Original Research Article

Household Food Insecurity Evidence among Rural Pastoralist community in Southern Ethiopia: A community-Based Study

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ABSTRACT

Background: Food insecurity is a significant public health problem in developing nations particularly in Ethiopia. During COVID- 19, food insecurity has worsened as result of lock down in most part of Africa as well as Ethiopia. In this regard, several studies have been conducted in central and agrarian communities, yet there is little evidence of studies on food insecurity in pastoralist communities. Thus, the study aimed to assess the burden and factors associated with food insecurity at rural pastoralist community.

Methodology: A community-based, comparative cross-sectional study conducted among 536 households. Pre-tested and structured questionnaires were used to collect data, related to household food access and socio-demographics. Data were entered in Epi info version 7 and exported to SPSS version 25 for data analysis.

Results: The overall prevalence of food insecurity in this study area was 88% [95% CI: 88.2, 91.0]. Low land agro-ecology [(AOR=3.1, 95% CI: (1.5, 6.3)], pastoralist community [AOR=3.7, 95% CI: (1.6, 8.7)], low wealth index [(AOR=2.5, 95% CI: (1.1. 3.6)], and larger family size composition which were statistically significant with food insecurity at household level.

Conclusion: The burden of food insecurity was 88% in the study area. Which was substantially high burden and a severe public health problem. Low wealth index, family size, and low land agro ecology were contributing factors for food insecurity. Therefore, policy makers and local administration advised to invest pastoralist income generating intervention and modern agricultural technology to tackle food insecurity in the study area.

***Key word**: Burden, Experience, Contributing Factors, Food insecurity, household, Pastoralist community*

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1. INTRODUCTION

Food security is ensured if sufficient nourishment (healthy, quality, quantity, socio-culturally acceptable) is "accessible and available for and acceptably used by all people consistently to carry on with a sound and joyful life"[1,2,3&4]. At the household level, food security refers to the capacity of the household to secure, either from its own production or through purchases, sufficient food to meet the dietary needs of all members of the household [5]. Food insecurity, in comparison, is a basic general wellbeing nutrition problem in Low and Middle Income Countries (LMICs) [6]. Food insecurity occurs due to lack of access to adequate, safe and nutritious food for development, physical growth and healthy life [7]. The reason for the lack might be the absence of food and shortage of resources.

Globally food insecurity report indicated that, there is a little progress in world starvation, even the figure of people who suffer from hunger has gradually increased. Thus, more than 821 million, approximately 1 out of 9 people in the world are still food insecured today [8]. In recent evidence, 9.2% of the world people, slightly more than 700million populations were exposed to severe of food insecurity in 2018[9]. In this regard, Ethiopia and South Sudan carry the highest risk with 3million people in nutrition crisis, followed by Kenya (2 million people), Somalia (731,000) and Uganda (180,000) [10]. Undernourishment and severe food insecurity appear to be increasing in almost all regions of Africa, as well as in South America [8].

Ethiopia is one of the countries in Sub-Saharan Africa, which has experienced food insecurity over long periods of time and which has one of the highest prevalence of food insecurity with more than 35% of the general population consistently food insecure. An estimated 30 million people in Ethiopia are exposed to under nourished and food insecurity [11]. About, 51% of the rural households in Ethiopia experience food insecurity, with livestock proprietorship and family size being negatively or positively related to food insecurity [12]. An estimated 10% of Ethiopian residents are consistently face food insecurity, and this number increases to 15% in dry seasons. More than 41% of the Ethiopian populations live under the breadline and more than 31million people are under nourished [13]. To this end, in 2014, an estimated 3 million individuals required nutrition crisis food interventions [14]. As indicated by Mohamed, [13] Ethiopia has been suffering with dry season, food insecurity, repeated nourishment deficiency, hunger and starvation. While, Climate change and dry seasons are the primary drivers of food insecurity, currently global developments such as COVID-19 pandemic, have exacerbated food insecurity due to the social, economic restrictions and lockdown in Ethiopia [15, 16 & 17].

