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Harla journal of Health and Medical Science

Original Research

Prevalence of Stunting and Associated Factors among Children aged 6-59 Months in Pastoral and Agro-Pastoral Communities in Adigala Woreda, Somali Region, Eastern Ethiopia

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Abstract

Background: Stunting is as a height that is more than two standard deviations below the World Health Organization median child growth standard. Stunting is the commonest reason for pediatrics hospital admission. Ethiopia is one of the countries in sub-Saharan Africa with the highest rate of stunting. Therefore, the objective of this study is to assess the prevalence of stunting and associated factors among children aged 6-59 months in Sitti zone Adigala Woreda, Somali Region, Eastern Ethiopia.
Methods: A community-based cross-sectional study design was conducted from June 1 to 30, 2024 in Adigala woreda. A simple random sampling technique was used to select 415 children aged 6-59 months with mothers or caregivers. Data were collected using pre-tested structured questionnaire. Data were entered into Epi-data 3.1. Data were cleaned and analyzed using SPSS for windows version 20. Descriptive statistics were calculated for all study variables. Bivariable and multivariable logistic regression analyses were done and the results of the Adjusted Odds Ratio with 95% confidence intervals and P< 0.05 were considered statistically significant.
Results: The prevalence of stunting in this study was 84 (20.2%) (95% CI: 16.5, 24.4). Low average monthly family income (AOR: 3.11, 95% CI: 1.52, 5.39), large family size (>5) (AOR: 2.27, 95% CI: 1.21, 4.27), and not exclusive breast feeding (AOR: 2.01, 95% CI: 1.07, 3.64) were significantly associated with child stunting.
Conclusion: This study demonstrated that the prevalence stunting was high and still a severe public health problem in the study area based on the WHO cutoff point. Low average monthly family income, not exclusively breast-fed children, and living in a large size family (>5) were independent predictors of stunting. Therefore, improving household economic conditions and limiting the number of children need to be considered for reducing stunting among children. It is also crucial to give due emphasis for interventions related to infant and young child feeding with special emphasis for exclusive breast feeding.

Keywords: Adigala Woreda, Eastern Ethiopia, Somali Region, Stunting, Under Five Children

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DOI:
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Received September 2024; Received in revised form November 2024; Accepted December 2024

1. Introduction

World malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. Malnutrition is the commonest reason for pediatric hospital admission. An estimated 2 million children under five were admitted for treatment of severe acute malnutrition globally. The term malnutrition covers two broad groups of conditions. One is undernutrition, which includes stunting, wasting, underweight, and micronutrient deficiencies or insufficiencies [1]. Stunting is a height that is more than two standard deviations below the World Health Organization median child growth standard [2].

Global mortality estimates show that nearly half of all deaths among children under age 5 result from malnutrition [3]. In 2018, 22% of under-five children globally were stunted, 7% were wasted, and 3% were severely wasted. Likewise, over 90% of these stunted and wasted children live in Africa and Asia [4]. Ethiopia is one of the countries in sub-Saharan Africa with the highest rate of malnutrition. According to the Ethiopia Demography Health Survey report, 44.4%, 9.7%, and 38% of children under five years old were stunted, wasted, and underweight, respectively [5].

The causes of malnutrition are classified as immediate, underlying, and basic. The immediate or direct causes are inadequate or inappropriate dietary intake and infectious diseases, whereas insufficient access to food, childcare, water supply, and environmental sanitation are underlying causes. Political, cultural, religious, economic, and social systems, including women's status in the society, are considered as basic causes for malnutrition [6].

The prevalence of stunting generally increases steadily with age, from 22% among children 6-8 months up to 44% of children 48-59 months. Notably, the highest proportion of stunting of children (45%) was observed at age 24-35 months, and it is also slightly higher among male than female children (40% versus 33%). The 2011 EMDHS results show that 21% of all children are underweight (below -2 SD), and 6% are severely underweight (below -3 SD). Children in rural areas are more likely than those in urban areas to be underweight (23% versus 14%). The highest percentages of underweight children are observed in the Somali and Afar regions (both at 32%), while the lowest percentage is observed in Addis Ababa (5%). The percentage of underweight children decreases as the mother's education and wealth quintile increase [7].

