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Young Children Feeding Practice and Associated Factors Among Mothers in Tigray Region, Ethiopia

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Background: Young child feeding practice is the important modifiable factor influencing the health of children. Optimal young child feeding practice is safe, promotes sensory and cognitive development and help to protect from common childhood illnesses.

Objective: The purpose of this study was to assess young children feeding practices and its associated factors among mothers in Tigray Region, Ethiopia.

Methods: A community-based cross-sectional study design was used. The study was conducted from March 8 to April 8, 2024, in selected zone of Tigray Regional state, Ethiopia. Data was collected from 600 mothers using structured interview questionnaire with Multi-stage sampling technique and kept on the Kobo Collect website. Data was analyzed by SPSS version 27. Frequency distributions, Bi-variate and Multivariate analysis was done and at P value <0.05 considered as statistically significant.

Results: The overall poor feeding practice was 59.2%. Separated mothers (AOR = 7.222, 95% CI (2.080, 25.079)), farmer mothers (AOR = 2.933, 95% CI (1.030, 8.354)), and unemployed fathers (AOR = 1.947, 95% CI (1.005, 3.770)) showed higher odds of poor feeding practices, respectively. Home deliveries (AOR = 8.454, 95% CI (4.100, 17.433)), cesarean sections (AOR = 7.454, 95% CI (3.100, 16.33)) and vacuum delivery, (AOR = 3.902, 95% CI (1.277, 11.925)) were also linked to higher odds of poor feeding practices, respectively. Regular postnatal care (AOR = 0.547, 95% CI (0.390, 0.768)), higher educational level of parents (AOR 0.356 95% CI (0.170, 0.746)) and refrigerator ownership (AOR = 0.589, 95% CI (0.418, 0.831)) have lower odds of poor feeding practices, respectively.

Conclusion: The overall poor feeding practice was 59.2%. Separated mothers, farmer mothers, unemployed fathers, home deliveries, cesarean sections and vacuum delivery were associated with increased poor feeding practice. Higher educational level of parents, regular postnatal care and refrigerator ownership have prevention effect of poor feeding practice.

Keywords: young children, feeding practice, Tigray, Ethiopia

Introduction

The primary modifiable factor influencing children's health is young child feeding practices. Safe and optimal young child feeding fosters the development of the child's senses and cognitive abilities and provides antibodies that shield children from common childhood illnesses like pneumonia and diarrhea, which are the two leading causes of young child death globally. Since the first two years of life are a "critical window" to ensure optimal child growth and development, appropriate feeding is a vital event.[1] Inappropriate feeding practices in these window periods are a major cause of childhood under nutrition.[2] Undernourishment during this crucial phase can have detrimental effects that are irreversible and have long-term effects, such as stunted growth, weakened immune systems, difficulty learning, and decreased productivity in later life.[3]

A baby or young child's daily meal requirements are determined by the quantity of energy they require, how much they can consume at each meal, and the energy density of the food that is provided.[4] In order to improve the nutritional condition of children under two years, World Health Organization (WHO) created a set of key indicators to evaluate infant and young child feeding (IYCF) practices. Breastfeeding and complementary feeding-related behaviors were also

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included in these measures. Therefore, timely introduction of solid and semi-solid food starting at age 6 months and improving the amount and quality of food children eat while preserving breastfeeding are examples of appropriate feeding practices.[5]

According to the World Health Organization (WHO) recommendations, complementary foods should be introduced when an infant reaches 6 months of age. For children aged 6–23 months, minimum dietary diversity involves consuming foods from at least four out of seven standard food groups. Minimum meal frequency is defined as providing a minimum of two or three meals with one to two snacks per day for breastfed infants aged 6–8 months, and three or four meals with one to two snacks per day for those aged 9–23 months. For non-breastfed infants aged 6–23 months, it is recommended to provide milk products at least twice a day. Additionally, minimum acceptable diet includes breastfed children aged 6–23 months who receive both minimum dietary diversity and minimum meal frequency, and non-breastfed children aged 6–23 months who receive at least two milk feedings along with minimum dietary diversity (excluding milk feeds) and minimum meal frequency.[6]

About 18% of acute respiratory mortality in children under five, 30% of diarrheal deaths, and 45% of neonatal infectious deaths are caused by inadequate breastfeeding.[5] Breastfed newborns frequently had reduced blood pressure, cholesterol, and rates of type 2 diabetes, obesity, and overweight in adulthood. There is proof that breastfed individuals score higher on intellect exams.[7]

The Ethiopian Demographic Health Survey (EDHS) 2019 reports that half of the children born in the three years prior to the survey were nursed for approximately 25 months, making breastfeeding almost universal in Ethiopia. Merely 52% of kids commenced breastfeeding within 60 minutes and EBF for six months, respectively. Over half of infants receive supplemental foods from 6 to 9 months of age. In general, only 4% of children between the ages of 6 and 23 months receive nutrition that complies with the infant and young child feeding (IYCF) guidelines.[8]

The global prevalence of exclusive breastfeeding (EBF) for infants up to six months of age has been steadily increasing. According to the most recent data in 2023, approximately 48% of infants worldwide were exclusively breastfed for the first six months.[9] From all the preventative measures, optimal breastfeeding of infants under two years old has the biggest potential influence on child survival; in the developing world, it might avert 1.4 million deaths of children under five. The results of a study conducted in Ghana show that breastfeeding babies within the first hour of birth can prevent 22% of neonatal deaths.[10]

Every day, 3000 to 4000 infants in low-income countries die from diarrhea and acute respiratory infections due to inadequate breastfeeding. Optimal breastfeeding and appropriate complementary feeding could prevent 13% and 6% of under-five mortality, respectively. Recent studies in Ethiopia, Ghana, Bolivia, and Madagascar have shown that optimal breastfeeding can prevent 20–22% of neonatal deaths.[11] Breast feeding significantly lowers mortality from various infectious diseases as well as from two of the biggest killers of children: acute respiratory infections and diarrhea.[12]

The argument, therefore, is that since breastfeeding provides a complete nutritional and preventive health package for infants and young children, it would arrest infant mortality. However, the intriguing question that inspired this research was: What are the factors of young children feeding practice in Tigray region? The purpose of this study was, therefore to obtain a better understanding of factors affecting young children feeding practice, including the barriers and facilitators to initiation and continuation, among mothers in Tigray region. What a young child eats is directly dependent on the knowledge, perceptions, and practices of their parents and other caregivers.[13] Yet little is known about how to modify these feeding practices in the study area.

