatal care (ANC) services, and socioeconomic barriers.

Although the Ethiopian government has initiated strategic policies like the National Nutrition Program and the Sekota Declaration to combat child under-nutrition, the progress in reducing stunting and

underweight prevalence has been slower than anticipated [3, 7]. This underscores the necessity for up-to-date, localized evidence on the determinants of MAD uptake to guide effective interventions. This study, therefore, aims to assess the prevalence of MAD and identify its associated factors among mothers with young children in public health centers across Addis Ababa. The findings are intended to provide actionable insights for policymakers, healthcare providers, and non-governmental organizations to enhance child nutrition strategies and mitigate the long-term impacts of early childhood malnutrition.

2. MATERIALS AND METHODS

2.1. Data study and Area

We conducted a cross-sectional study within public health centers located in Addis Ababa, Ethiopia. The fieldwork for this investigation took place between March 1 and April 30, 2023. The study setting included three selected sub-cities (Yeka, Bole, and Lemikura) within the capital, which had a combined projected population of 21,872 children within the 6–23 month age range.

2.2. Data Source and Study population

All mothers whose children were aged 6–23 months and had permanent residence (more than 6 months) in Addis Ababa city in 2023 were considered the source population. All mothers with children aged 6 to 23 months and attending selected public health facilities for different purposes were eligible to participate in the study.

All mothers with children age 6–23 months and who live permanently or more than six month in Addis Ababa are included in the study. If a mother or caregiver has mental problem or unable to communicate. Children aged 6–23 months who had chronic or congenital disorders at the time of the study were not included in the study.

2.3. Sample size determination

For the first objective based on the following assumption a single population proportion formula was used. n= $\frac{\left(\frac{Z\alpha}{2}\right)^2 pq}{d^2} * DE$. n=$1.96^2$*0.746*0.254*1.5/$0.05^2$=436. Where Proportion of minimum acceptable diet (p = 74.6%) (Abebe *et al.*, 2021). Marginal error of 5% (d = 0.05), Standard score corresponding to 95% confidence (Zα/2 = 1.96). And a design effect of d = 1.5 was used 5% for non-response rate 436*5% =22 + 436=458. Accordingly, the total sample size was determined to be 458. For the second objective Identifying factors associated with minimum acceptable diet practice previous research shown that age of child, maternal education, and family size have a higher AOR were more important than other variables to the dependent variable when applying two proportion formulae in Epi Info version 7.2.5.

Table 1
Sample size estimation and assumptions for the second specific objective

Associated factors	Power	Zα/2 of 95% CI	P1	P2	Ratio	AOR	N	Design effect	5% NRR	Final sample size
Age of a child	80%	1.96	0.491	0.123	1:1	2.76	248	1.5	5%	391
Maternal education	80%	1.96	50.9	0.175	1:1	3.24	34	1.5	5%	54
Family size	80%	1.96	0.193	0.123	1:1	12.37	136	1.5	5%	214

Where; AOR is adjusted odds ratio, NRR is non–response rate, N is total population.

Because the sample size for the estimate of the first specific objective was bigger, it addresses all variables more than the second specific objective. As a result, the subsequent study was based on a total sample of 458 mothers found using the simple random sampling technique at the chosen health institute.

2.4. Sampling procedure

A multistage sampling approach was adopted to recruit participant mothers. Initially, three sub-cities were chosen from the eleven in Addis Ababa. From these, six public health facilities were randomly selected. The sample size of 458 was then proportionally allocated to each facility based on client flow data obtained from registration books one month prior to data collection. Finally, we employed systematic random sampling to select individual mothers at each center during the study period.

Study variables: Dependent variable (Minimum acceptable diet), Independent variables are; Socio-demographic variable (Relation to a child, age of child, sex of a child, age of mother in a year, marital status, mothers education, mothers occupation, religion, husbands occupation, number of children and monthly income).

Child and mother health care characteristics

ANC visit, counselling about nutrition during ANC follow up, counselling about nutrition during PNC follow up, mother’s media exposure and knowledge of mothers

2.5. Operational definition/definition of terms

Complementary Food (CF)

Any manufactured or locally made solid, semi-solid, or soft food that can be used to complement breast milk or baby formula when those sources are no longer adequate to meet the new born's nutritional needs [12].

Minimum Acceptable Diet (MAD)

The MAD indicator was deemed to be achieved only if a child satisfied the criteria for both Minimum Dietary Diversity and Minimum Meal Frequency based on the 24-hour dietary recall. All other cases were recorded as not achieving MAD [23].

Minimum Dietary Diversity (MDD)

A child was classified as having met the MDD requirement if they had consumed items from five or more of the eight predefined food groups (like grains, legumes, dairy, flesh foods, eggs, vitamin A–rich fruits and vegetables) in the 24 hours preceding the survey. Failure to meet this threshold was categorized as inadequate dietary diversity [23].

Minimum Meal Frequency (MMF)

Proportion of breastfed and non-breastfed children aged 6–23 months who receive soft, solid, and semi-solid foods in the last 24 hours. Breastfed infants aged 6–8 months must receive these foods at least 2 times in the last 24 hours; breastfed infants and young children aged 9–23 months at least 3 times in the last 24 hours. For non-breastfed infants and young children aged 6–23 months, at least 4 times in the last 24 hours [22].

