

Comparison of dietary diversity scores and associated factors among children in households with and without home gardens, Ginir District, Oromia Region, Ethiopia

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ABSTRACT

Background: Poor dietary practices are among the major public health problems in developing countries. However, little information exists regarding dietary diversity scores and their contributing factors among children living in the study area. Therefore, this study aimed to assess and compare the dietary diversity scores and associated factors among children in households with and without home gardens of the Ginir District, Oromia Region, Ethiopia.

Methods: A community-based comparative cross-sectional study was conducted among 746 children living in households with and without home gardens from April 30, 2024, to June 15, 2024. A multistage sampling method was used to select the study participants. A structured questionnaire was used to collect the data. A sequential multiple logistic regression model was used to see the factors associated with the outcome variable. The results were presented using 95% CI and adjusted odds ratio (AOR). A p-value less than 0.05 was considered statistically significant.

Results: The prevalence of good dietary diversity scores of children in households with home garden was 30.5% and children without home gardens 19.1%. Married mothers (AOR = 2.2, 95% CI: 1.1–4.7), college and above educational level (AOR = 2.4, 95% CI: 1.2–4.9), having home garden practices (AOR = 1.5, 95% CI: 1.1–2.2), male child (AOR = 1.6, 95% CI: 1.1–2.2), younger child aged 6–23 months (AOR = 2.1, 95% CI: 1.4–3.2), good mothers nutritional knowledge (AOR = 1.6, 95% CI: 1.1–2.3), and rich wealth index (AOR = 2.3, 95% CI: 1.5–3.5) were significantly associated with good dietary diversity scores.

Conclusions: The prevalence of good dietary diversity scores in households with home gardens is statistically higher than in households without gardens. Empowering households on home gardening practices, improving maternal knowledge, increasing their education, and promoting appropriate infant and child feeding practices are crucial interventions to improve dietary diversity scores in the study area.

Keywords: Children, Dietary diversity scores, Nutrition, Food science

Citation: Zeleke Y, Yazew T, Shukure R. Comparison of dietary diversity scores and associated factors among children in households with and without home gardens, Ginir District, Oromia Region, Ethiopia. *Horn Afr. j. health biomed. sci.* 2026, 2(1): 53–70

Edited by Getachew Shiferaw

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BACKGROUND

Inadequate dietary diversity among young children contributes significantly to undernutrition and deficiencies in essential nutrients (1,2). An inadequate dietary diversity score is defined as the proportion of households that receive four or fewer food groups from the seven food groups consumed over the past 24 hours (1). Undernutrition, directly or indirectly, accounts for more than 50.0% of deaths among children (3), and 340 million people suffer from micronutrient deficiency globally (4). Inadequate feeding practices cause the deaths of about 3.4 million children under the age of five every year (5). About two-thirds of these deaths are related to improper feeding practices during the first two years of life (6,7).

In 2022, about 45 million children under five (6.8%) were affected by wasting, and 13.6 million (2.1%) had severe wasting (8). Over three-quarters of these children live in Asia, and 22% are in Africa (8). In sub-Saharan Africa, nearly one in three children under the age of five suffers from stunted growth due to inadequate nutrition (9). Studies conducted in Bangladesh, Indonesia, Nepal, and India showed that the prevalence of inadequate dietary diversity among children under five was 40%, 46.3%, 53.5%, and 77%, respectively (10-12). In sub-Saharan African countries, the prevalence of inadequate dietary diversity among children was 79.9% (13).

In Ethiopia, poor dietary diversity scores among children under five range from 40.1% to 89.4% (14). Nationally, the most consumed foods within the past 24 hours were grains, roots, and tubers, accounting for 63.6% of consumption, followed by eggs at 17.2% and flesh foods at 8.7% (15). In Ethiopia, 39% of children under five are stunted, 11% are wasted, and 22% are underweight (16). Different regions of the country have varying prevalence of acute malnutrition. For example, in Oromia Region, inadequate dietary practices among children under five years old range from 57.5% to 77% (17), and East Bale Zone is also one of those from the Oromia Region, which is highly affected by acute malnutrition (18).