The selection of the topic on young children's feeding practices and associated factors among mothers in the Tigray Region, Ethiopia, is highly relevant due to the severe impact of the recent war that plagued the region for two years. The conflict caused widespread devastation, with children and women being among the most vulnerable groups affected. Disruption of basic services such as food supply, healthcare, and social support systems placed immense stress on the region, leading to malnutrition and inadequate feeding practices for young children. Investigating these feeding practices provides essential insights into the immediate and long-term challenges faced by mothers in ensuring proper nutrition for their children.

During the war, the Tigray region experienced large-scale internal displacement, which uprooted families from their homes and traditional livelihoods. Farming, the mainstay of the region's economy, was interrupted, leading to food shortages and a lack of access to nutritious diets. Mothers, as primary caregivers, faced tremendous difficulty in feeding their children, as local food production halted and supply chains were broken. The health sector of the Tigray region is

now undergoing a gradual process of rehabilitation and recovery with the collaborative efforts of the Ethiopian federal government, the Tigray regional office, and various non-governmental organizations (NGOs), steps are being taken to restore critical infrastructure, re-establish healthcare services, and address the pressing needs of the population. This study aims to assess how these factors influenced feeding practices of the young children.

The finding of this study will be used to develop strategies that contribute towards the elimination of young child poor feeding practice in the study area. The findings also provide information for policy makers and indicate possible solutions for practicing optimal young child feeding practice. It create an environment to the community that would enable mothers, families and other caregivers in all circumstances to make and implement informed choices about optimal feeding practices for young children. The result of this study will also have contribution for educational purpose by improving the awareness of health professionals' skill and knowledge on young children feeding.

Materials and Methods

Study Area and Period

This study was conducted in selected zones of Tigray region, Ethiopia. Tigray regional state is found 700 Km far from the capital city of Ethiopia, Addis Ababa. Tigray is the fifth most populous region of Ethiopia. About 75% of Tigrayans live in rural areas. The Tigray regional state has 7 million people, with Tigrinya as its official language. The region is served by 40 government hospitals, 226 health centers, and 741 health posts. It is divided into 7 administrative zones, 52 districts, and 814 tabias (sub-districts with an average population of 5000 or approximately 1000 households). This study was conducted from March 8 to April 8, 2024.

Study Design and Population

A community-based cross-sectional study was used among mothers who have young children in Tigray Region, Ethiopia.

Inclusion and Exclusion Criteria

All mothers who have young children in the selected study area were included for this study and those mothers who are severely ill and unable to respond were excluded from this study.

Sample Size and Sampling Technique

Single population proportion formula was used with the following assumptions.

$$n = (Z\alpha/2)^2 P(1-P)/d^2$$

Where: n = required sample size, **Zα/2** = critical value for normal distribution at 95% confidence level which equals to 1.96, **P** = 61.7% (young children feeding practice according to WHO recommendation taken from the research done in Ethiopia in 2022).[14] **d** = an absolute precision (margin of error 5%), Design effect = 1.5 Considering design effect 1.5 and adding 10% of non-response rate the final sample size was 600.

Multi-stage sampling technique was used to collect from the households of the selected district. From the total of 7 zones in Tigray Region, 3 are selected by simple random samplings (SRS) technique considering the representativeness of the sample. Then, from 3 zones, 9 districts were selected by SRS. The total number of mothers with their children less than two years in those selected district (N) was 16,028. From these target populations, the required sample size was taken according to proportional allocation to sample in each selected district by using the formula $n_j=(n/N)N_j$.

Finally, systematic sampling was done to get the individual sample unit at household level. After determining the sampling interval, the center of each district was located and to start the first house, lottery method was used. Once the direction is located using the lottery method; then, it was started from the first household, which was immediately found from that direction and systematically continued by jumping 27 houses to get next sample. If the selected house hold had no eligible mother, the next house near to it will be visited and if again no eligible mother in this house the sampling procedure would continue to the second selected house hold interval and the procedure continue till the required sample is achieved. If two or more mothers are available in the house hold, lottery method was used to include in the survey. [Figure 1]