Maternal knowledge towards complementary feeding

Mothers who score above the mean of ten knowledge questions related to infant and child feeding practice were categorized as knowledgeable (yes) and those who score below the mean were categorized as not knowledgeable (no).

2.6. Data collection procedures and instrument

For data collection, our team utilized a structured questionnaire, which was translated into Amharic version and administered by trained interviewers. To assess complementary feeding practices, we gathered dietary intake data using a 24-hour recall method. Mothers were asked to detail all foods and liquids consumed by their child in the previous day, which allowed us to calculate dietary diversity scores.

2.7. Data quality control

To ensure data quality, we implemented several measures. We recruited qualified clinical nurses and a senior nutrition specialist as data collectors and supervisors. This team underwent a comprehensive two-day training program that covered the study objectives, ethical conduct, interview techniques, and accurate data recording procedures.

2.8. Data processing and analysis

The completed and consistent questionnaires were fed into Epi Info version 7.2.5 and then exported to SPSS software version 26 for further analysis. To compute the optimal minimum acceptable diet (MAD)

and other factors, descriptive statistics, such as frequency distributions, were used. The relationship between independent and dependent variables was determined using bivariate logistic regression. Finally, independent variables with P-values ≤ 0.25 were incorporated into multi variable logistic regressions to compensate for confounding factors, and factors with p values less than 0.05 ($p \leq 0.05$) and AOR at 95% confidence intervals in logistic regression were determined to have a statistically significant connection with the dependent variable. By using the Hosmer and Lemeshow test, model fitness was checked.

2.9. Ethical consideration

After approval of the proposal by the Institutional of Bahirdar University faculty of chemical and food engineering department of applied human nutrition, a letter of support was delivered to the Addis Ababa city administration health office. The office then issued a letter of clearance. The participants are informed about the aim and importance of the study, and their confidentiality and privacy are maintained.

Table 2
Socio demographic characteristic of mother having children aged 6–23 month in public health centres at Addis Ababa, Ethiopia, 2023 (n = 451)

Variables	Categories	Frequency	Percentage
Age of mother in years	15–24	64	14.2
	25–34	298	66.1
	35–49	89	19.7
Age of child	6–11	191	42.4
	12–17	163	36.1
	18–23	97	21.5
Sex of a child	Female	227	50.3
	Male	224	49.7
Marital Status	Married	416	92.2
	Divorced	16	3.5
	Separated	19	4.2
Relation to a child	Mother	434	96.2
	Grand mother	17	3.8
Mothers education	Unable to read & write	51	11.3
	Primary	219	48.6
	Secondary	88	19.5
	College & above	93	20.6
Mothers occupation	Government employee	51	11.3
	Merchant	155	34.4
	Private employee	82	18.2
	House wife	163	36.1
Religion	Orthodox	181	40.1
	Protestant	147	32.6
	Muslim	123	27.3
Husbands occupation	Merchant	167	37.0
	Private employee	192	42.6

Variables	Categories	Frequency	Percentage
	Government employee	92	20.4
Number of children	1–2	327	72.5
	>=3	124	27.5
Monthly income	< 8500	107	23.7
	8500–13000	316	70.1
	> 13000	28	6.2

The participants were informed that there is no risk of participating in the study, and there is no service denied due to not participating. Participation is voluntary, and they can withdraw from the study at any time if they are not comfortable with the questionnaire. They also have the full right not to respond to any specific question and to ask any question related to the study. The overall confidentiality and privacy of the information were kept safe throughout the whole process of the study, and verbal consent was obtained from each individual before data collection.

3. RESULTS AND DISCUSION

3.1. Socio-demographic characteristics of study population

In the present study, the demographic profile revealed that two-thirds (66.1%) of participating mothers were in the peak reproductive age group of 25–34 years, with a mean age of 29.5 years. This maternal age distribution aligns closely with findings from similar urban community and facility-based studies across Ethiopia [3] [17]. Maternal age often serves as a proxy for maternal experience and decision-making autonomy within the household, which positively influences adherence to optimal complementary feeding indicators, including Minimum Acceptable Diet (MAD).

Regarding child characteristics, infants aged 6–11 months comprised the largest subgroup (42.4%), followed by those aged 12–17 months (36.1%). The higher representation of younger infants (6–11 months) reflects frequent contact with public health centers during routine early childhood immunization and growth monitoring visits. Prior evidence demonstrates that younger infants in Ethiopia are at heightened risk for inadequate dietary diversity and delayed transition to solid foods compared to older infants aged 18–23 months, primarily due to maternal fears of choking or poor digestive tolerance [1] [17].

The educational attainment in this cohort was relatively high compared to national averages: 48.6% of mothers had completed primary education, 19.5% secondary education, and 20.6% attained college or higher qualifications. In urban Ethiopian settings, maternal education is a well-established structural driver of child nutritional health; higher formal education enhances health literacy, enables better

comprehension of nutritional counseling, and empowers mothers to allocate household resources toward nutrient-dense complementary foods [1] [17].