In 2015, UN assembles launched new agenda for world transformation and sustainable development. These new global change plans consisted of 17 sustainable development goals (SDG) and 169 targets

Comment [u3]: Rather than merely focusing on the fact presentation, it would be interesting to focus on showing research gap. This is because, several studies have been conducted on Food Security in Ethiopia. So, one can be well attracted to yours if you can show the gap in food security literature. As you know the aim of publishing in such internationally reputable journal as **Asian Food Science Journal** **is to contribute to new knowledge. Therefore, try to show the research gap you addressed via your mmanuscript.**

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that will implement for 15years. Out of the 17 SDG, goal 2(end hunger and improved nutrition and promote sustainable agriculture)[18].

Food security is not only a matter for social wellbeing of families, but it is also the most prevalent public health issue in developing nations, particularly in Ethiopia. In fact, several studies have been conducted in central and agrarian communities. However, there is little evidence of studies on food insecurity in the most remote pastoralist communities like South omo zone. Moreover, there is a lack of community based research, pertaining to intervene and address food insecurity in pastoralist communities. Thus, the recent community based study aimed to assess the burden and determinate factors associated with food insecurity.

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Comment [u6]: State the objective clearly so that readers shall understand what you addressed in the manuscript.

2. MATERIALS AND METHODS

STUDY SETTING

The research was conducted in the South Omo Zone, one of 15 zones in the Southern Nations, Nationalities and People's Region (SNNPR) of Ethiopia. The zone is divided into 10 districts and one city administration and the zone consists of 205 rural and 60 urban "kebeles" (smallest admiration structure in Ethiopia). The zone capital is Jinka, a city in the southern part of the SNNPR; 434 km from the regional capital of SNNPR, Hawassa; and 800 km from Addis Ababa, the capital of Ethiopia. The Central Statistical Agency (CSA) 2019 estimated a population of 749,214 in the South Omo Zone, accounting for nearly 4% of the total population of the region, with 359,623 and 389,591 of men and women, respectively. An estimated 152,900 of the population was a household in the zone [19].

As indicated by South Omo Zone Finance and Economic Development Annual Report [20] ,the Zone has a diverse agro-ecology, ranging from hot arid to tropical humid. The high land constitutes 0.5 percent of the Zone, midland 5.1 percent, "mid-low land" 60 percent, and low land 34.4 percent [20]. The major food crops produced in the Zone are maize, sorghum, "teff" (type of cereal), coffee, vegetables, root crops, pulses and oil seeds. The communities in the Zone are mainly agro-pastoralist and their livestock include cattle, goats, sheep, horses and mules [20]. The current study was conducted at Dasenech, Hammer, Benytsemay,Malle and South Ari districs (Figure 1).

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Ethiopia

South Nations Nationalities and Peoples Region

Figure 1: Administrative map of South Omo Zone, South nation nationality people Region, Ethiopia

STUDY DESIGN

The community based, comparative cross-sectional study design was used to determine the burden and contributing factors of household food insecurity in rural parts of South Omo Zone, SNNPR Ethiopia. Because several studies have been conducted in central and agrarian communities, there is little evidence of studies on household food insecurity in the most remote pastoralist communities like Southern Omo.

SAMPLE SIZE DETERMINATION

The sample size was determined by single population proportion formula: with assumption of 95% confidence level, and 5% margin of error, 7% of non -response rate and 1.5 design effect, considered the previous proportion of 68.8 % [32].

$$n = \frac{(Z\alpha/2)^2 \times P \times (1-P)}{d^2}$$

$$= \frac{3.8416*0.68*0.32}{0.0025}$$

n=334*1.5(DE)+ 7%(NR)= **536**

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SAMPLING TECHNIQUE

The researchers applied a multi-stage stratified sampling method and randomly selected study respondents, using a simple random sampling method. Initially, all districts in the zone were listed and stratified into 3 ecological zones: highland, midland and lowland. For each stratum, districts were selected randomly and Kebele was selected through simple random sampling in each district. The sample size was then allocated to the strata proportional to the population size.

Comment [u9]: this is a local term that should be defined in its initial use.

SAMPLING FRAME

The sampling frame included all household in the sampled “kebele”. Households are registered in the “kebele” through a community-based health information system where health extension workers registered, so they were a resident in the community, know each village information very well. Simple random sampling was used to select households from the sample frame.