Other factors contributing to child stunting reported by previous studies are the child's age and sex, frequency of breastfeeding, birth weight, rural residence, mother's education, antenatal

follow-up, and immunization status of the child, which is significantly associated with underweight among children aged <5 years [8]. Although nutrition indicators in Ethiopia have improved over the years, the rate of change in stunting is slow, with a decline from 47% in 2005 [4] to 38% in 2016 [9]. The NNS in Ethiopia is now operationalized through the multi-sectoral National Nutrition Programme (NNP) 2015–2020 with ten stakeholder ministries. In 2015, the Ethiopian government also signed the Sekota Declaration, which commits different sectors to reduce stunting to 0% by 2030 [10].

In addition, stunting has significant educational consequences. Today in Ethiopia, more than 2 out of every 5 children are stunted. 16% of all repetitions in primary school are associated with stunting, and the stunted population has, on average, 1.1 years less of education. According to World Bank estimates, a 1% loss in adult height due to childhood stunting is associated with a 1.4% loss in economic productivity [11].

In Ethiopia an estimated 67% of the working-age population, or 26 million people, were stunted as children. The annual costs associated with child undernutrition are estimated at 55.5 billion ETB, which is equivalent to 16.5% of GDP. Reduction of the prevalence to half of the current levels of child undernutrition by the year 2025 can generate annual average savings of 4.4 billion ETB (US$ 376 million) [12].

In spite of its negative consequences, there is no available data in Adigala Woreda that helps to improve stunting. Therefore, this study aimed to determine the prevalence and factors associated with stunting among children aged 6 to 59 months in Adigala woreda in the Somali region, Eastern Ethiopia.

2. Methods and Materials

2.1. Study Area and Period

This study was conducted in Adigala woreda, Somali region, eastern Ethiopia, which is located 630 kilometers from the capital city. The region shares borders with Afar, Oromia, and the Dire Dawa administration. Shinile Zone is one of the larger zones in the region, with 6 woredas and a population of 682,826. It shares borders with Afar, Oromia, and Dire Dawa Administration, as well as with neighboring Djibouti.

It has two hospitals, 19 health centers, and 116 health posts. Adigala woreda is one of the woredas in the Shinile zone, with an estimated total population of 82,358 people, including

42,826 pastoralists and 39,531 agro-pastoralists. The temperature normally ranges from 58°F to 91°F and rarely falls below 54°F. It has a total of 15 kebeles, each with a pastoral and agro-pastoral community survey. The study was conducted from June 1 to 30, 2024 in Adigala woreda.

2.2. Study Design

A community-based cross-sectional study design was conducted among children aged 6-59 months with mothers/caregivers living in Adigala woreda.

2.3. Study Population

All children aged 6-59 months living in Adigala woreda were the source population, and selected children aged 6-59 months living in Adigala woreda for at least six months were the study populations.

2.4. Sample Size Determination and Sampling Technique

Sample size was calculated using a single population proportion formula by considering the prevalence of stunting among Under five children, 43.2% [13], 95% confidence interval, 5% margin of error, and 10% nonresponse were used. Accordingly, the calculated sample size was 415. By simple random sampling, 5 kebeles were selected from 15 kebeles in Adigala woreda, and the total number of mothers with children aged 6-59 months was obtained from those 5 kebeles. Then the calculated sample size is proportionally allocated to those selected kebeles.

2.5. Data Collection Tools and Techniques

Data were collected by a pre-tested, structured, and interview-administered questionnaire adapted from different literature with credible data [4-6,14,15]. The questionnaire was aimed at gathering comprehensive information on participants' demographics, behaviors, and attitudes relevant to the study. The questionnaires have 4 parts which are socioeconomic factors, assessment of environmental health factors, child caring factors, and obstetric-related factors.

A checklist was developed from the standard management protocol of chronic acute malnutrition, the chronic acute malnutrition regression logbook, the CAM monitoring multi-chart, and a review of related literature to collect required information from the relevant document. Eight data collectors (six diploma and BSc nurses) who have experience in data collection and supervisors collected the data after two days of training given to them.