The prevalence of undernutrition among children in Ethiopia does vary significantly across different regions. The prevalence of acute undernutrition among children in rural areas of the Seqota District in the Amhara Region of Ethiopia was 26% (19). According to the Nutrition Cluster, in Tigray, more than 115,000 children (14%) are severely malnourished (20). The prevalence of wasting among children under five ranges from as low as 4% in Addis Ababa to as high as 26% in the Afar Region, with the national average being 11% (21). In Shashemene, Oromia Region, Ethiopia, the prevalence of acute malnutrition among children was 19.91% (22). In South Wollo, Amhara Region, Ethiopia, the prevalence of acute malnutrition among children aged 6–59 months was 31.0% (23).

In Asian and African countries, the primary causes of inadequate dietary diversity include factors such as lack of education, poor socioeconomic status, ineffective agricultural practices, limited access to markets, and food insecurity (5). In Ethiopia, poor dietary diversity is significantly linked to factors such as poor household wealth status, food insecurity, mass media, family size, and poor nutritional knowledge (24). No single food group can provide all the nutrients necessary for optimal health and performance. Therefore, it is essential to include a variety of food groups in the daily diet to meet nutritional requirements adequately (25). The Ethiopian government launched a revised National Nutrition Program II (NNP II) aimed at reducing food insecurity and undernutrition. One of the key interventions is to promote dietary diversity by enhancing the knowledge and practices of farmers regarding household dietary diversity (26). One possible intervention to ensure a dietary diversity score is home gardening practices, which have been shown to have favourable effects on children's nutritional outcomes and dietary intake (27).

Previous studies focused on dietary diversity and its associated factors among children and did not compare the dietary diversity practices of children who live in households with and without home gardens. Besides, to the knowledge of researchers, there is a literature gap and a scarcity of information in the study area. Therefore, this study designed to compare the dietary diversity practices and associated factors among children

living in households with and without home gardens of the Ginir District, Oromia Region, Ethiopia.

METHODS

Study settings, design, and period

A community-based comparative cross-sectional study was done in Ginir District, East Bale Zone of Oromia Region, Ethiopia, from April 30, 2024, to June 15, 2024. As an administrative town within the East Bale Zone located in south-eastern Ethiopia, it is approximately 560 kilometers away from Addis Ababa. The district comprises 33 rural kebeles. Recent demographic data indicate that Ginir has a total population of 139,495, of whom 71,323 were men and 68,172 were women (28). Among them, there are 28,842 children aged 6 to 59 months. Common agricultural practices in the district include teff, wheat, sorghum, barley, maize, peas, and beans, as well as various vegetables and fruits. According to the 2016 report from the Ginir District Agricultural Office, nearly 1,400 households have home gardens to ensure food security and generate revenue, while over 2,500 households do not have home gardens (29).

Inclusion and exclusion criteria

All mothers who had children aged 6–59 months living in households with and without gardens of the Ginir District were included in the study. Mothers who were critically ill and had mental problems during the survey were excluded from the study.

Sample size calculation

The sample size was determined using the double population proportion formula considering the following assumptions: 95% confidence level, 80% power of the study, and a 1-to-1 ratio of households with gardens to households without gardens. The proportion of good dietary diversity scores among children in households with home gardens was 23% ($P_1 = 0.23$), which was taken from a previous study conducted in Ethiopia (17). A 10% difference in adequate dietary diversity among children under five years in households without home gardens is expected, and thus the prevalence of adequate dietary diversity is 13% ($p_2 = 0.13$). Finally, by considering the design effect of 1.5 and 10% non-response rate, the required sample size for this study was 762 (381 for households with home gardens and 381 for households without home gardens).