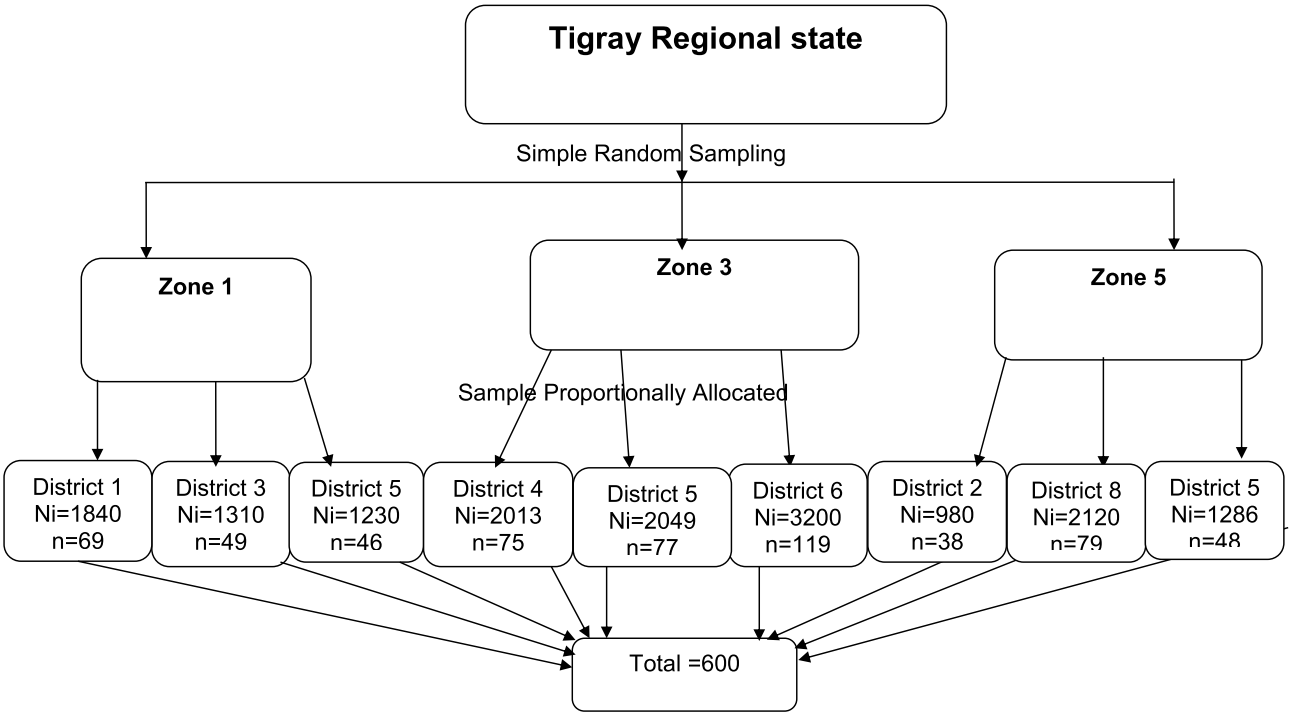

Figure 1 Schematic representation of sampling technique for Young children Feeding practice and associated factors among mothers in Tigray Region, Ethiopia 2024. NB: Zone 1[Central zone (Adwa, Axum, Abergele), Zone 3 (Eastern Zone (Adigrat, Hawzen, Wukro)), Zone 5 (North western Zone (Shire inda Selassie, La`ilay adyabo, Tahtay adya)).

Study Variables

Feeding practices was dependent variable and maternal related factors, socio demographic variables, young child health related factor and health professional related factors were considered as independent variable.

Operational Definition

Young children: In this study, young child refers to birth up to 24 months old.

Good feeding practices: Refers to infants and young children feeding practices that satisfy the minimum dietary diversity, minimum meal frequency and introduction of solid, semi-solid or soft foods at the recommended diversity, frequency and time.

Poor feeding practices: Refers to infants and young children feeding practices that did not satisfy one of the above three criteria.

Formula milk: Refers to commercially prepared product made from processed cow's milk or plant-based alternatives and contains added nutrients, such as vitamins, minerals, and fatty acids, to meet infants' nutritional needs.

Animal milk: Derived directly from animals such as cows, goats, or sheep. In this study, animal milk refers to cow milk.

Data Collection Techniques and Instrument

Data was collected by using pre-tested structured questionnaire adapted from different literatures and modified to the local context and to the research objective. The questionnaire was translated into Tigrigna (Local language), then the Tigrigna version was back translated into English by language professionals, and consistency between the original and the back translated versions was checked by the investigator.

Data was collected by trained health workers working at the health institutions and health extension workers working in the community by using a structured interviewer questionnaire. Data was kept on the Kobo Collect website for humanitarian assistance, downloaded in Ms. Excel format and exported to SPSS version 27. A descriptive statistics and logistic regressions were computed. A variable with P-value less than 0.05 was considered as statistically significant.

Frequency distributions, cross-tabulations and graphs were used to describe the finding. Any variable significant at p <0.25 level in the bi-variable analysis was included in multivariate analysis.

Data Quality Control

The pretest was done by the principal investigator on 5% of randomly selected households to check the consistency and clarity of the data collection tool at the Enticho district, which was not included in the actual study. Training was given for both data collectors and supervisors for one day on how to collect data from house-to-house. The filled formats were checked for completeness each day by the supervisor and investigator. In this study, an appropriate design, utilizing systematic random sampling, clearly defined variables, and a commitment to objectivity and transparency in both data collection and analysis was made to minimize bias.

Results

Socio-Demographic Characteristics of Young Children Feeding Practice Among Mothers in Tigray Region, Ethiopia

The proposed sample size was 600 participants and all 600 mothers responded, making the response rate 100%. In terms of the gender of the infants, 276 (46.0%) were male, while 324 (54.0%) were female. The other detailed socio-demographic characteristics are shown in the following table [Table 1].

Table 1 Socio-Demographic Characteristics of Young Children Feeding Practice Among Mothers in Tigray Region, Ethiopia (n=600)

Characteristics	Category	Frequency	Percent
Maternal age	<18 years	10	1.7
	18 to 25 years	193	32.2
	25 to 35 years	258	43.0
	>35 years	139	23.2
	Total	600	100.0
Age of the child	<6 months	31	5.16
	6–12 months	340	56.6
	12–24 months	229	38.16
	Total	600	100.0
Marital Status of the Mother	Single	52	8.7
	Married	464	77.3
	Divorced	20	3.3
	Widowed	48	8.0
	Separated	16	2.7
Educational Level of the Mother	Unable to read and write	63	10.5
	Grade 1–8	148	24.7
	Grade 9–10+2	253	42.2
	10+2 completed and above	136	22.7

(*Continued*)

Table 1 (Continued).

Characteristics	Category	Frequency	Percent
Occupation of the Mother	Government Employee	105	17.5
	Private Employee	76	12.7
	Daily Laborer	28	4.7
	House Wife	251	41.8
	House made/servant	5	0.8
	Merchant	87	14.5
	Farmer	27	4.5
	Student	16	2.7
	Unemployed	5	0.8
	Others	21	3.5
Husband's Educational Level	Unable to read and write	41	6.8
	Grade 1–8	62	10.3
	Grade 9–10+2	136	22.7
	10+2 completed and above	225	37.5

Antenatal and Postnatal Care and Young Children Feeding Practice

Regarding antenatal care (ANC) attendance, the majority of mothers, 569 (94.8%) reported attending ANC, while a smaller proportion, 31 (5.2%) did not. Among those who attended ANC, the distribution of the number of visits was as follows: 18 (3.0%) attended once, 46 (7.7%) attended twice, 168 (28.0%) attended thrice, 226 (37.7%) attended four times, 63 (10.5%) attended five times, 34 (5.7%) attended six times, 11 (1.8%) attended seven times and 3 (0.5%) attended eight times.