DATA COLLECTION

A structured and pretested questionnaire was used to collect data. The questions in the questionnaire were adopted and adapted from the literature. The socio-demographic aspect of the questionnaire was adapted from demographic health and survey (DHS) [22] and the researchers considered the work of Coates, Swindale and Bilinsky [23] to develop an instrument to measure food security, which consisted of 9 questions enquiring as to whether a specific condition associated with the experience of food insecurity had occurred in the previous four weeks. The researchers considered to assess food security access at household level.

Comment [u10]: The researchers considered food security access at household level in assessing the food security------should be corrected this way.

QUALITY CONTROL

To ensure content validity, the principal instigators sent the instruments to four specialists in the field of nutrition, food security program managers and a statistician. The researcher revised the instrument according to the comments of the experts prior to pilot testing and actual data collection. The pilot for this study was carried out in the nearby Bakadewela district in which a population with comparable socio-demographic attributes to the study population. The data collectors and supervisors were trained over two days. The principal investigators and supervisors manually checked the data completeness at the end of each day.

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DATA ANALYSIS

The researchers assessed the data manually for comprehensiveness and reliability. After that, the data were entered in to epi info version 6 and then exported to SPSS software version 25, then cleaned by the principal investigators by using frequency tables, ascending and descending order. Data were described using descriptive statistics [24] such as frequency distribution, central tendency, and dispersion. Inferential statistics, like bivariate analysis and Multivariate logistic regression was applied to assess the association of independent variables such as socio-demographic and health-related variables with dependent variables of household food security [24,& 25]. In the existing investigation, the results of the logistic regression were depicted as crude odds ratio (COR), and adjusted odds ratio (AOR) with their respective confidence intervals. A *p-value* < 0.25 was used to export variables to the multivariate model. Variables with a *p*-value < 0.05 were used to determine a statistically significant association [25]. A *p-value* under α=0.05 demonstrates statistical evidence to discard the hypothesis (null), and, by implication, acknowledge the alternative hypothesis.

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3. RESULTS AND DISCUSSION

Prevalence of household food insecurity

Based on the assessment results, the mean (±SD) of the food insecurity score at household level was 4.2±3.1 with minimum of 0 and maximum score of 9. The prevalence of household food insecurity

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(access) was categorized in to four levels namely: food secure and mild, moderately and severely food insecure.

Out of the total study respondents, 12% (n=54) of the household respondents statements revealed that they had food security at household level. Furthermore, a majority, 49% (n=231) of the research respondents confirmed that they had severe food insecurity preceding the survey; followed by 17% (n=81) of the household stating that they had moderate food insecurity. The rest, 22% (n=103) of households reported that they had mild food insecurity. The overall prevalence of food insecurity was 88% [95% CI: 88.2, 91.0] (Figure 2).

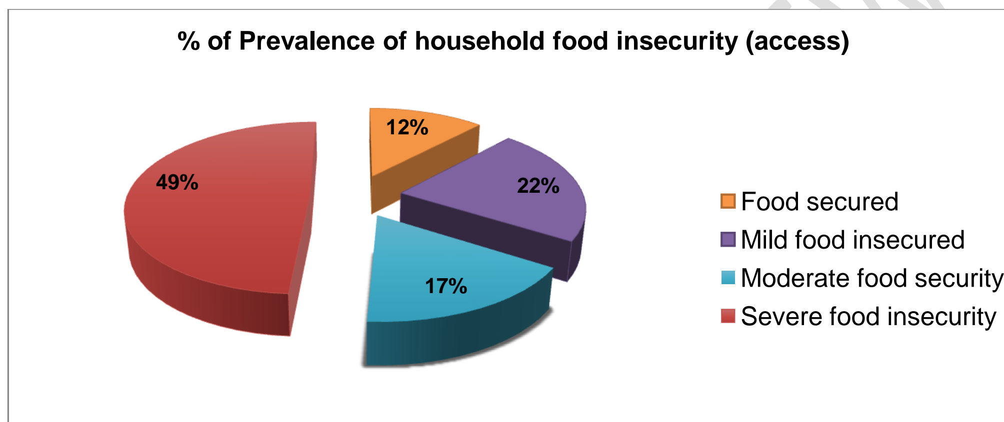

Figure 2: Prevalence of household food insecurity (access) at the community of South Omo Zone of SNNPR, Ethiopia, 2019