Sampling procedures

To select study participants for this study, the Ginir District was purposively used as the study area to assess dietary diversity practices among households that had home gardens and non-gardens. The multistage sampling method was employed. Initially, of the total of 33 rural kebeles in the Ginir District, 10 kebeles were selected through a lottery method. Subsequently, a total of 3927 households with children aged between 6 and 59 months residing in the selected kebeles were identified and listed at the health post level by health extension workers utilizing data from

the Community-Based Health Information System. In the study area, about 1401 and 2526 children were found in households with and without home gardens, respectively. These children were then stratified into the above two groups: those households that have home gardens and those without gardens. Next, the calculated sample size was proportionately allocated to each household from the two groups. Finally, the required sample for this study was selected using a systematic sampling technique from the two groups. Whenever there were two or more under-five children in the house, a lottery method was used to select one eligible child.

Data collection tools and procedures

Data collection instruments were adapted from different literature (17,24). First, the questionnaire was prepared in English, then translated into the local language (Afaan Oromoo) for fieldwork purposes and back-translated into English to verify consistency. The questionnaire consists of different parts, including socio-demographic-related, child-related, and maternal-related parts, knowledge, dietary diversity practices, and the wealth index.

In this study, child dietary diversity scores (DDS) (good /poor) were used as the dependent variable. A 24-hour recall method was used to assess child DDS. For children aged 6 to 23 months, good DDS was fulfilled if a child has received five or more food groups from eight food groups, while poor DDS was if the child has

received less than five from eight food groups; (1) Grains, roots/tubers, (2) legumes/nuts/seeds, (3) dairy products, (4) flesh foods, (5) eggs, (6) vitamin rich fruits and vegetables, (7) other fruits and vegetables and (8) breastfeeding. For children aged 24 to 59 months, good DDS fulfilled if a child has received four or more food groups from seven food groups. Whereas, poor DDS if the child has received less than four from seven food groups; (1) Grains, roots/tubers, (2) legumes/nuts/seeds, (3) dairy products, (4) flesh foods, (5) eggs, (6) vitamin rich fruits and vegetables, and (7) other fruits and vegetables (30). In this study, socio-demographic, maternal, child-related variables, nutritional knowledge of mothers on nutrition, and home gardening practices were considered as the independent variables.

Data quality assurance

To ensure data accuracy, training was given to seven data collectors and two supervisors. A pre-test was also conducted on 5% of the sample size to make the necessary amendments and corrections to the tool. Then, some tools, procedures, and ambiguous questionnaires were edited. The supervisors monitored the data collection process and reviewed the questionnaires daily for completeness.

Data processing and analysis

The collected data were coded, entered, and cleaned using Epi Data version 4.6 and exported to Statistical Package for Social Sciences (SPSS)

version 25 for analysis. Descriptive statistics like frequency, percentage, and mean were also carried out. Multicollinearity among the independent variables was assessed by examining the standard error, with a cutoff value set between -2 and +2 (VIF=1.24). None of the independent variables exhibited multicollinearity within this range. A sequential multiple regression model was used to test the association of predictors of dietary diversity scores among children in the two groups. Model goodness of fit was checked by using the Hosmer and Lemeshow goodness of fit test. Finally, variables with P-values <0.05 were considered statistically significant, and the strength of the association was reported using an AOR with the corresponding 95% CI.

RESULTS

Socio-demographic characteristics

Of a total of 762 sampled mothers who had children aged 6-59 months, 746 (374 from households with home gardens and 372 from households without home gardens) participated in the study, which provided a response rate of 97.9%. The mean (+SD) age of the mothers in households with home gardens was 28.7 (± 4.5) years. Whereas the mothers' mean age (+SD) in households without home gardens was 27.7 (± 6.2) years. Most households with home gardens mothers were married (91.7%), compared to 89.5% of households without home gardens' mothers. About 10% of husbands had no formal education in households with home gardens, and

16.2% of husbands from households without home gardens. About 69.1% of husbands were farmers in households with home gardens, while 40.5% of husbands were from homes without a garden (Table 1).

Table 1: Socio-demographic characteristics of mothers of Ginir District from April 2024 to June 2024 (n=746).