In terms of counseling about infant feeding options, 396 (66.0%) mothers reported having been counseled, while 204 (34.0%) had not. The counseling occurred across different types of visits: during ANC only (27, 4.5%), delivery only (366, 61.0%), postnatal care (PNC) only (271, 45.2%), a combination of ANC and delivery (11, 1.8%), ANC and PNC (3, 0.5%), delivery and PNC (242, 40.3%), and other unspecified times (11, 1.8%). Specifically, during ANC visits, 27 (4.5%) mothers were counseled about infant feeding options, while 369 (61.5%) were not. During delivery, 366 (61.0%) received counseling, while 30 (5.0%) did not.

Young Children Feeding Practice Among Mothers in Tigray Region, Ethiopia

In this study, the overall poor feeding practice of young children was 355 (59.2%). The vast majority of mothers, 587 (97.8%), reported having breastfed their child, while only 13 (2.2%) did not at all. Regarding the timing of breastfeeding initiation, 368 mothers (61.3%) breastfed their child within the first hour, 208 (34.7%) initiated breastfeeding after the first hour, and 11 (1.8%) could not recall. Concerning feeding of other food or drinks before the first breastfeeding, 55 infants (9.2%) received something other than breast milk, while 532 (88.7%) did not. The items provided before the first breastfeeding included butter 20 (3.3%), water and sugar 30 (5.0%). About 126 (21%) of the infants had taken any food or fluid before six months other than breast milk.

Numbers of Children per Mother

The following figure displays the frequency distribution of mothers by the number of children they have. [Figure 2]

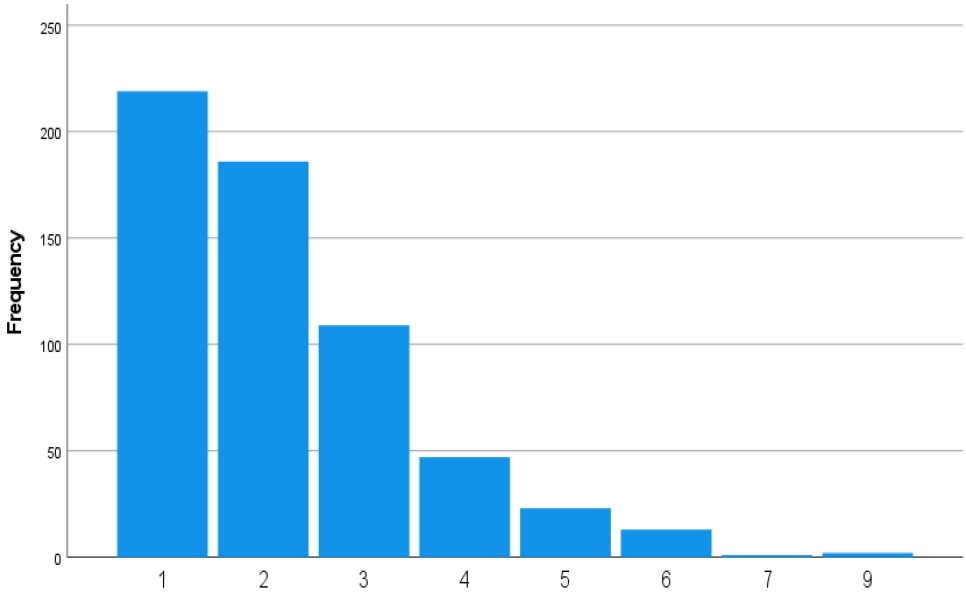

Figure 2 The number of children per each mother.

Antenatal Care Visits During Last Pregnancy

The following figure shows the number of ANC visits of the mother in the last pregnancy. The distribution indicates that four ANC visits were the most common, aligning with standard prenatal care recommendations. [Figure 3]

Breast Feeding Practice Other Than Their Mother

In terms of whether infants were ever breastfed by anyone else, 24 (4.0%) were reported to have been breastfed by someone else, while 576 (96.0%) were not. Considering the relationship of external feeder of their child, the primary feeders were reported as servants followed by grandmothers. [Figure 4]

Practice of Feeding Expressed Breast Milk for Young Children

Regarding the expression of breast milk, as the following table indicates, 51 (8.5%) mothers reported having ever expressed breast milk until their child's six months, while 549 (91.5%) did not. Of those who expressed breast milk, 25 (4.2%) stated that, they had given the expressed milk to their child, whereas 26 (4.3%) had not [Table 2].

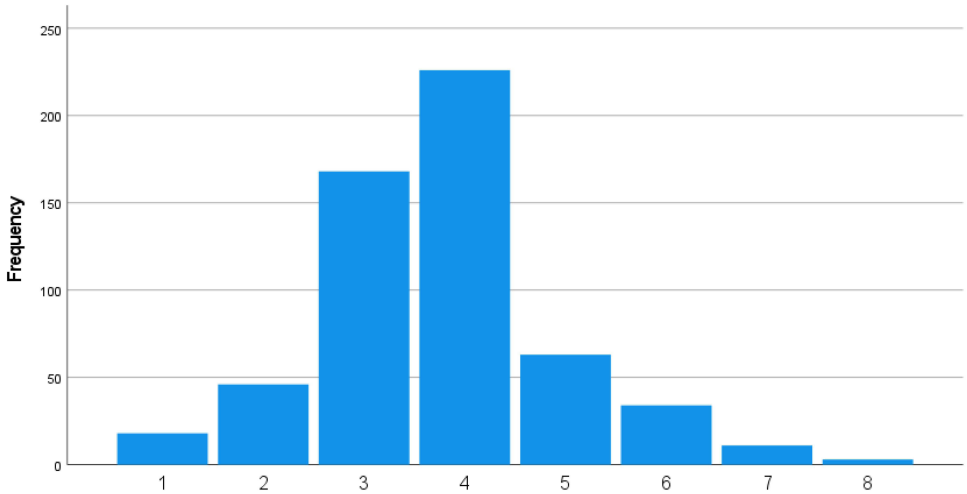

Figure 3 Number of antenatal care visits of the mother during last pregnancy.