2.6. Study Variables

2.6.1. Dependent Variable

- ✓ Stunting

2.6.2. Independent Variables

- ✓ **Socio-demographic factors:** Age of the mother, Religion, Ethnicity, Marital status, Family size, Family monthly income, educational status, and Head of households.
- ✓ **Child-caring practices:** Exclusive breast feeding, Time of initiating breast-feeding, Immunization status of the child, Presence of illness in the last 6 months and providing other milk for their children after 6 months.
- ✓ **Maternal characteristics:** History of ANC for the last pregnancy, Number of ANC visit during last pregnancy, History of illness during last pregnancy, Place of delivery for the last childbirth and currently presence of any health problem.
- ✓ **Environmental condition:** Water-supply**,** Housing condition**,** Sanitation**,** Access to health facility.

2.7. Data Quality Control

To assure the quality of the data, a pretested, structured questionnaire was used. Data collectors and supervisors were given two days of training, and the instrument was tested on 5% of the respondents in non-selected kebeles. Supervisors were made on-the-spot checks and reviewed all the completed questionnaires to ensure completeness and consistency of the information collected, and incorrectly filled or missed questionnaires were given back to the respective data collectors for correction. Double data entry was performed to check the consistency or reduce data entry error.

2.8. Data Analysis

First the data were checked manually for completeness and consistency. Data were checked, cleaned, coded, and entered into EPI 3.1 and exported into SPSS version 25 for statistical analysis. Descriptive analysis using frequencies, tables, and charts was used for summarizing the data based on relevant variables. Binary logistic regression was applied to see the association between diet and other independent variables.

Variables having a p-value of <0.25 were candidates for multivariate regression. In the multivariable logistic regression model, fitness was checked and tested by the Hosmer-Lemeshow goodness of fit test. Odds Ratio (OR) along with 95% CI was used to measure the strength of association between variables, and level of statistical significance was declared at p-values < 0.05.

2.9. Operational Definition and Measurement

- ✓ **Stunting:** Children with height-for Stunting: Children with height-for-age-Z- score<-2 SD as compared with the reference population categorized as "stunted" [16].
- ✓ **Timely initiation of breastfeeding** is defined as putting the newborn to the breast within one hour of birth [17].
- ✓ **Exclusive breastfeeding (EBF):** The practice of feeding breast milk (including expressed breast milk) during the first 6 months and no other liquids and solid foods, except medications [18].

3. Results

3.1. Socio-Demographic and Individual Characteristics

A total of 415 participated in the study and provided a response rate of 100%. The livelihood of the respondent was agro-pastoral 294 (70.8%), and the average family monthly income was 212 (51%). While the heads of the house were male 241 (58%), the primary caretakers were almost equally mothers and fathers (28.4% and 28.9%), and 41% of mothers/caregivers were aged 21-30 years old. With respect to child age, 56.6% of children were aged ≥37 months, while 23.86% and 16.15% were aged 25-36 and 13-24 months, respectively.

About 170 (41%) of mothers or caregivers were housewives, while 135 (32.53%) and 110 (26.51%) were students and merchants, respectively. About 257 (61.9%) of husbands were merchants, 278 (67%) of mothers or caregivers had primary education, more than half of mothers/caregivers 217 (52.53%) were married, and 157 (37.8%) were divorced. Finally, 331 (78.8%) of caregivers had more than five family members (Table 1).

Table 1: Socio-economic & demographic information of the study participant in Adigala woreda, Somali region, Eastern Ethiopia, 2024.