Variables		HG(n=374)		HNG(n=372)	
		Frequency	%	Frequency	%
Age of mothers in years	15-24	90	24.1	115	30.9
	25-34	253	67.6	187	50.3
	>35	31	8.3	70	18.8
Marital status of the mother	Unmarried	31	8.3	39	10.5
	Married	343	91.7	333	89.5
Husband's educational status	No formal education	34	9.9	54	16.2
	Able to read and write	160	46.6	104	31.2
	Elementary school	74	21.6	44	13.2
	High school	30	8.7	57	17.1
	College and above	45	13.1	74	22.2
Husband occupational	Farmer	237	69.1	135	40.5
	Merchant	39	11.4	56	16.8
	Private employee	22	6.4	47	14.1
	Government employee	45	13.1	95	28.5
Educational level of Mother	No formal education	58	15.5	54	14.5
	Able to read and write	117	31.3	103	27.7
	Elementary	77	20.6	95	25.5
	High school	81	21.7	83	22.3
	College and above	41	11.0	37	9.9
Occupation of the mother	Housewife	277	74.1	211	56.7
	Farmer	38	10.2	39	10.5
	Private employee	23	6.1	31	8.3
	Government employee	36	9.6	91	24.5
Family size	<4	118	31.6	199	53.5
	≥ 4	256	68.4	173	46.5

Number of children	<3	310	82.9	310	83.3
	≥3	64	17.1	62	16.7
Wealth index	Poor	112	29.9	187	50.3
	Medium	93	24.9	64	17.2
	Rich	169	45.2	121	32.5

HG- households with home gardens, HNG-households without home gardens

Maternal-related factors

Table 2 shows maternal-related factors. Of the total mothers who were from households with

home gardens, 90.6% were followed antenatal care (ANC) during pregnancy, and 87.9% from households without home gardens

Table 2: Factors related to mothers of Ginir District from April 2024 to June 2024 (n=746).

Variables		HG(n=374)		HNG(n=372)	
		Frequency	%	Frequency	%
ANC follow-up during pregnancy	Yes	339	90.6	327	87.9
	No	35	9.4	45	12.1
Place of delivery	Health Institution	324	86.6	323	86.8
	Home	50	13.4	49	13.2
PNC service	Yes	334	89.3	306	82.3
	No	40	10.7	66	17.7

HG-households with home gardens, HNG-households without home gardens

Child-related factors

The majority, 71.9% of children in households with home gardens were aged 6–23 months, compared to 55.4% in households without home gardens, indicating a higher proportion of younger children in households with home gardens. Of the total children from the households

with home gardens, 51.1% were male, while 47.6% in households without home gardens. Moreover, 69.3% of children from households with home garden families were third-born or lower, while 80.6% from households without garden families (Table 3).

Table 3: Factors related to children of Ginir District from April 2024 to June 2024 (n=746).

Variables		HG(n=374)		HNG(n=372)	
		Frequency	%	Frequency	%
Age of child	6-23	269	71.9	206	55.4
	24-59	105	28.1	166	44.6

Sex of child	Male	191	51.1	177	47.6
	Female	183	48.9	195	52.4
Childbirth order	<=3	257	68.7	302	81.2
	>3	117	31.3	70	18.8
Child immunization status	Immunized	363	97.1	315	84.7
	Not immunized	11	2.9	57	15.3
Child illness	Yes	105	28.1	152	40.9
	No	269	71.9	220	59.1

Keynote: HG= households with home gardens, HNG=households without home gardens

Maternal knowledge of nutrition

Table 4 depicts the nutritional knowledge distribution among mothers. Of the total mothers from households with home gardens, 303 (81%) knew when to start babies eating foods in addition to breast milk, while 305 (82%) from households without home gardens. About 10% of mothers reported that illness is one of the causes

of undernutrition in households with, and 1.3% of mothers from households without home gardens. Moreover, 105 (28%) of mothers from households with home gardens reported that inadequate dietary intake causes child undernutrition, and 71 (19%) of mothers from households without gardens (Table 4).