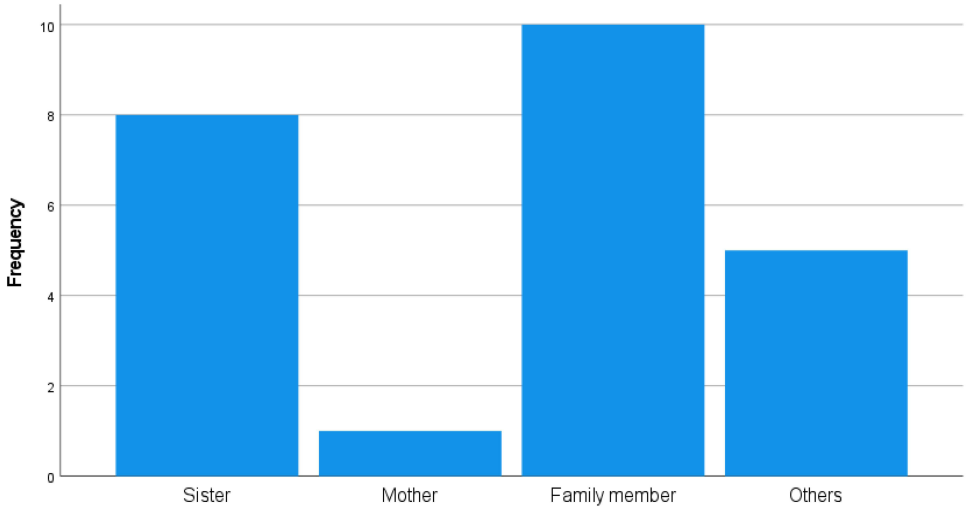

Figure 4 Breast feeders' relationship to the mother.

Practice of Feeding Formula Milk for Young Children

Concerning the feeding practices related to formula milk, 118 (19.7%) mothers reported having given formula milk to their child, while 482 (80.3%) did not. Among those who provided formula milk, the weekly consumption patterns were as follows: 10 (1.7%) used 0.25 tins, 64 (10.7%) used 0.50 tins, 7 (1.2%) used 0.75 tins, 24 (4.0%) used 1.00 tins, 2 (0.3%) used 1.50 tins, 6 (1.0%) used 2.00 tins, 4 (0.7%) used 3.00 tins, and 1 (0.2%) used 5.00 tins.

Moving to animal milk practices, 246 (41.0%) mothers reported giving cow milk to their child, while 354 (59.0%) did not. Among those who provided animal milk, weekly consumption was reported as follows: 1 (0.2%) used 0.25 liters, 12

Table 2 Expressed Breast Milk Feeding Practice Among Young Children in Tigray Region, Ethiopia (N= 600)

Variable	Frequency	Percent
Ever Expressed Your Breast Milk Until Child's Six Months		
Yes	51	8.5
No	549	91.5
Total	600	100.0
Expressed Your Breast Milk Yesterday or Last Night		
Yes	4	0.7
No	14	2.3
Ever Given the Expressed Breast Milk to Your Child		
Yes	25	4.2
No	26	4.3
Given the Expressed Milk Yesterday or Last Night		
Yes	4	0.7
No	14	2.3

(*Continued*)

Table 2 (Continued).

Variable	Frequency	Percent
Kind of Utensils You Used to Feed the Expressed Milk		
Bottle	20	3.3
Cup with Spoon	10	1.7
Others	21	3.5
Frequency You Feed the Expressed Breast Milk to Your Child		
Always	4	0.7
Often	1	0.2
Sometimes	46	7.7
Reasons for Expressing Breast Milk		
To Relieve Breast Engorgement	11	1.8
To Relieve Pain Due to Coracle	3	0.5
To Separate from the Infant	3	0.5
Infant Unable to Suckle on Breastfeeding	13	2.2
Others	10	1.7
Expressed Breast Milk to Separate from the Infant		
Yes	8	1.3
No	43	7.2
Expressed Breast Milk Due to Infant Unable to Suckle		
Yes	18	3.0
No	33	5.5

(2.0%) used 0.50 liters, 7 (1.2%) used 0.75 liters, 38 (6.3%) used 1.00 liters, 9 (1.5%) used 1.50 liters, 1 (0.2%) used 1.75 liters, 26 (4.3%) used 2.00 liters, 7 (1.2%) used 2.50 liters, 41 (6.8%) used 3.00 liters, 53 (8.8%) used 3.50 liters, 34 (5.7%) used 4.00 liters, 4 (0.7%) used 5.00 liters, 2 (0.3%) used 6.00 liters, and 11 (1.8%) used 7.00 liters. Concerning adherence to instructions on formula milk tins, 94 (15.7%) mothers reported being able to follow the instructions, while 24 (4.0%) could not.

Regarding the frequency of preparing formula or cow milk per day, 90 (15.0%) mothers prepared it once, 91 (15.2%) twice, 89 (14.8%) thrice, 39 (6.5%) four times, 5 (0.8%) five times, 3 (0.5%) six times, and 4 (0.7%) eight times. In terms of disposition of leftover milk after feeding, 73 (12.2%) gave it to an older child, 147 (24.5%) discarded it, 78 (13.0%) saved it for later feed, and 14 (2.3%) either gave it to an older child or saved it for later feed.

Hygienic Practice During Feeding for Young Children

Regarding household facilities, 227 (37.8%) mothers reported having a refrigerator, while 373 (62.2%) did not. In terms of time allocation for their child, 542 (90.3%) mothers reported giving adequate time, while 58 (9.7%) did not [Table 3].