Socio-economic findings indicated that a substantial proportion of mothers were engaged in economic activities specifically as merchants (34.4%) or private employees (18.2%); however, 36.1% were housewives. Correspondingly, 70.1% of households reported a monthly income in the 8,500–13,000 Birr range. Higher household purchasing power in urban centers directly translates to improved access to commercial and fresh food groups, such as animal-source foods and fruits, thereby facilitating the achievement of minimum dietary diversity and minimum meal frequency [3]. Furthermore, over 90% of mothers were married and resided with their biological children, providing stable home environments that support caregiver networks for child feeding.The full socio-demographic details are presented in (Table 2).

3.2. Child and mother health care characteristics

All mothers enrolled in the study reported attending antenatal care (ANC) follow-up sessions. Of these, 61% received counselling on nutrition, breastfeeding, and child feeding practices during their ANC visits (Table 3). In the postnatal period, 53.4% of participants were advised on the significance of breastfeeding and complementary feeding. Exposure to mass media was reported by more than half of the mothers (57.4%), and a substantial majority (74.3%) demonstrated knowledge of appropriate complementary feeding practices. These health care characteristics are summarized in [5].

Table 3. Child and mother health care characteristics among mother having children aged 6-23 month in public health centres at Addis Ababa, Ethiopia, 2023 (n=451)

Variable	Category	Frequency	Percentage
ANC follow up	Yes	451	100.0
Advice about nutrition during ANC follow up	No	176	39.0
	Yes	275	61.0
Advice about nutrition during PNC follow up	No	210	46.6
	Yes	241	53.4
Mother’s media exposure	No	192	42.6
	Yes	259	57.4
Knowledge of mothers	No	116	25.7
	Yes	335	74.3

3.3. Dietary diversity

We assessed dietary diversity using a 24-hour dietary recall method, where mothers detailed all foods and liquids consumed by their child the previous day [Figure 3] [22]. The dietary intake was then categorized into the eight standard food groups recommended by the World Health Organization to calculate a dietary diversity score [22]. Any consumption from a food group was counted, provided the item was not used merely as a condiment. The analysis revealed that grains, roots, and tubers were the most common food group, consumed by 89% of infants aged 6–11 months and 94.5% of those aged 12–17 months. This aligns with national data indicating cereals and tubers form the staple diet for young children in Ethiopia [8, 9]. For the younger infants (6–11 months), vitamin A rich fruits and vegetables were consumed by 64.9%, followed by dairy products (56.5%), legumes and nuts (55%), and other fruits and vegetables (48.7%). A similar pattern was observed in the 12–17 month cohort, with 65.6% consuming dairy, 62.6% consuming legumes and nuts, and 52.8% consuming other fruits and vegetables.

Across all age groups, the most frequently consumed items were grains, roots, tubers, dairy, and vitamin A rich foods, a pattern consistent with other studies in Ethiopian settings [1]. Older children (18–23 months) demonstrated a higher intake of cereals, legumes, nuts, and vitamin-rich fruits and vegetables compared to younger children. In contrast, egg consumption was lowest among the 6–11 month olds, while meat-based foods were generally infrequently consumed across all age categories, highlighting a common gap in the consumption of animal-source proteins as noted in previous research [7].

3.4. The practice of minimum acceptable diet

The prevalence of MAD among children aged 6-23 months was 36.1% (95% CI: 31.7- 40.8). Three hundred twenty eight (72.7%) (95% CI: 68.4-76.8) of children received minimum meal frequency and 208 (46.1%) (95% CI: 41.4-50.8) of them were received minimum dietary diversity (Figure 4).

3.5. Factors affecting minimum acceptable diet.

To identify factors associated with minimum acceptable dietary practices among mothers of children aged 6 to 23 months in public health centres in Addis Ababa, bivariate and multivariate binary logistic regression analyses were used. In the bi-variate analysis, 15 variables that had a p-value < 0.25 were selected as a candidate’s variable for the multi variable analysis. Some of these variables were age of mother, age of child, sex of a child, mother's education, and advice during ANC follow-up, mother’s media exposure, and knowledge of mothers about complimentary feeding (Table4).

Table 4 . Bi-variate analysis for factors associated with minimum acceptable diet among mothers of children aged 6-23 month in public health centers at Addis Ababa, Ethiopia, 2023 (n=451).