Table 4: Maternal knowledge towards nutrition in Ginir District from April 2024 to June 2024 (n=746).

Variables		HG (n=374)		HNG (n=372)	
		Frequency	%	Frequency	%
Time for babies start additional foods	Before 6 months	14	3.7	8	2.1
	After 6months	303	81	305	81.9
	I don't know	57	15.2	59	15.8
Knowledge about varieties of food groups	Yes	260	69.5	265	71.2
	No	114	30.4	107	28.7
List the varieties of food groups	Cereal food groups	150	40.1	123	33
	Vegetables	59	15.7	60	16.1
	Fruits	32	8.5	47	12.6
	Meat groups	2	0.5	22	5.9

	Others (eggs, dairy products)	17	4.5	13	3.4
Knowledge about the term nutrition	Deficiencies of energy supply from foods	75	20	72	19.3
	Deficiencies of disease-protecting foods	177	47.3	106	28.4
	I don't know	122	32.6	194	52.1
Causes of malnutrition	Diseases/illness	36	9.6	5	1.3
	Inadequate dietary intake	105	28	71	19
	Inadequate dietary diversity	58	15.5	48	12.9
	Lack of access to food	23	6.1	48	12.9
	I don't know	152	40.6	200	53.7
Consequences of undernutrition	Morbidity	151	40.3	65	17.4
	Mortality	64	17.1	57	15.3
	Reduce productivity	2	0.5	43	11.5
	I don't know	157	41.9	207	55.6
Knowledge	Good	237	63.4	181	48.7
	Poor	137	36.6	191	51.3

HG-households with home gardens, HNG-households without home gardens

Dietary diversity scores

Table 5 shows dietary diversity scores within 24 hours before the day of data collection among children aged 6–59 months in households with and without home gardens. Children from households with home gardens consumed more

grains/tubers/root, legumes/seeds, and vitamin A-rich fruits and vegetables compared to those children from households without home gardens. About 240 (80.9%) mothers from households with home gardens and 193 (93.7%) without home gardens breastfed their children (Table 5).

Table 5: Children's dietary diversity scores in Ginir District from April 2024 to June 2024 (n=746).

Variables		HG (n=374)	HNG (n=372)
		Frequency (%)	Frequency (%)
Grains, roots, and tubers	Yes	352 (94)	321 (86.3)

	No	22 (6)	51 (13.7)
Legumes, nuts, and seeds	Yes	273 (73)	236 (63.4)
	No	101 (27)	136 (36.6)
Dairy products	Yes	222 (59.3)	260 (69.9)
	No	152 (40.6)	112 (30.1)
Flesh foods	Yes	32 (8.5)	37 (9.9)
	No	342 (91.5)	335 (90.1)
Eggs	Yes	108 (28.9)	87 (23.4)
	No	266 (71.1)	285 (76.6)
Vitamin A-rich fruits and vegetables	Yes	180 (48.1)	152 (40.9)
	No	194 (51.9)	220 (59.1)
Other fruits and vegetables	Yes	72 (19.2)	59 (15.9)
	No	302 (80.8)	313 (84.1)
Breastfeeding	Yes	240 (89.2)	193 (93.7)
	No	29 (10.8)	13 (6.3)

HG-households with home gardens, HNG-households without home gardens

Prevalence of dietary diversity scores

The overall prevalence of poor dietary diversity scores among children aged 6-59 months and

between 2 months living in a household with home gardens was 30.5%, while 19.1% in households without home gardens (Fig 1).