Practice of Complementary Feeding for Young Children

Regarding the introduction of complementary food for their child, 415 (69.2%) mothers indicated they have started by the age of 6 month, while 185 (30.8%) have not. In terms of current breastfeeding practices, 517 (86.2%) mothers

Table 3 Hygienic Practice During Feeding Young Children in Tigray Region, Ethiopia (n=600)

Variable	Frequency	Percent
Do you have refrigerator?		
Yes	227	37.8
No	373	62.2
Total	600	100.0
Do you give adequate time for your child?		
Yes	542	90.3
No	58	9.7
Total	600	100.0
Your reason not to give enough time for your child (care)?		
Lack of time due to different tasks	53	8.8
Unwell mother	4	0.7
Do you boil water to wash the utensil?		
Yes	419	69.8
No	181	30.2
Total	600	100.0
What is your reason not to boil water?		
No adequate fuel	14	2.3
No adequate time	32	5.3
Others	136	22.7
Do you wash your hands before preparing infant food?		
Yes	583	97.2
No	17	2.8
Total	600	100.0
Have your child ever been fed by others?		
Yes	263	43.8
No	337	56.2
Total	600	100.0

reported currently breastfeeding their child, while 83 (13.8%) were not. When asked about their intended duration of breastfeeding, responses varied as follows: 80 (13.3%) between 13–18 months, 304 (50.7%) between 19–24 months, and 132 (22.0%) planned to breastfeed for more than 24 months.

Reasons for Stopping Breastfeeding and Subsequent Foods Received

As shown in the table, mothers provided various reasons for stopping breastfeeding including infants no longer wanted to breastfeed, mothers wanted to encourage solid food intake, due to pregnancy and due to fear of HIV transmission [Table 4].

Table 4 Reasons to Stop Breastfeeding and Subsequent Foods Received

Reason	Frequency	Percent
Why did you stop breastfeeding?		
Infant no longer wanted to breastfeed	4	0.7
Infant no longer wanted breastfeed and to encourage solid food	5	0.8
To encourage infant to eat solid food	22	3.7
Pregnancy	21	3.5
Fear of HIV transmission	8	1.3
Mother too sick to breastfeed	2	0.3
Advised by health providers, husbands, other persons to encourage solid food feeding and infants no longer wanted	7	1.2
Other	8	1.3
Foods the child received after stopping breastfeeding		
More than five diversities	10	1.7
At least three foods	36	6.0
Milk products	3	0.5
At least four diversities	14	2.3
Formula or powdered milk	4	0.7
Cow milk	1	0.2
Porridge or cereal-based fluid	2	0.3
Adult food	7	1.2
Water or tea	27	4.5
Soft drink	7	1.2
Grains, roots, tubers, and plantains	4	0.7
Pulses (beans, peas, lentils)	7	1.2
Nuts and seeds	4	0.7
Flesh foods (meat, fish, poultry, organ)	8	1.3
Eggs	9	1.5
Vitamin-A rich fruits and vegetables, and other fruits and vegetables	3	0.5

Multivariate Analysis About Association of Poor Feeding Practice

Following the bivariate analysis, only the variables that met the significance criterion (p-value < 0.25) were included in the multivariate logistic regression model. Separated mothers have a significantly higher risk (AOR = 7.222, 95% CI (2.080, 25.079), P = 0.002) of poor feeding practices. Mothers categorized as "farmers" in occupation have significantly higher odds (AOR = 2.933, 95% CI (1.030, 8.354), P = 0.044), and unemployed fathers also show higher odds (AOR = 1.947, 95% CI (1.005, 3.770) P = 0.048), for poor feeding practice. Home delivery is associated with substantially higher odds (AOR = 8.454, 95% CI (4.100, 17.433), P = 0.000) of poor feeding practices than institutional deliveries. Delivery type also matters, with cesarean sections (AOR = 7.454 (3.100, 17.433), P = 0.000) and vacuum deliveries (AOR = 3.902, 95% CI (1.277, 11.925), P = 0.017) linked to higher odds of poor feeding practices than SVD.

Regular postnatal care (PNC) attendance significantly reduces the risk of poor feeding practices (AOR = 0.547, 95% CI (0.390, 0.768), P = 0.000), emphasizing the need for consistent follow-up care. Additionally, infants breastfed by someone other than the mother are at lower risk (AOR = 0.429, 95% CI (0.305, 0.603), P = 0.000), which may reflect the benefits of shared caregiving. Household amenities such as refrigerator ownership also contribute to better feeding practices (AOR = 0.589, 95% CI (0.418, 0.831), P = 0.003) [Table 5].

Table 5 Multivariate Analysis About Association of Poor Feeding Practice and Different Variables Among Young Children in Tigray Ethiopia (n=600)

Variable	Category	AOR (95% CI)	P value
Current Marital status of the mother	Single	1	
	Married	2.460 (0.776, 7.800)	0.126
	Divorced	2.219 (0.793, 6.209)	0.129
	Widowed	3.889 (0.966, 15.652)	0.056
	Separated	**7.222 (2.080, 25.079)**	**0.002****
Current occupation of the mother	Government Employee	1	
	Private Employee	0.968 (530, 1.766)	0.915
	Daily Laborer	2.444 (0.914, 6.536)	0.075
	House Wife	0.694 (0.437, 1.101)	0.121
	House made/servant	2.667 (0.288, 24.696)	0.388
	Merchant	1.405 (0.774, 2.548)	0.263
	Farmer	**2.933 (1.030, 8.354)**	**0.044***
Husband's highest educational level	Unable to read and write	**1**	
	Grade 1–8	1.051 (0.449, 2.461)	0.909
	Grade 9–10+2	**0.356 (0.170, 0.746)**	**0.006****
	10+2 completed and above	0.696 (0.342, 1.416)	0.318
Husband's current occupation	Government Employee	0.747 (0.408, 1.365)	0.343
	Private Employee	0.626 (0.310, 1.264)	0.191
	Daily Laborer	0.834 (0.516, 1.348)	0.459
	Merchant	0.309 (0.092, 1.041)	0.058
	Unemployed	**1.947 (1.005, 3.770)**	**0.048***
	Farmer	0.973 (0.297, 3.186)	0.964
Birth place of the mother in last pregnancy	Health Institution	**1**	
	Home	**8.454 (4.100, 17.433)**	**0.000****
Types of delivery in the last pregnancy	SVD	1	
	SVD with episiotomy	1.278 (0.875, 1.865)	0.204
	CS	**7.454 (3.100, 17.433)**	**0.000****
	Forceps	2.439 (0.466, 12.753)	0.291
	Vacuum	**3.902 (1.277, 11.925)**	**0.017***

(*Continued*)

Table 5 (Continued).