Variables	Category	Frequency (n)	Percentage (%)
Family monthly income in ETB	<1500	54	13.0
	1500-2500	149	35.9
	>2500	212	51.1
Head of household	Male	241	58.1
	Female	174	41.9
Livelihood	Postural	121	29.2
	Agro-postural	294	70.8
Age of mother	<20	56	13.5
	21-30	170	41.0
	31-40	164	39.5
	>40	25	6.0
Age of your child	6-12 month	12	2.9
	13-24 month	68	16.4
	25-36 month	100	24.1
	>=37 month	235	56.6
sex of the children	Male	214	51.6
	Female	201	48.4
Family size	<5	84	20.2
	>5	331	79.8
Maternal education status	Unable to write and read	61	14.7
	Able to write and read	39	9.4
	Primary	202	48.7
	Secondary	113	27.2
	Technical vocational	0	0.00
Marital status	Single	0	0.00
	Married	217	52.3
	Widowed	41	9.9
	Divorced	157	37.8
Occupation mother	Housewife	170	41.0
	Merchant	137	33.0
	Student	108	26.0

3.2. Assessment of Environmental Health Factors

More than half of respondents, 214 (51.60%), responded that the main source of drinking water for members of their household was piped into the compound, while 107 (25.80%) and 94 (22.70%) had it piped outside the compound and piped into the dwelling, respectively. Similarly, more than half, 213 (51.30%), of respondents treat their water in any way to make it safer to drink. 173 (41.70%) and 145 (34.90%) of respondents store their water in the pot and jerrycan, respectively.

On the other hand, 320 (77.10%) respondents reported that the distance from the house to the water source was less than 30 minutes. 342 (82.40%) responded that they dispose of household/domestic solid and liquid wastes in the pit. With respect to latrines, 411 (99.0%) of mothers/caregivers had latrines, and among these, 357 (86.0%) had ventilated improved pit latrines. Finally, 376 (90.6%) of respondents say that the main material of their house was a thatched roof (Table 2).

Table 2: Environmental health related factors among children aged 6-59 months in Adigala woreda, Somali region Eastern Ethiopia, 2024.

Characteristics		Frequency	%
Main source of drinking water	Piped into dwelling.	94	22.7
	Piped into compound.	214	51.6
	Piped outside compound	107	25.8
Treat your water	Yes	215	51.8
	No	200	48.2
How do you store your water?	Jerikan	146	35.2
	Pot	173	41.7
	Pail (Bucket)	96	23.1
Distance from the house to the water source	>=30min	321	77.3
	<=30min	94	22.7
Do you have a latrine?	1 Yes	411	99.0
	2 No	4	1.0
What kind of toilet facility	Open pit latrine	1	2
	Ventilated improved pit latrine	376	90.6
	Pour flush latrine	35	8.4
	No type of latrine	3	7
Where do you dispose household	Open field	56	13.5
	Pit	342	82.4
	Burning	0	0
	Composting	17	4.1
Main material of the roof	Thatched roof	376	90.6
	Corrugated iron sheet	38	9.2
	Other, specify___	1	0.2

3.3. Obstetric-Related Factors

Related to obstetric characteristics, more than half, 218 (52.80), of children weighed less than 2.5 kg at birth, while 154 (37.10%) and 43 (10.40%) weighed 2.5-3 kg and >=3 kg, respectively. More than half, 415 (100%), of mothers had ever breastfed the child. 218 (52.50%) of respondents' children-initiated breastfeeding within the first 1 hour of delivery, while 197 (47.50%) started after 1 hour of delivery. 202 (48.70%) of respondents' children had breastfed

for two years, while 200 (48.20%) children had breastfed for one year. Among the total respondents, 353 (85.5%) had given breast milk to their children immediately after birth, while 60 (14.5%) gave cow milk. With respect to breastfeeding frequency, 205 (49.40%) of children had been breastfed for less than 7 times per 24 hours, while 149 (35.90%) and 61 (14.70%) children had been breastfed 8-10 and more than 11 times per 24 hours, respectively. 411 (99.00%) of respondents responded that they started feeding their child something other than breast milk.

More than half, 214 (51.60%) respondents, started extra food for the first time at the age of six months, while 111 (26.70%) and 90 (21.70%) started less than six months and after six months, respectively. More than half, 217 (52.30%), of mothers used a cup to feed the child when they started to give complementary feeding, while 107 (25.80%) used a bottle. 183 (44.10%) and 222 (53.50%) respondents responded that their children received deworming and vitamin A in the last six months, respectively. Finally, 217 (52.30%) respondents responded that their children take baths twice or more per week. 285 (69.0%) respondents had responded that their children had eaten solid, semi-solid, or soft foods other than liquids four times or more in the last 24 hours before the study time, while only 103 (24.8%) responded that their children had eaten twice in the last 24 hours before the study time (Table 3).