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Out of the total study respondents, a large portion of households, 70.4% (n=330), of the research respondents stated that they were worrying about food in the 30 days preceding the survey; similarly, 69% (n=325) of the study respondents reported that they had been unable to eat their preferred diet in the 30 days preceding the survey. In addition, more than half of the households, 56.7% (n=266), indicated that they had consumed a limited range of nourishment in the 30 days before the study. About 40% (n=191) of the households (HHs) stated that they had eaten food they would prefer not to eat in the 30 days preceding the survey. 62.7% (n=294) of research respondents stated that they had eaten limited meals in the 30 days preceding the survey. Similarly, 63% (n=297) of the respondents responded that they ate fewer meals in a day, in the 30-days preceding the survey.

On the other hand, a notable number of the households i.e. 35.4% (n=166) of the respondents declared that they had no food to eat, to some extent in their house, in the 30-days preceding the survey. Out of the total study respondents, 37% (n=176) of the households stated that they often had to go to sleep at

night hungry, during the thirty days leading to the survey. Similarly, nearly, one quarter, 23.5% (n=110) of the respondents indicated that they had gone an entire day and night without eating, in the thirty days preceding the survey (Table 1).

Table 1: Household food insecurity scale at South Omo Zone, SNNPR, Ethiopia, 2019

Measurement Tool	Frequency	Percent
Worry about food		
No	145	30.9
Yes	330	70.4
Unable to eat preferred foods		
No	144	30.7
Yes	325	69.3
Eat just a few kinds of foods		
No	203	43.0
Yes	266	57.0
Consume diets really do not need to eat		
No	278	59.3
Yes	191	40.7
Eat a smaller meal		
No	175	37.3
Yes	294	62.7
Eat fewer meals in a day		
No	172	36.7
Yes	297	63.3
No food of any kind in the household		
No	303	64.6
Yes	166	35.4
Go to sleep hungry		
No	203	62.5
Yes	176	37.5
Go a whole day and night without eating		
No	359	76.5
Yes	110	23.5

With respect to food security levels at each agro-ecological level, about (20.8%) of food security level was seen dominantly within highland agro-ecology zones compared with lowlands. The most elevated prevalence of (42.9%) mild food insecurity pattern among the research respondents was seen within

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lowland zones when compare with high land (6.1%) agro- ecological zones. Similarly, a high prevalence of (29.4%) pattern of moderate food insecurity was seen in low land agro-ecology zones when compared with mid & high land, besides, the highest prevalence (73%) of food insecurity was seen among lowlands compared with mid and highland zones (Figure 3).

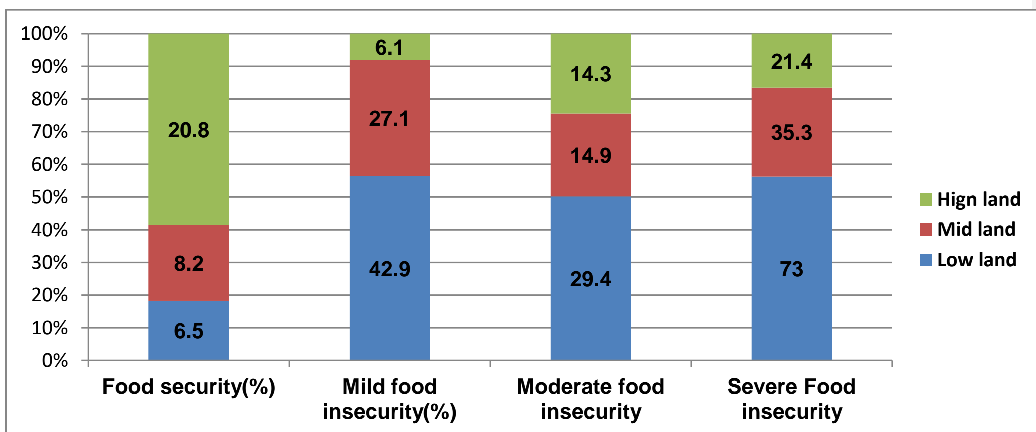

Figure 3: Household food insecurity by agro-ecological zones within the Community of South Omo Zone, SNNPR, Ethiopia, 2019.