Variable	Category	MAD		COR(95%CI)	P-value
		Yes	No		
Relation to a child	Mother	156(35.9)	278(64.1)		
	Grand mother	7(41.2)	10(58.8)	1.25(0.47,3.34)	.660
Age of child	6-11	45(23.6)	146(76.4)		
	12-17	74(45.4)	89(54.6)	2.70 (1.71,4.25)	.000*
	18-23	44(45.4)	53(54.6)	2.69(1.60,4.53)	
Sex of a child	Female	68(30.0)	159(70.0)	1	
	Male	95(42.4)	129(57.6)	1.72(1.168,2.53)	.006*
Age of mother in a year	15-24	20(31.3)	44(68.8)	1	
	25-34	100(33.6)	198(66.4)	1.11(.622,1.98)	.036*
	35-49	43(48.3)	46(51.7)	2.057(1.050,4.02)	
Marital Status	Married	153(36.8)	263(63.2)	1	.
	Divorced	3(18.8)	13(81.3)	0.397(.111,1.41)	.996
	Separated	7(36.8)	12(63.2)	1.003(.387,2.60)	
Mothers education	Unable to read & write	17(33.3)	34(66.7)	1	.007*
	Primary	57(26.0)	162(74.0)	0.704(.365,1.35)	
	Secondary	36(40.9)	52(59.1)	1.385(.673,2.84)	
	College & Above	53(57.0)	40(43.0)	2.650(1.300,5.40)	
Mothers occupation	Government employee	19(37.3)	32(62.7)	1	.512
	Merchant	50(32.3)	105(67.7)	0.802(.415,1.55)	
	Private employee	38(46.3)	44(53.7)	1.455(.712,2.97)	
	house wife	56(34.4)	107(65.6)	0.881(.459,1.69)	
Religion	Orthodox	57(31.5)	124(68.5)	1	.736
	Protestant	65(44.2)	82(55.8)	1.724(.097,2.71)	
	Muslim	41(33.3)	82(66.7)	1.088(.667,1.77)	
Husbands occupation	Merchant	61(36.5)	106(63.5)		

	Private employee	72(37.5)	120(62.5)	1.043(.678,1.60)	.849
	government employee	30(32.6)	62(67.4)	0.841(.491,1.44)	
Number of children	1-2	110(33.6)	217(66.4)		.703
	>=3	53(42.7)	71(57.3)	1.47(.964,2.25)	
Monthly income	<8500	37(34.6)	70(65.4)	1	
	8500-13000	113(35.8)	203(64.2)	1.05(.665,1.68)	.430
	>13000	13(46.4)	15(53.6)	1.64(.706,3.81)	
Advice about nutrition during ANC follow up	No	48(27.3)	128(72.7)	1	.
	Yes	115(41.8)	160(58.2)	1.917(1.273,2.88)	002*
Advice about nutrition during PNC follow up	No	73(34.8)	137(65.2)	1	
	Yes	90(37.3)	151(62.7)	1.119(.761,1.64)	.569
Mother's media exposure	No	59(30.7)	133(69.3)	1	.
	Yes	104(40.2)	155(59.8)	0.661(.446,.98)	.040*
Knowledge of mothers	No	33(28.4)	83(71.6)	1	
	Yes	130(38.8)	205(61.2)	1.595(1.008,2.52)	.046*

*1: reference categories, * candidate variables at 0.25 levels, COR: Crude odd ratio*

Model fitness was checked by Hosmer and Lemeshow test and the p-value was 0.714, showing that the data set was good fit for the model. All the independent variables selected for multi variable binary logistic regression analysis was fitted and the multi-collinearity effect was checked. Then, the VIF for all the independent variables is less than 10 (Table 5).

Finally, age of child, mother's educational status, sex of child and advice during ANC follow up were identified as factors associated with minimum acceptable dietary practices among mothers of children aged 6 to 23 months in public health centers at Addis Ababa at 5% level of significance. Those children with the age group of 18-23 months were 2.44 times more likely to have higher odds of a minimum acceptable diet than those children whose ages were 6-11 months (AOR=2.44, 95%CI: 1.50 to 3.97). Similarly, children who were aged 12-17 were 2.42 times higher odds of a minimum acceptable diet than those children whose ages were 6–11 months old (AOR=2.42, 95%CI: 1.39 to 4.23).

Male children were two times more likely to achieve the minimum acceptable diet than female children (AOR=1.97, 95%CI: 1.29 to 3.02). Mothers who had higher degree education were 2.49 times more likely to provide minimum acceptable diets for their children as compared to uneducated mothers (AOR = 2.49;

95% CI: 1.16 to 5.36). Mothers had an advice during antenatal care follow-up were 1.63 times more likely to provide minimum acceptable diet for their children as compared to those mother did not have an advice for the service (AOR = 1.63; 95% CI: 1.04,2.58) (Table 5).

Table 5: Factors associated with minimum acceptable diet among children aged 6-23 month in public health centers at Addis Ababa, Ethiopia, 2023 (n=451)