Variable	Category	AOR (95% CI)	P value
PNC attendance of the mother	Yes	**0.547 (0.390, 0.768)**	**0.000****
	No	1	
Do you have refrigerator	Yes	**0.589 (0.418, 0.831)**	**0.003****
	No	1	

Notes: ** Refers to variables which are significantly associated with a P-value less than 0.01 and * refers to P-value less than 0.05. The variables which have significant association stated as bold font.

Discussion

The research aimed to investigate the current status of young child feeding practices in Tigray region and identify factors influencing these practices, and assess their alignment with global nutritional recommendations. The study revealed several key insights, such as prevalent breastfeeding patterns, the timing of introducing complementary foods, and the types of foods commonly given to young children. The discussion examines socio-cultural, economic, and educational factors that influence feeding practices, providing a nuanced understanding of the challenges and opportunities in promoting better nutritional outcomes for young children in Tigray.

Poor Feeding Practice and Associated Factors Among Young Children

The findings revealed that a significant proportion of young infants and children up to 24 months experienced poor or inappropriate feeding practices, with 355 out of 600 children (59.2%). A study in the Amhara Region of Ethiopia indicated that 46.1% of children aged 6–24 months had inadequate feeding practices.[14] Compared to the 59.2% found in the Tigray Region, this suggests that feeding practices may be poorer in Tigray. The 2019 Ethiopia Mini Demographic and Health Survey (EMDHS) reported that only 14% of children aged 6–23 months receive the minimum acceptable diet, indicating widespread poor feeding practices nationally.[15]

When this finding compare with African studies; research conducted in Kenya revealed that 41.2% of children aged 6–23 months had poor feeding practices.[16] This is lower than the 59.2% observed in the Tigray Region, indicating better feeding practices in Kenya compared to Tigray. In Nigeria, a study found that 34.8% of children were not fed according to recommended practices.[17] This again shows a lower percentage of inappropriate feeding compared to Tigray Region.

A global study on infant and young child feeding practices reported that in South Asia, approximately 39% of children aged 6–23 months were not fed according to WHO recommendations.[5] This figure is lower than that of Tigray Region, highlighting regional challenges specific to Tigray. In Tigray, the study found a high prevalence of pre-lacteal feeding. Similarly, in the Oromia Region of Ethiopia, a study found that 32.4% of mothers practiced pre-lacteal feeding, which was associated with cultural beliefs and lack of education[18] appropriate complementary feeding is crucial for child nutrition. A study in Uganda highlighted that 58% of children did not receive appropriate complementary feeding, which aligns closely with the findings in Tigray.[19]

In comparison to other studies, the findings in Tigray align with broader research indicating that marital status, education, occupation, and access to healthcare significantly affect child feeding practices. For instance, a study in Nigeria found that single mothers were more likely to exhibit poor feeding practices, echoing the elevated risk seen in separated mothers in Tigray.[18] Similarly, education's protective effect is widely supported; a study in India showed that mothers with higher education levels had better feeding practices.[20]

However, some differences arise when comparing occupational impacts. While the Tigray study highlights the risks associated with unstable occupations, a study in Kenya found that mothers in stable jobs also faced challenges due to time constraints.[17] This suggests that the quality and stability of employment, rather than employment status alone, play crucial roles.

The significant association between home delivery and poor feeding practices in Tigray compares with findings in some Southeast Asian countries, where traditional practices still support adequate feeding.[21] This discrepancy might seem from differences in healthcare infrastructure and cultural practices.

Antenatal and Postnatal Care Visit and Young Children Feeding Practice

In this study, the majority of mothers (94.8%) reported attending ANC, while a smaller proportion (5.2%) did not. This high attendance rate aligns with findings from other studies done in Ethiopia ported that 96.2% of mothers attended at least one ANC visit, indicating a similarly high rate of ANC attendance.[22] However, the distribution of the number of visits varied slightly, with fewer mothers completing the recommended four or more visits. The study from Bangladesh found that 89.6% of mothers attended ANC, which is slightly lower but still high.[23] The study conducted in Nigeria reported that 87.5% of mothers attended ANC, showing a slightly lower attendance rate compared to the current study.[24]

In terms of counseling about infant feeding options, 66.0% of mothers in this study reported having been counseled, while 34.0% had not. This finding is comparable to other research: Another study from India found that 68% of mothers received counseling on infant feeding during ANC visits, closely matching the 66.0% reported in the current study.[25] And a study from Kenya noted that only 54.2% of mothers received counseling on infant feeding, which is lower than the current study.[17] The counseling was mainly during ANC visits, emphasizing the need for more comprehensive counseling strategies. A study from Tanzania reported that 63.7% of mothers received infant feeding counseling, a figure very close to the current study's 66.0%.[26] The timing of counseling varied, with many mothers receiving advice during ANC and PNC visits.

Young Children Feeding Practice Among Mothers in Tigray Region, Ethiopia

In this study, 97.8% of mothers reported having breastfed their child during the first hours of birth. This high initiation rate aligns with findings from similar studies: the study conducted a global analysis breast feeding found that 94% of infants initiated breastfeeding within the first hour of birth, which is slightly lower than the 97.8% reported in the current study.[27] This suggests a strong global trend towards early breastfeeding initiation. A study from Ethiopia reported a breastfeeding initiation rate of 98.6% among Ethiopian mothers, which is comparable to the findings in the current study.[28] Another study from Bangladesh found that 95.3% of mothers initiated breastfeeding within the first hour after birth, again showing consistency with high initiation rates observed globally and in specific regions.[29]

Regarding pre-lacteal feeding practices, the current study reported that 9.2% of infants received something other than breast milk before their first breastfeeding. The other literature reported a lower prevalence of pre-lacteal feeding (4.9%) among infants in Nepal.[30] The study highlighted cultural practices and misconceptions about newborn feeding as contributors to non-exclusive breastfeeding practices. And in India found a higher prevalence of pre-lacteal feeding (22.3%) in rural India, indicating significant regional variations influenced by cultural beliefs and lack of breastfeeding support.[31] Also from Pakistan, it is reported a prevalence of 14.3% for pre-lacteal feeding practices among infants in Pakistan, emphasizing the need for targeted interventions to promote exclusive breastfeeding.[32]

Reasons for Not Breast Feeding Among Young Children

In this study, only 0.7% of mothers cited their infant's perceived illness as a reason for not breastfeeding. This is relatively low compared to findings in other studies, that health problems in either the mother or infant were cited as reasons for not breastfeeding in 14% of cases.[33] This suggests variability across different populations in how health concerns impact breastfeeding practices.