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Agricultural Land

The mean (±SD) value of the agricultural land was 2.17±(1.5) with the least and greatest estimation values of 0 and 8 hectares respectively. Out of the total study respondents, 11.1% (n=52) of research respondents revealed that they had no agricultural land. By contrast, more than a quarter, 28% (n=133) of the households indicated that they had one hectare of agricultural land, 26.9% (n=126), 14.3%(n=67), and 19.4%(n=91) of the households had two, three, and four or more hectares of agricultural land, respectively.

Production

Regarding food production on the land, the majority, 77% (n=362), of land was covered by maize, sorghum and/or millet. About 15.8% (n=74) of the research respondents indicated that their land was not covered by crops. Similarly, 7% (n=33) of households described that they produced other crops such as roots, tubes, fruits and vegetables. Concerning household food sources, nearly a quarter, 23.5% (n=110), of the households indicated that they purchased food. Likewise, 35% (n=165) of households indicated that their food sources were a result of their own production. A notable number, 41.4% (n=194) of respondents admitted that food sources were primarily food aid and back-up stocks, and from others (neighbors, relatives and friend support) (Figure 4).

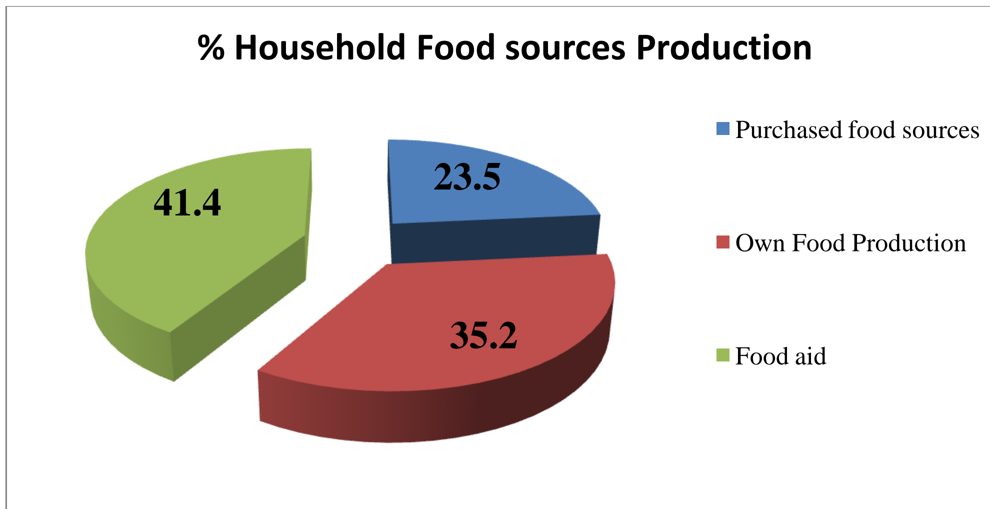

Figure 4: Household food sources within the community of South Omo Zone SNNPR, Ethiopia, 2019

Only, 24% (n= 113) of study respondents report indicated that their own food production was adequate for the whole year or to cover that period partially. In contrast, a large number, 76% (n=356), of the household report described their own production as being inadequate for the whole year, out of this,41.4% of the respondents reported their food source are food aid (Figure 3).

Causes of food insecurity

The study respondents were asked to offer the explanations for food scarcity at the household level. In response, a large number, 38% (n=182), of the households indicated that the cause of food shortage was drought. Similarly, one third, 37.1% (n=174), of the respondents showed that the cause of food scarcity was climate change. On the other hand, small proportions, 9.2% (n=43), of the study respondents believed that the cause of food shortage at household level was absence of water/rain or irrigation for production. About, 15% (n=70) of the households responded that the cause of food shortage was not clearly known (Figure 5).