Table 3: Obstetric characteristics of study participants in the study of prevalence of stunting among children aged 6-59 months in in Adigala woreda, Somali region and eastern Ethiopia, 2024.

Time initiates your child for First breastfeed after birth.	Within 1 hour	219	52.8
	After 1	196	47.2
First feed for child immediately after birth?	Butter	1	2
	Cow Milk	63	15.2
	Breast milk	351	84.6
Breastfeeding status of the child during the first 6 months of life.	Exclusive breastfeeding	94	22.7
	Partial Breastfeeding	321	77.3
For how long have you breastfed your child?	Less than 6 months	12	2.9
	up to 12 months	200	48.2
	for two years	203	48.9
Frequently of feeding with in 24hr	Less than 7	202	48.2
	Less than 8-10	153	36.9
	More than 11	60	14.5
Did you start complementary feeding	Yes	411	99.0
	No	4	1.0
If yes, when did you start complementary feeding him/her for the first time?	Less than 6 months	112	27.0
	At 6 months	214	51.6
	6 to 12 months	89	21.4
Deworming	Yes	183	44.1
	NO	232	55.9
Vitamin A	Yes	222	53.5

	No	193	46.5

3.4. Child Caring Characteristics

Of the 415, 294 (70.8%) of the children were born at a health center. 217 (52.3%) children were born above 9 gestational ages, while 103 (24.80%) and 95 (22.90%) were born at 9 and less than 9 months, respectively. 312 (99.90%) children had ever gotten any vaccinations to prevent him/her from getting diseases. Among the total children, 241 (58.10%) of the children had a history of diarrhea. More than half, 215 (51.80%), of children had a birth order greater than 5, while 117 (28.20%) and 83 (20.00%) had a birth order of 4-5 and 1-3, respectively (Table 4).

Table 4: Characteristics of children had history of diarrhea among children aged 6-59 months in in Adigala woreda, Somali region and eastern Ethiopia, 2024.

Place of child birth	Home	0	0
	Health post	121	29.2
	Health center	294	70.8
	Hospital	0	0
	Other (specify)	0	0
Gestational age at birth	Less than 9 months	16	3.9
	at 9 months	217	52.3
Immunized status	Ever vaccinated	411	99.0
	not vaccinated, if no	4	1.0
Febrile disease in the last two weeks	Yes	241	58.1
	NO	174	41.9
Birth order of your current child	1-2	83	20.0
	3-4	117	28.2
	>=5	215	51.8

3.5. Maternal Caring and Characteristics

With respect to age at first birth, 208 (50.10%) respondents were < 18 years old, while 207 (49.90%) were ≥18 years old. More than half, 214 (51.60%) and 109 (50.10%) of respondents, responded that they eat extra meals two times and once during the last pregnancy, respectively, while 214 (51.6%) and 108 (26.0%) eat twice and once during lactation. Finally, 169 (40.7) of respondents responded that they have ever attended ANC during their pregnancy of their child, and 412 (99.3) of respondents' children had NO edema. Finally, 95 (22.9%) children were stunted, while 320 (77.1%) children were not stunted (Table 5).

Table 5: Maternal caring and characteristics children were stunted and were not stunted among children aged 6-59 months in in Adigala woreda, Somali region and eastern Ethiopia, 2024.