Regarding maternal health, 20.3% of mothers in this study reported their own health issues as a barrier to breastfeeding. This finding is consistent with other research reported that maternal health problems were cited by 21.5% of mothers as reasons for not breastfeeding.[34] Regarding advice received, only a small percentage of mothers in this study received advice from their husbands (0.3%) or from others (2.5%). This contrasts with findings from other studies found that 30.5% of mothers received advice against breastfeeding from family members, highlighting the influence of social networks on breastfeeding decisions.[35] In terms of societal norms and knowledge gaps, a small proportion of mothers in this study mentioned conforming to societal norms (1.8%) or lacking knowledge about exclusive breastfeeding (4.3%) as reasons for not breastfeeding.

Comparable findings include reported that 19.2% of mothers cited societal norms as barriers to breastfeeding.[36] This indicates regional variations in the influence of societal norms on breastfeeding practices.

Regarding perceived insufficient breast milk, 11.2% of mothers in this study felt their milk supply was inadequate. This perception is consistent with findings from other studies[33] found that 15.6% of mothers cited perceived insufficient breast milk as a reason for not breastfeeding exclusively.

Practice of Feeding Expressed of Breast Milk Among Young Children

In this study, 8.5% of mothers reported ever expressing breast milk until their child's six months. Among those who expressed milk, 4.2% fed the expressed milk to their child. Comparative findings from other studies reveal varying prevalence rates and practices: reported that 23.2% of infants worldwide receive expressed breast milk, indicating a higher prevalence compared to the 8.5% reported in the current study.[36] This suggests that while expression practices are common globally, they vary widely across populations. A study in China founds that 85% of mothers expressed breast milk, emphasizing cultural and contextual factors influencing expression practices.[34]

Reasons for Stopping Breastfeeding and Subsequent Foods

In this study, 0.7% of mothers mentioned that their infants no longer wanted to breastfeed. A study highlights child-led weaning as a common reason for breastfeeding cessation, influenced by developmental milestones and infant preferences.[34] Regarding encouraging solid food intake, in this study 3.7% stopped breastfeeding to encourage their infants to eat solid foods. Based on the global Perspective discussed cultural and social influences on early introduction of complementary foods, impacting breastfeeding duration.[35] This study shows 1.3% cited fear of HIV transmission, and 1.2% were advised by health providers or others to encourage solid food feeding. Regarding variety in foods received, after stopping breastfeeding, children received various foods, including milk products (0.5%), formula or powdered milk (0.7%), porridge or cereal-based fluids (0.3%), and others. A study discussed the importance of diversified diets for children post-breastfeeding cessation to ensure adequate nutrition and growth.[36]

Limitations and Strengths of the Study

Limitations: Geographical constraints, cross-sectional design, self-reported data, limited scope of factors and resource constraints were acknowledged as limitations.

Strengths: Context-specific insights, comprehensive data collection, and contribution to literature: practical implications, policy relevance and holistic approach were considered as strength.

Conclusions

In this study, about 59.2% of the children experienced poor feeding practice. Separated mothers, unemployed fathers, home deliveries, cesarean sections and vacuum delivery have significant association with poor feeding practice. On the other hand, higher educational level of parents, refrigerator ownership, effective counseling on infant feeding during ANC and PNC was associated with good feeding practices. Pre-lacteal feeding practices were still prevalent. Maternal health issues, perceived insufficient breast milk, and lack of knowledge were common barriers to stop breast feeding before six month.

Recommendations

The following recommendations are forwarded: **Enhancing Maternal Education**: It is crucial to implement educational programs aimed at increasing mothers' knowledge about nutrition and appropriate feeding practices. **Improving Access to Healthcare Services**: Access to healthcare services plays a significant role in shaping feeding practices. **Strengthening Community Support Systems**: Establishing community support systems and strengthening these support networks can create a supportive environment where mothers can share experiences, receive advice, and access resources related to child nutrition.

Abbreviations

AFASS, Acceptable, Feasible, Affordable, Sustainable, and Safe; BF, Breast Feeding; EBF, Exclusive Breast Feeding; ERF, Exclusive Replacement Feeding; IYCF, Infant and Young Child Feeding; PLF, Pre-Lacteal Feeding.

Data Sharing Statement

All information/data used for this research are available with the corresponding author and can be accessible with request.

Ethical Consideration

Ethical clearance was obtained from the institutional review board of Selinus University on January 18/2024 (UNISE/2897/IT) and from Tigray regional office February 25/2024 (Ref/3486/365/16). After being approved by the IRB, an official letter of co-operation was written to each selected district from Tigray regional health office. The official letter was submitted to the selected district managers and permission was received to get full access to information from respective kebeles and households. The ethical approach followed in this study aligns with the principles outlined in the declaration of Helsinki. Informed consent from individual participants was obtained and an assent form was used for those who are under 18 years. Data was coded and locked in the password during data entry and analysis to maintain the confidentiality of the study participants. Names of the participant were not included during data collection.

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Author Contributions

All authors contributed significantly to the work reported, whether through the conception, study design, execution, data acquisition, analysis and interpretation. They participated in drafting, revising, or critically reviewing the article, provided final approval of the version to be published, agreed on the journal for submission, and accepted responsibility for all aspects of the work.

Disclosure

The authors have declared that there are no conflicts of interest in this study.

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