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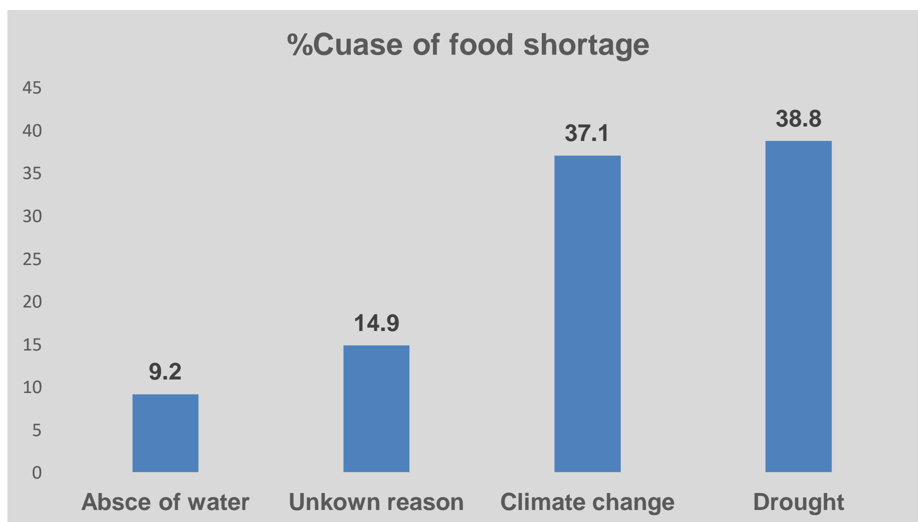

Figure 5: Causes of food scarcity in HH level within South Omo Zone, SNNPR, Ethiopia, 2019

Factors related to food insecurity

The burden of food insecurity was less likely to occur among self-production and purchased groups when compared to food aid and safety-net group (x^2=7.8, *p-value=0.007* and *p=0.04*). The prevalence of food insecurity was 51.8% (95% CI: 47.0, 56.5) in households living within low land agro-ecology compared to highland with 29.3% (95% CI: 25.2, 33.9) (X^2=19.4, *p-value<0.0001*). Likewise, the burden of food insecurity was 77.3% (95% CI: 73.0, 81.1) higher among those who had no enough production for the years when compared to those who had enough production, 22.6% (95% CI: 18.8, 26.9) (x^2=3.4, *p-value=0.04*) (Table 2).

Table 2: Bivariate logistic regression of predictor for household food insecurity within South Omo Zone, SNNPR, Ethiopia, 2019

Character	Food insecurity		X^2	Crude	P-value
	Yes	No		OR (95%CI)	
Agro-ecology					
Low land	215	15	19.4	3.7 (1.9, 7.2)	0.000*
Mid land	78	7		2.9 (1.2, 6.9)	0.015
High land	122	32		1	1
Self-production enough for the year					
No	321	35	3.4	1.8 (1.0, 3.4)	0.04*
Yes	94	19		1	1
Position of economy					

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Pastoralist	220	16	9.5	2.67 (1.4, 4.9)	0.002*
Agrarian	195	38		1	1
HH food sources					
Purchased	95	15	7.8	0.45 (0.2,0.9)	0.04
Self-production	139	26		0.4 (0.2, 0.8)	0.007*
Food aid and Safety Net	181	13		1	1

By contrast, the reporting of food insecurity was less prevalent in the richest group 16.8% (95%CI: 13.5, 20.7) when compared with the poorest group 21.9% (95% CI: 18.2, 26.1) (x^2=16.2, *p-value=0.03*. Additionally, the proportion of food insecurity, 53.0% (955CI:48.2, 57.7) was highest among pastoralist community members when compared with agrarian community counterparts 46.9% (95%CI: 42.2, 51.8)(x^2=9.5,*p-value=0.002*).

Furthermore, ANOVA showed a mean difference among variables i.e. dietary diversity (F=3.112, *p=0.04),* water sources (F=3.328, *p=0.002*), household (F=4.168, *p =0.003*), agro-ecology (F=10.10, *p=<0.0001*), household meal consumption per day (F=13.17, *p<0.0001*) and food sources (F=3.94, *p=0.020*) were all statistically related with household food insecurity.