Age at first birth?	< 18	208	50.1
	> 18	207	49.9
Frequence of extra meals eats during the last pregnancy	1 extra	109	26.3
	2 extra	214	51.6
	3 extras	92	22.2
How many extra meals did you eat during lactating?	1 extra	108	26.0
	2 extra	214	51.6
	3 extras	93	22.4
ANC	Yes	169	40.7
	No	246	59.3
Child MUAC measurement	Max (in cm)	97	23.4
	Min	1	0.2
Weight of the child	Max (in cm)	56	13.5
	Min	6	1.4
Height/Length of the child	Max (in cm)	54	13.0
	Min	6	1.4
Presence of bilateral pitting edema on the child (Observe)	No	412	99.3
	Yes	3	0.7
Stunting status of children	Stunting	95	22.9
	Not stunting	320	77.1

3.6. Factors Associated with Stunting

In bivariable logistic regression analysis, paternal education, average monthly family income, ANC visit, place of delivery, postnatal care, breastfeeding initiation time, exclusive breastfeeding, source of drinking water, and waste disposal system were significantly associated with stunting. In multiple logistic regression analysis, average monthly family income, family size, and not exclusive breastfeeding were significantly associated with stunting. The likelihood of stunting in this study was 3 times higher among children who live in a family with an average monthly income of 5000-10,000 ETB (AOR: 3.11, 95% CI: 1.52, 5.39) compared with children living in a family with average monthly income of >10,000 ETB.

Similarly, the odds of stunting were higher among children who were not exclusively breast-fed for the first 6 months (AOR: 2.01, 95% CI: 1.07, 3.64) than those children who exclusively breast-fed. Children living in a large family size (> 5) are more likely to be stunted (AOR: 2.27, 95% CI: 1.21, 4.27) than those living in a small family size (≤ 5 members) (Table 6).

Table 6: Bivariable and Multivariable logistic regression of factors associated with prevalences of stunting among children aged 6-59 months in Adigala woreda, Somali region, Easter Ethiopia, 2024.

Variables	Stunted		COR (95% CI)	AOR (95% CI)
	Yes	No		
Family monthly income				
<5,000	6	48	1	1.00
5000-1000	24	125	537 (1.442, 8.679)	3.11 (1.52, 5.39)**
>1000	65	147	2.303 (1.362, 3.85)	0.51 (0.52, 0.99)
Total family members				
</=5	80	110	1.00	1.00
>5	100	125	1.74 (1.21, 7.11)	2.27 (1.21, 4.27)**
Weight of the child at birth				
<2.5 kg	46	173	1	1.00
2.5-3.0kg	49	105	4.2 (3.4, 8.22)	2.43 (0.31, 7.62)
>3kg	0	42	0.570 (.31, .91)	1.57 (0.36, 2.91)
What did you give to your child immediately after birth?				
Butter	0	1	1.00	1.00
Cow milk	9	54	2.24 (2.67, 4.458)	3.33 (0.92, 6.34)
Breast milk	86	265	1.947 (.923, 4.107)	1.947 (.923, 4.107)
Breastfeeding status of the child during the first 6 months of life				
EBF	9	85	1.00	1.00
Not EBF	86	235	3.456 (1.65, 7.173)	2.01 (1.07, 3.64)**
Duration of breast feeding				
<6 months				
7-12 months	0	12	1.00	1.00
2 years	9	191	1.87 (2.43, 6.3)	3.18 (0.022, 5.87)
	86	117	1.59 (2.561, 3.182)	2.48 (0.21, 3.86)
Frequency of breastfed per day				
<7	86	116	1.862 (2.723, 4.58)	2.98 (0.84, 4.12)
8-10	9	144	2.15 (1.22, 4.19)	3.23 (0.79, 6.43)
>11	0	60	1.00	1.00
What used during complimentary feeding?				
Bottle	82	25	4.62 (2.723, 6.98)	0.98 (0.84, 7.131)
Spoon	0	90	3.15 (2.22, 5.19)	1.23 (0.92, 5.63)
Cup	13	205	1.00	1.00

4. Discussions

The estimated prevalence of child stunting at 20.2% (95% CI: 16.5%, 24.4%) in pastoral and agro-pastoral communities in Adigala Woreda, Somali Region, eastern Ethiopia, reveals a significant public health concern. Stunting, defined as low height-for-age, reflects chronic malnutrition and is associated with adverse health outcomes, including impaired cognitive development, increased susceptibility to infections, and reduced productivity later in life [19]. This prevalence aligns with previous studies conducted in Ethiopia and other low- and middle-income countries (LMICs), highlighting the persistent nature of child stunting in resource-

limited settings. For instance, studies in rural Ethiopia reported stunting prevalence rates ranging from 28.1% to 40.5% among children aged 6-59 months [20,21].