Variables	Category	MAD		COR(95%CI)	AOR(95%CI)
		Yes	No		
Age of mother	15-24	20(31.3)	44(68.8)	1	1
	25-34	100(33.6)	198(66.4)	1.11(.62,1.98)	0.807(0.43,1.53)
	35-49	43(48.3)	46(51.7)	2.06(1.05,4.02)	1.60(0.77,3.35)
Age of child	6-11	45(23.6)	146(76.4)	1	1
	12-17	74(45.4)	89(54.6)	2.69(1.71,4.25)	2.44(1.50,3.97)*
	18-23	44(45.4)	53(54.6)	2.69(1.60,4.53)	2.42(1.39,4.23)*
Sex of child	Female	68(30.0)	159(70.0)		1
	Male	95(42.4)	129(57.6)	1.72(1.17,2.53)	1.97(1.29,3.02)*
Mothers education	Unable to read & write	17(33.3)	34(66.7)	1	1
	Primary	57(26.0)	162(74.0)	0.704(.365,1.35)	0.71(0.358,1.44)
	Secondary	36(40.9)	52(59.1)	1.385(.673,2.84)	1.46(.674,3.18)
	College & above	53(57.0)	40(43.0)	2.65(1.30,5.40)	2.49(1.16,5.36)*
Advice about nutrition during ANC follow up	No	48(27.3)	128(72.7)	1	1
	Yes	115(41.8)	160(58.2)	1.92(1.27,2.88)	1.63(1.04,2.58)*
Mother's media exposure	No	59(30.7)	133(69.3)	0.66(0.47,.98)	0.90(0.57,1.44)
	Yes	104(40.2)	155(59.8)	1	1
Knowledge of mothers	No	33(28.4)	83(71.6)	1	1
	Yes	130(38.8)	205(61.2)	1.59(1.01,2.52)	1.05(0.607,1.79)

*1: reference categories, * significant at 0.05 levels, COR: Crude odd ratio, AOR: Adjusted odd ratio*

This study evaluated the practice of the Minimum Acceptable Diet (MAD) and its determinants among mothers of children aged 6–23 months in public health centers of Addis Ababa, Ethiopia. The findings

indicate a MAD prevalence of 36.1% (95% CI: 31.7–40.8) among the studied children. This figure demonstrates notable parallels with research from the Amhara region (31.6%) [1], India (35.6%) [10, 11], and Nepal (39.8%) [19]. conversely, the prevalence observed in our study is lower than rates documented in Indonesia (44.9%) and China (41.6%) [14], as well as a previous study in Addis Ababa (74.6%) [1].

On the other hand, the current prevalence exceeds that reported in several other settings. These include Dembecha, North Ethiopia (8.6%) [1], Gorche District, Southern Ethiopia (10.6%) [6], and Aleta Wondo District, Sidama Regional State (13.8%) [1] [20]. Furthermore, our result is higher than findings from South Ethiopia Sodo (21.1%) [15], the Philippines (6.7%) [13], Pakistan (8%) [15], Uganda (23%–26.3%) [1], and a broader national estimate for Ethiopia (11%) [7]. These disparities likely stem from geographic and temporal variations, as well as differences in the socio-demographic profiles of the study populations, particularly maternal education and media exposure.

The analysis identified several factors significantly associated with MAD:

A child's age was a key predictor, with children aged 12–17 months and 18–23 months having significantly higher odds of achieving MAD compared to the youngest group (6–11 months). This finding is consistent with studies from Addis Ababa [1], the 2019 EDHS [8], Wolaita Sodo [15], Afghanistan [18], and rural Ghana [1]. This pattern may be attributed to maternal perceptions that infants under one year have an underdeveloped capacity to digest solid or semi-solid foods, leading to a delayed introduction of diverse diets until the child is older [1]. A significant association was observed between the child's sex and MAD, with male children having higher odds than females. This result aligns with research from Lalibela, Northeast Ethiopia [1], Addis Ababa [1], West Guji Zone, Oromia [1], and Sodo Zuria District [1]. This disparity may be influenced by sociocultural norms that prioritize the nutritional allocation for male children, suggesting a need to ensure equitable feeding practices for girls.

Maternal education emerged as a critical factor. Mothers who had attained a college-level education or higher were significantly more likely to provide a MAD compared to mothers with no formal education. This is supported by studies in Goncha district, Northwest Ethiopia [1], and Dembecha [1]. Formal education likely enhances a mother's capacity to acquire, understand, and apply nutritional knowledge, thereby playing a vital role in adhering to recommended child feeding standards.

Receiving nutritional advice during antenatal care (ANC) follow-ups was positively associated with MAD. Children whose mothers were counseled on nutrition during ANC had higher odds of meeting the diet standard. This finding is corroborated by studies in Lalibela, Northeast Ethiopia [1], Samara Logia, Northern Ethiopia [1], and Gondar, Northwest Ethiopia [1]. This underscores the importance of counseling in improving knowledge, shaping positive attitudes, and promoting optimal feeding practices, positioning ANC visits as a crucial platform for delivering essential infant and young child feeding education.

4. CONCLUSION

In this study, the Minimum acceptable diet practice among children aged 6–23 months in the study area was high when compared to the national prevalence of a minimum acceptable diet but did not meet the World Health Organization's recommendation. Thus, child feeding practices in the study area did not meet the World Health Organization's infant and young child feeding recommendations. Child age, mother's educational level, obtaining nutrition counseling during ANC visits, and maternal age were all significant determinant factor affecting minimum recommended diet standard.

Based on the findings of the study, the following recommendations were forwarded. More efforts should be made to educate and advocate for the benefits of a minimum acceptable diet for all children in order to break the inter-generational cycle of malnutrition. During the health center visit, health care experts should encourage mothers to seek postnatal and antenatal care follow-ups, as well as advice on the minimum accepted diet. Health professionals should focus on the use of health-care services and promoting community awareness about the minimum acceptable food habits for infants and children. Furthermore, we recommend that future studies adopt a qualitative study design to evaluate the socio-cultural barriers and advocate for the minimum acceptable diet, as well as to investigate diet quality. Furthermore, it is vital to emphasis the gender equality of the mother's feeding practices.