In the multivariate analysis, possible confounders were adjusted and the characteristics that were found to be related with food insecurity during bivariate examination were assessed via multivariate analysis, using the logistic regression model. The odds of food insecurity were 2.4 times (AOR=2.4, 95% CI: 1.0, 5.2) higher among households having two or fewer meals every day, than the individuals who had more than three and more meals per day. Similarly, compared to the households, which they had no food needs, they were less likely to report food insecurity (AOR=0.2, 95% CI: 0.08, 0.4) than within the counterpart group (Table 4). In the same way, respondents from low land agro-ecology (AOR=3.1, 95%CI: 1.5, 6.3) and mid land agro-ecology (AOR=2.9, 95%CI: 1.1, 7.8) had significantly higher odds to have food insecurity compared with highland agro-ecology respondents. On the other hand, the existence of food insecurity decreased when we moved up the poorest to richest wealth index. The odds for food insecurity was (AOR=2.5, 95%CI: 1.1, 3.6) 2.5 times higher odd to develop food insecurity among the poorest wealth index group when compared to the richest group. This is statistically significant association with food insecurity (Table 3).

In this study, households from pastoralist communities had 3.7 times (AOR=3.7, 95%CI: 1.6, 8.7) higher odds of food insecurity than agrarian communities (Table 3). Moreover, the odds of food insecurity were 1.8 times higher (AOR=1.8, 95%CI: 0.8, 3.7) among households which had 4-6 family members than their counterpart. This was a statistically significant relationship with food insecurity (Table 3).

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Table 3: Multivariate logistic regression model of predictors for household food insecurity at south Omo Zone, SNNPR, Ethiopia, 2019

Character	Food insecurity Yes	No	X^2	Crude OR (95%CI)	Adjusted OR (95%CI)
Agro-ecology					
Low land	215	15	19.4	3.7(1.9, 7.2)	3.1(1.5, 6.3)***
Mid land	78	7		2.9(1.2, 6.9)	2.9(1.1, 7.8)
High land	122	32		1	1
Self-production enough for the year					
No	321	35	3.4	1.8(1.0, 3.4)	1.5(0.7, 3.0)
Yes	94	19		1	1
Household Wealth index					
poorest	70	20	16.2	3.9(1.7, 9.2)	2.5(1.1, 3.6)***
poor	82	14		2.6(2.5, 5.5)	1.5(1.8, 4.7)
Medium	84	7		1.2(4.5, 3.6)	1.0(1.5, 3.0)
Rich	91	4		2.4(1.7, 8.2)	1.9(0.5, 6.7)
Richest	84	9		1	1
Position in community					
Pastoralist	220	16	9.5	2.67(1.4, 4.9)	3.7(1.6, 8.7)***
Agrarian	195	38		1	1
Food need during last 12 months					
No	134	42	40.2	0.13(0.06, 0.26)	0.2(0.08, 0.4)***
Yes	281	12		1	1
Family size					
1-3	130	18	2.5	1.3(0.6, 2.9)	1.5(0.6, 3.4)
4-6	217	23		1.8(0.8, 3.7)	1.8(0.86, 4.0)***
>6	68	13		1	1

****statistically-significant

DISCUSSION

Despite current interventions, food insecurity is a global challenge in Africa and, particularly in Ethiopia. A significant body of evidence suggests that food insecurity is prevalent in agrarian communities; however, there are limited studies on food insecurity in pastoralist communities.

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In the present study, 12% of households were food secure. Furthermore, the majority of the households (49%) of had severe food insecurity; 17% of the households experienced moderate food insecurity, while 22% of the households had mild food insecurity. The overall prevalence of food insecurity in households was more than 85 %, from mild to severe; this finding indicate a substantial burden of food insecurity in this study area.

These results correlate with evidence from a study conducted in the Kampala Slums in Uganda with a prevalence of 88.5%[26]. Another study conducted in Nairobi, Kenya showed a prevalence of 85% [27], literature from Ecuador on HFI prevalence was 81% [28], and a study conducted in Jimma, Ethiopia, indicated a prevalence of 83.5% [29]. Further, 82% of households in the Sidama districts in southern Ethiopia faced mild to severe food insecurity [30].

The current figure was higher than the previous study report from other studies in Ethiopia, including Addis Ababa 75% [31], Tigrai 68.8% [32], Amhara 65.3% [33], Afar 70.4%[34], Oromia 58.5 % [35), and Gojjam, Amhara 58.1%[36]. Comparatively, study reports from other countries such as South Eastern Kenya 62.7% [37] and Latin America 75% and 25%, reported moderate to severe food insecurity [38]. The possible justification for such disparity could be that data collection was conducted during the dry season (May-June) when crops were not yet viable for consumption and, due to this, food was not available and demonstrated that a change in season may affect household food security.