Similarly, studies in countries like Bangladesh, Niger, and Kenya have reported stunting prevalence rates exceeding 20% [22]. The high prevalence of stunting observed in pastoral and agro-pastoral communities may be attributed to various factors, including poverty, food insecurity, limited access to healthcare services, inadequate sanitation, and suboptimal infant and young child feeding practices. In pastoralist settings, where livelihoods are often dependent on livestock and seasonal migration, access to nutritious foods may be constrained, leading to nutritional deficiencies and stunted growth [21].

This study found that the likelihood of stunting in this study was 3 times higher among children who live in a family with an average monthly income of 5000-10,000 ETB (AOR: 3.11, 95% CI: 1.52, 5.39) compared with children living in a family with an average monthly income of >10,000 ETB. This finding is consistent with previous studies that have highlighted the association between poverty and child malnutrition, including stunting [23].

Lower-income households may face greater challenges in accessing adequate nutrition and healthcare services, contributing to higher rates of stunting among children. Appropriate infant and young child feeding has been identified as one of the key determinants of child undernutrition, particularly stunting (24). Exclusive breastfeeding has been identified as an indispensable way of providing the ideal food for the healthy growth and development of infants and children [24,25].

This study revealed that the odds of stunting were more common among children who were not exclusively breast-fed in the first six months. These results support the findings of Fikadu et al. (2014), which found exclusive breastfeeding as a predictor of stunting in the Meskan district, Southern Ethiopia [26]. This could be explained by the initiation of any type of complementary food before six months, which could cause illnesses like diarrhea and lower respiratory tract infections due to the immature digestive and immune systems of children [27].

Moreover, children living in a large family size (> 5 members) were more likely to be stunted (AOR: 2.27, 95% CI: 1.21, 4.27) than those living in a small family size (≤ 5 members). This could be obviously because of the completion made among family members on diet that limits children to obtain necessary diet as recommended [28,29]. Addressing the nutritional needs of

mothers and children in larger families through targeted interventions can help mitigate the risk of stunting among higher birth order children.

5. Conclusion

This study demonstrated that the prevalence of stunting was high and still a severe public health problem in the study area based on the WHO cutoff point. Low average monthly family income, children not exclusively breast-fed, and living in a large-sized family were independent predictors of stunting. Therefore, improving household economic conditions and limiting the number of children need to be considered for reducing stunting among children. It is also crucial to give due emphasis to interventions related to infant and young child feeding, with special emphasis on exclusive breastfeeding.

Abbreviations

BMI: Body Mass Index, CED: Chronic Energy Deficiencies, CSA: Central Statistical Authority, DHS: Demographic and Health Survey, EDHS: Ethiopian Demographic and Health Survey, SNNPR: South Nations Nationalities Peoples Region, UDHS: Uganda Demographic and Health Survey, UN: United Nation, WHO: World Health Organization

Acknowledgments

First and foremost, we would like to thank Dire Dawa University College of Medicine and Health sciences particularly the department of public health for giving us this great chance and for their continuous follow up and support for my proposal to final research. Secondly, we would like to thank all study participants for their voluntarism to participation in this study. Thirdly, we would like to extend our thanks to all data collectors for their contributions for the success of this study.

Authors Contributions

EM: made substantial contributions from the start of the research idea to proposal development, data collection, analysis and interpretation of data, and preparation of the manuscript. LA, AA: participated in proposal development, data analysis, and preparation of the manuscript for publication. All authors read and approved the final version of the manuscript.

Ethical Approval

This study was approved by the Institutional Review Board of Dire Dawa University. Then, relevant offices communicated their cooperation with an official letter issued by the research affairs directorate. The purpose of the study was verified briefly to the study participants, and confidentiality was assured. Finally, written consent was obtained from study participants before conducting the interview.

Competing of Interest

The authors declare that they have no competing interests.

Funding

Not Available.

Availability of Data and Materials

All the necessary data for this study were included in this manuscript.

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