Abbreviations

ANC: Antenatal Care

AOR: Adjusted Odds Ratio

CF: Complementary Food

CI: Confidence Interval

COR: Crude Odds Ratio

DE: Design Effect

EDHS: Ethiopian Demographic and Health Survey

E.C.: Ethiopian Calendar

IYCF: Infant And Young Child Feeding

MAD: Minimum Acceptable Diet

MDD: Minimum Dietary Diversity

MMF: Minimum Meal Frequency

MMFF: Minimum Milk Feeding Frequency

N: Total Population Number

NGO: Non-Governmental Organization

NRR: Non-Response Rate

PNC: Postnatal Care

SD: Standard Deviation

SPSS: Statistical Package for the Social Sciences

VIF: Variance Inflation Factor

WHO: World Health Organization

Declarations

Funding Declaration

The authors declare that no specific funding, grant, or financial support was received from any public, commercial, or non-profit funding agency for the conduct of this research. All the cost of the research was covered by the authors.

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Figures

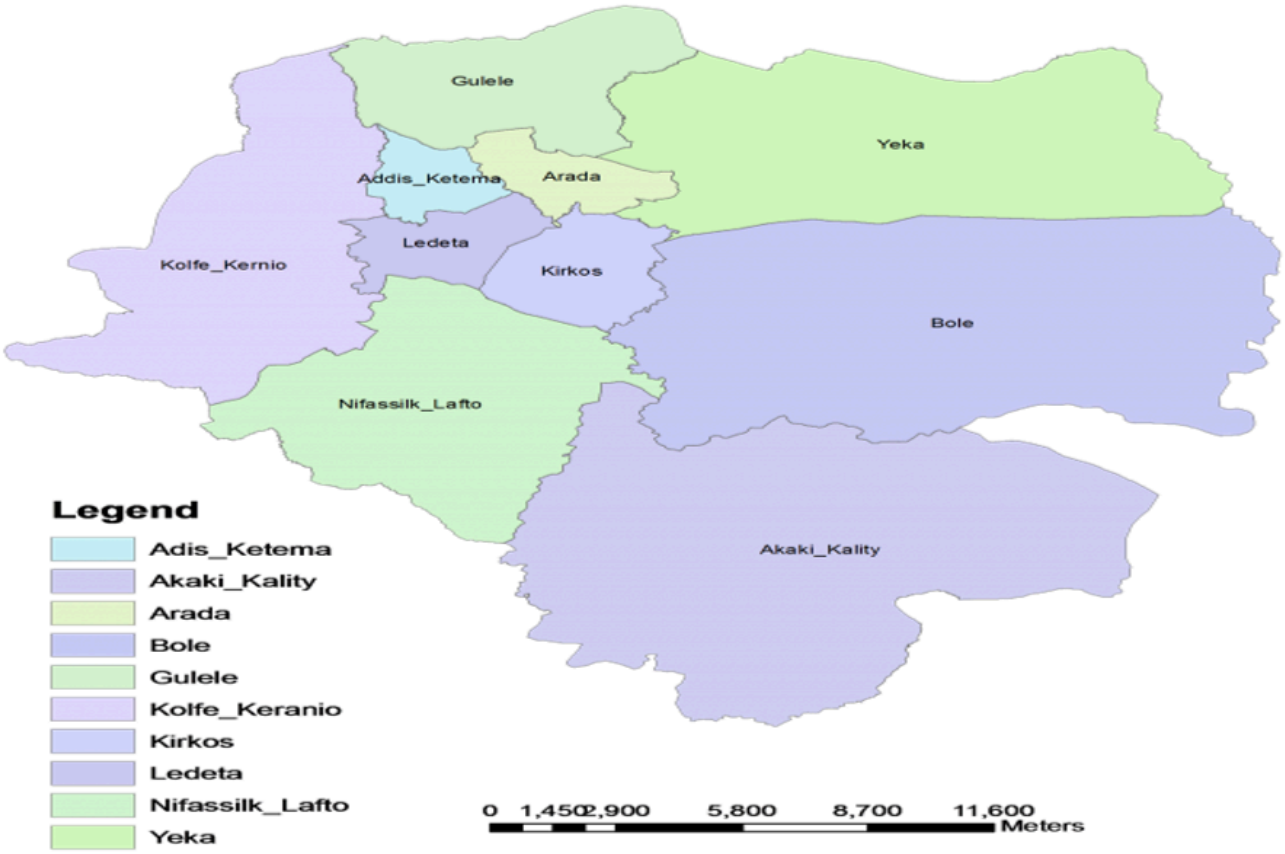


Figure 1

Addis Ababa city administration map

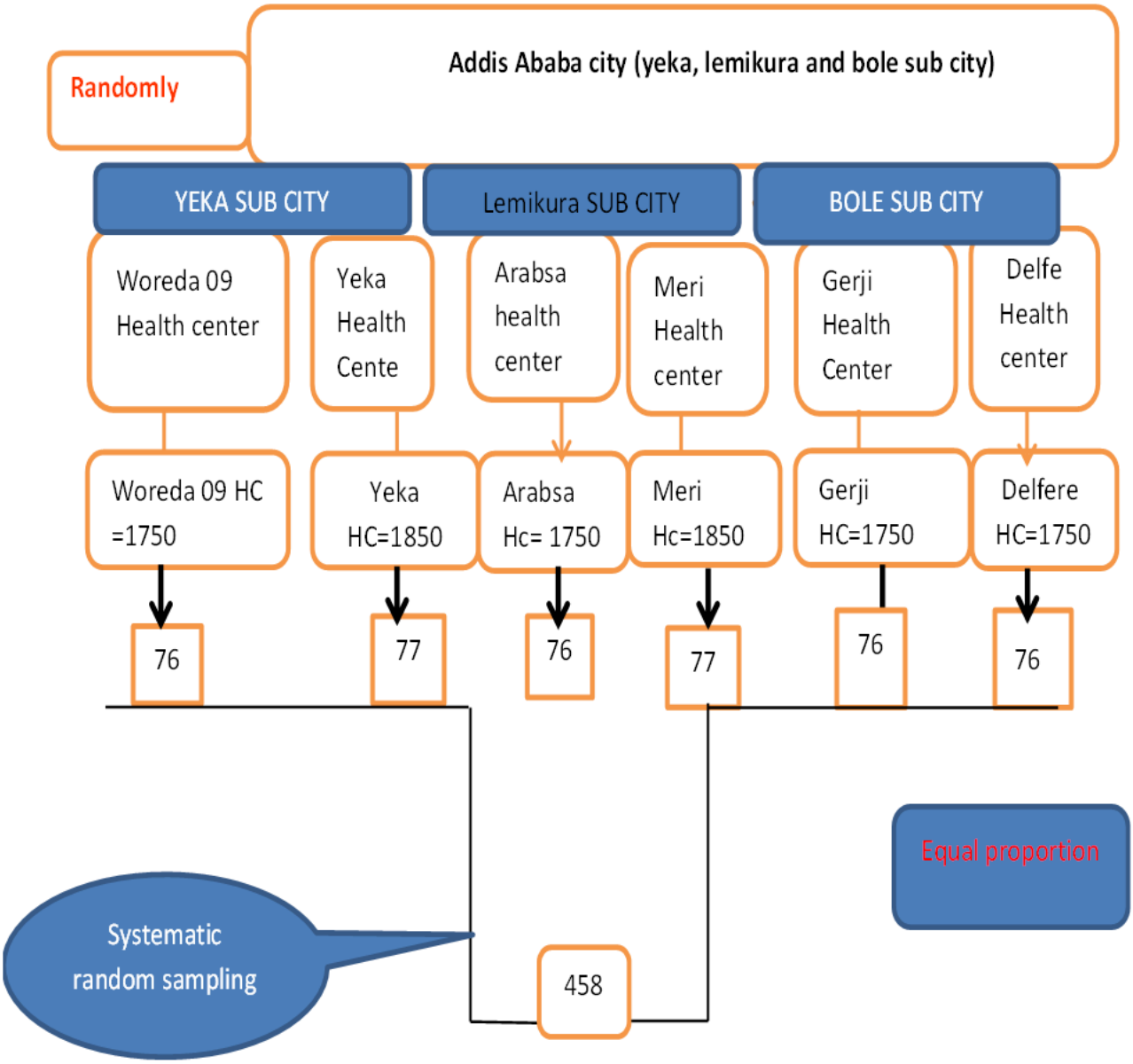


Figure 2

Diagrammatic presentation of sampling procedure.