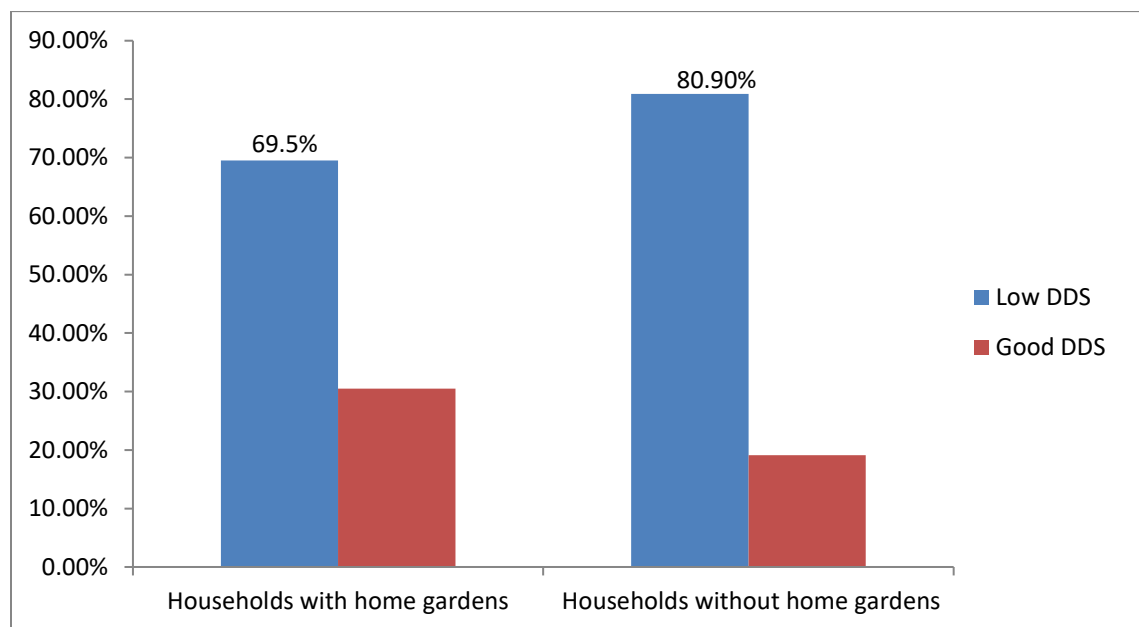


Figure 1: Prevalence of dietary diversity scores among children in households with and without home gardens in Ginir district from April 2024 to June 2024 (n=746).

Factors associated with dietary diversity scores among children in households with and without home gardens

The results of the multivariable analysis showed that the married marital status of the mother (AOR = 2.2; 95% CI (1.1–4.7); P = 0.041), college and above education level of the mother (AOR = 2.4; 95% CI (1.2–4.9); P = 0.012), having home gardening practices (AOR = 1.5; 95% CI (1.0–2.2); P = 0.040), male sex of the child (AOR = 1.6; 95% CI (1.1–2.2); P =

0.015), younger age of the child (AOR = 2.1; 95% CI (1.4–3.2); P < 0.001), good knowledge level (AOR = 1.6; 95% CI (1.1–2.3); P = 0.027) of the mother, and rich wealth index (AOR = 1.7; 95% CI (1.1–2.6); P = 0.024) were significantly associated with DDS among children aged 6–59 months in households with and without home gardens (Table 6).

Table 6: Factors associated with dietary diversity scores among children in Ginir District, (n=746).

Variables	Categories	Dietary scores		COR (95%CI)	AOR (95%CI)	P-value
		Good DDS, n (%)	Poor DDS, n (%)			
Marital status of mother	Single	9 (12.5)	61(87.1)	1	1	
Maternal educational status	Married	176 (26.0)	500 (74.0)	2.4 (1.2–4.9)	2.2 (1.1–4.7)	0.041*
	Unable to read and write	22 (19.6)	90 (80.4)	1	1	
	Able to read and write	54 (24.5)	166 (75.5)	1.3 (0.76–2.3)	1.4 (0.77–2.5)	0.265
	Elementary	37 (21.5)	135 (78.5)	1.1(0.62–2.0)	1.3 (0.70–2.5)	0.389
	High school	43 (26.2)	121(73.8)	1.5 (0.81–2.6)	1.6 (0.37–3.0)	0.127
	College and above	29 (37.2)	49 (62.8)	2.4 (1.3–4.7)	2.4 (1.2–4.9)	0.012*
Home gardening practices	Yes	114 (30.5)	260 (69.5)	1.9 (1.3–2.6)	1.5 (1.0–2.2)	0.040*
Age of child	No	71 (19.1)	301(80.9)	1	1	
	6-23	147 (30.9)	328 (69.1)	2.8(1.8–4.1)	2.1(1.4–3.2)	<0.001*
	24-59	38 (14.1)	233 (85.9)	1	1	
Sex of child	Male	108 (29.3)	260 (70.7)	1.6(1.2–2.3)	1.6 (1.1–2.2)	0.015*
	Sex	77 (20.4)	301(79.6)	1	1	
Child immunization Status	Immunized	173 (25.5)	505 (74.5)	1.6(0.8–3.1)	0.90(0.43–1.9)	0.780
	Not immunized	121(17.6)	56 (82.4)	1	1	
Mothers knowledge	Poor	63 (19.2)	265 (80.8)	1	1	
	Good	122 (29.2)	296 (70.8)	1.7 (1.2–2.5)	1.6 (1.1–2.3)	0.027*
Wealth index	Poor	55 (22.6)	188 (77.4)	1	1	
	Medium	50 (20.2)	198 (79.8)	0.86 (0.56–1.3)	0.65(0.41–1.0)	.065
	Rich	80 (31.4)	175 (68.6)	1.6 (1.1– 2.3)	1.7 (1.1–2.6)	0.024*

**-significance at 5% level, COR-Crude odd ratio, AOR-Adjusted odd ratio, 1-reference categories, CI- Confidence interval, DDS- dietary diversity scores*

DISCUSSION

The results of this study show that there is a key difference in dietary diversity scores between children in households with and without home gardens. The current study showed that the prevalence of good dietary diversity scores among children in households with and without home gardens was 30.5% and 19.1%, respectively. This difference suggests that having access to a home garden can positively influence dietary diversity scores by providing a steady supply of fresh fruits and vegetables, which are essential for meeting nutritional needs and improving dietary diversity (31). The presence of a garden allows families to incorporate a wider range of foods into their diets, thereby potentially increasing the variety and quality of nutrition available to children.

Without a garden, families may rely more on purchased foods, which might be less diverse and potentially more expensive, limiting access to a variety of nutritious foods. This instance emphasizes how home gardening can be a useful tool for increasing dietary diversity (32). However, it is clear that while gardens can have a good effect, interventions that are more comprehensive are required to satisfy the nutritional needs of all children in the area, as only 19.1% of children in households without gardens achieve appropriate dietary diversity scores (27).

The findings of this study showed that the overall prevalence of good dietary diversity practices among children aged 6–59 months living in households with and without home gardens was 24.8% (95%CI: 21.7 -28.1). This result is consistent with the study conducted in Dire Dawa, 24.4% (29). However, this finding is lower than the studies conducted in Addis Ababa, Ethiopia, 59.9% (28), and southeast Ethiopia, 31.6% (30). This finding is also higher than studies conducted in East Gojam at 18.2%, Ethiopia (19), and Dejen District, 13.6%, Ethiopia (32). The differences might be attributed to various factors, including socioeconomic differences and variations in child feeding habits, differences in study settings, and variations in the age and size of study samples.

According to the study's findings, children in households with and without home gardens were noticeably more likely to get a good dietary diversity score than children in single-mother households. This finding is supported by a study conducted in Sub-Saharan Africa (31), which shows that marital status impacts household income and resource distribution, which in turn affects children's dietary diversity scores. Married couples often have more stable financial situations, allowing for better food security and more varied diets for their children than those who are single.

This study indicated that children whose mothers have at least a college education are significantly

more likely to have good dietary diversity. This finding agrees with studies conducted in northwest Ethiopia (32) and Southern Ethiopia (33). The possible reason might be that as the education level of the mother increased and as the mother engaged in paid work, there was access to more information on educational messages and different mass media like radio, television, and newspapers.