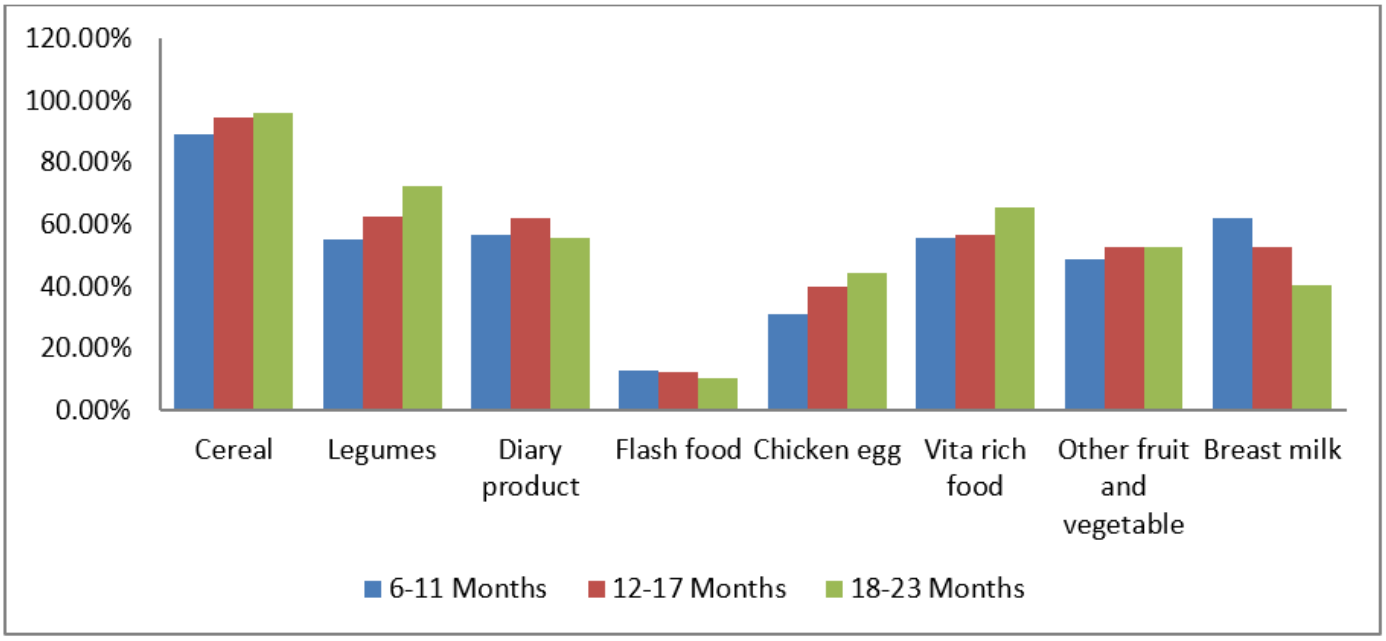


Figure 3

Food groups consumed by infants aged 6–23 months in public health centres at Addis Ababa, Ethiopia, 2023 (n=451)

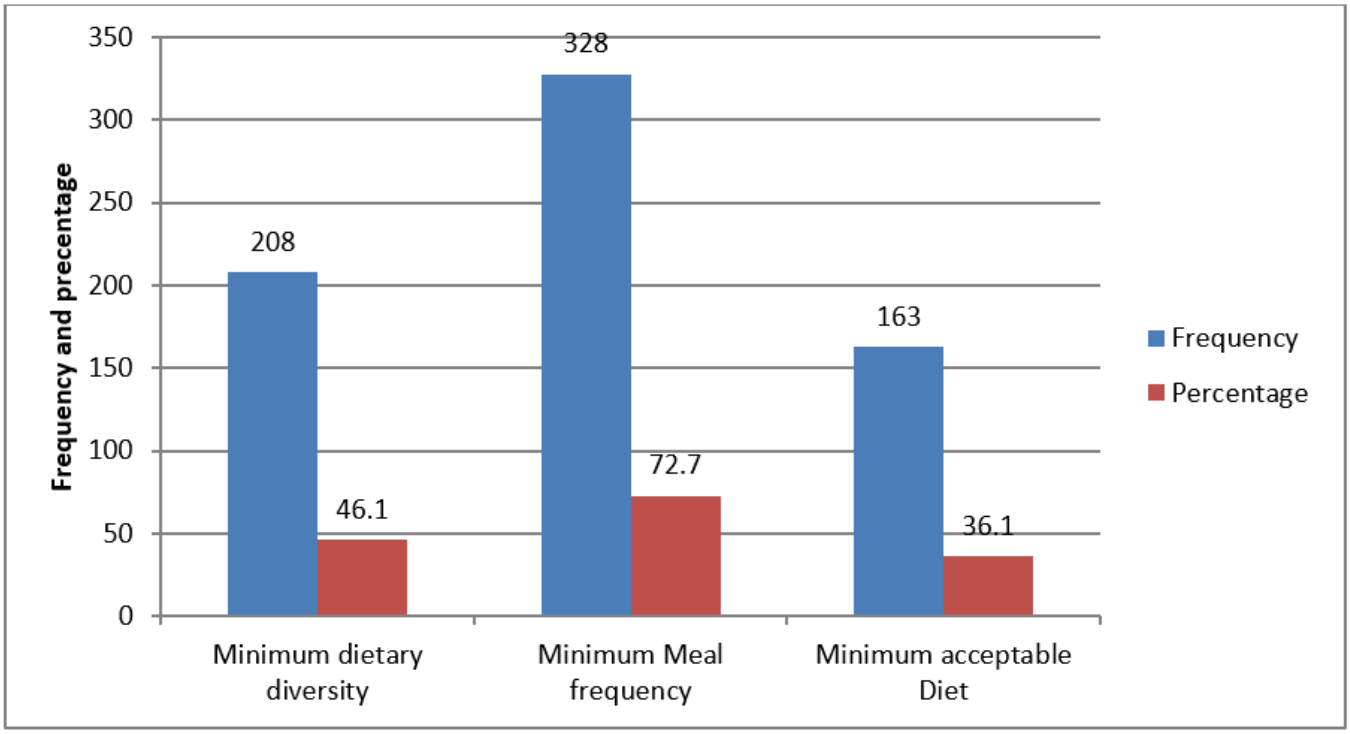


Figure 4

Minimum acceptable diet among mothers of children aged 6–23 months in public health centres at Addis Ababa, Ethiopia, 2023 (n=451)