The current study also showed that male children were more likely to have good dietary diversity scores compared to female children. It was consistent with the study findings reported from Ethiopia (34), which reflect that traditional gender roles and preferences in some communities can lead to boys receiving a wider variety of foods compared to girls.

The study findings showed that children in households with home gardens are 1.49 times more likely to have good dietary diversity scores than their counterparts. The finding is in line with a study conducted in Ethiopia (32). Previous research has also demonstrated that home gardens can enhance food security and dietary diversity by providing a steady supply of fresh fruits and vegetables (35). Households with home gardens offer families the opportunity to diversify their diets and reduce reliance on purchased foods, which can be particularly beneficial in low-resource settings.

Moreover, good maternal knowledge is significantly associated with good dietary

diversity scores in both households with and without home gardens. This finding is consistent with the previous study conducted in Ethiopia (36). The possible explanation for this finding is that the awareness of mothers on the nutritional value of the different varieties of foods is a crucial factor in purchasing these foods regularly for their children.

According to the findings of this study, children from wealthier families (rich) were significantly more likely to have good dietary diversity compared to their counterparts. This result is consistent with the studies conducted in Ethiopia (37) and East African countries (32). Other studies also emphasize that higher wealth enables access to a wider variety of nutritious foods and better living conditions, which positively affects children's dietary diversity (38). This may be due to the higher economic status, which may improve access to information, finance, and other resources required for improving dietary diversity scores of the children and families. Furthermore, the result of this study indicated that younger children aged 6–23 months were significantly more likely to have good dietary diversity compared to those children aged 24–59 months in both households with and without home gardens. This result is supported by the study conducted in Ethiopia (39). This could be due to more intensive monitoring and targeted nutritional interventions during the earlier years of life. Further, younger children may often

receive more focused dietary support, which can lead to better nutritional outcomes.

Conclusions

This study concluded that the prevalence of good dietary diversity scores among children in households with home gardens was higher among the children from households with home gardens than those from households without home gardens in the study area. The key factors associated with dietary diversity scores were maternal marital status (married mothers), maternal educational status (college and above), higher household wealth index, younger children aged 6-23 months, home gardening practices, and good maternal knowledge. Therefore, all responsible bodies should implement and support community-based home gardening programs by providing necessary resources, training, and materials to households. In addition, collaboration with local agricultural and health sectors is recommended to create awareness campaigns that highlight the benefits of home gardens in improving dietary diversity as a key strategy for malnutrition reduction, and to encourage household-level participation.

List of abbreviations

AOR- Adjusted Odds Ratio, CSA-Central Statistics Agency, DDS-Dietary Diversity Scores, EDHS-Ethiopian Demographic and Health Survey, FANTA-Food and Nutrition Technical Assistance, FAO-Food and Agriculture Organization, IYCF-Infant and Young Child Feeding, NNP-National

Nutrition Program, SPSS-Statistical Package for Social Sciences, UNICEF-United Nations International Children's Fund

Declarations

Ethical consideration

Ethical clearance was obtained from Salale University Institution Research Ethical Review Committee (SLU-2023/236). The research was carried out according to the Declaration of Helsinki, which pertains to medical research involving human subjects. Written informed consent was obtained from all participants prior to their inclusion explaining the study's aims and methods. Informed consent in writing was secured from every participant after a comprehensive Participant privacy was preserved by refraining from gathering data on variables that might disclose their identity and by limiting access to the data.

Consent for publication: Not applicable

Availability of data and materials: The dataset utilized in this research can be obtained from the corresponding author upon a reasonable request.

Authors' contributions

YZ conceived the study, conducted the analysis, and drafted the manuscript. TY and RS critically reviewed the manuscript. All authors approved the submission of the manuscript.

Acknowledgments

The authors acknowledge, all data collectors, supervisors, and participants for their tolerance and commitment during data collection.

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