Research from provincial Kenya, which was carried out between the arid period and the rainy seasons, showed marked contrasts between the after-effects of the two seasons. With the dry season indicating generally more elevated levels of food insecurity compared to the stormy season [39]. Seasonality is an important factor that may affect HFI as well as malnutrition [40]. This finding indicates that there was a high burden of food insecurity in the study area that requires urgent intervention to tackle the food emergency. Evidence in Norway showed that there was 93% of food insecurity among asylum seekers living in Norway and 7% of the respondents were food secure. However, the present investigation reported slightly lower than Henjum's report [41]. The reasons for such variations have been due to agro-ecological and socio-demographic characters of the study settings.

The present evidence indicated that 70.4% of the participants had a feeling of anxiety and uncertainty about food supply to the household; this evidence was similar to the previous study report from the Amhara Region, Ethiopia [33]. Similarly, 70.8% of the research respondents were worried about the accessibility of adequate food in the household in Afar, Ethiopia [42]. Food security occurs when each individual is able to access a sufficient amount of food that is affordable and nutritious [42]. However, in the present study, only 12% of households felt assured of their food security, as they experienced a diet of low-quality foods and minimal amounts of food. This finding was corroborated with study reports from the Ecuador; the finding demonstrated that women residing in homes where food was in short supply had to endure food containing less nourishment and that they experienced less varied diets [28].

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As Alemu and colleagues [33] described, the elevated predominance of family food insecurity was detected in the lowlands of the Abay Valley. The present findings also showed similar results, whereby food insecurity was higher among lowland agro-ecology compared with highland agro-ecology zones. The possible reason for this could be due to lower levels of rainfall, climate change vulnerability, and low soil fertility, all of which might contribute to higher levels of food insecurity in the lowlands.

Another facet of food security that was illuminated in this study is that family size is an important factor that affects household food security. In the present investigation, the prevalence of food insecurity was higher in families of a larger number compared to households with families of a smaller number. This evidence was supported in a previous study report from the Oromia region of Ethiopia [35], as well as other evidence in Sodo [43] and Tigray, Ethiopia [32]. Another study conducted in Ethiopia confirms with the above findings [44]. The possible justification for this could be that when the family size increases, the consumption of food within that family also increases. The family may, as a result, prioritize feeding the children, resulting in the loss of access to breakfast, lunch and dinner, for a day or even many days. This can aggravate food insecurity in poorly resourced settings.

Despite global development and progress that has been made in reducing starvation in many countries, a large number of the world's population still live in poverty. Haque and colleagues assert that the very poor live crosswise over many areas and various nations. Most individuals surviving on less than $1.25 a day live in two areas, Southern Asia and sub-Saharan Africa, representing about 80% of the very poor [45]. The current study indicated that the odds of food insecurity were 2.5 times higher among the poorest wealth index group compared with the richest wealth index group. This finding is in line with previous literature from Kenya [27], Bangladesh [45] and Beirut, Lebanon [46]. The possible explanation for this could be that poor family participants unfit to buy food from market.

A noteworthy finding in this study was that the burden of food insecurity was high in the pastoralist community as the odds of food insecurity were 3.7 times higher among the pastoralist community compared with the agrarian community. This finding was supported by a previous study by Mayanja, Akiiki, Greiner, and Morton [47]. In addition, households which reported absence of food support during the preceding 12 months were 80% more likely to face food insecurity as compared with those who had food support during the last 12 months. This evidence is supported by studies conducted earlier literature in Somali and Oromia regions, Ethiopia, revealed that harmony and danger contribute considerably to family food security [48].

The limitation of study is that data were collected in one season, so the study did not measure the effect of seasonal variation in HFI. Secondly, household food security was assessed by using the preceding 30 days as a reference. The responses, therefore, were purely based on household's memory and capacity to recall their previous diet and consumption. Finally, the cross-sectional nature of the study meant that it did not determine effect and temporal relationship.

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CONCLUSION

This study confirmed that there was a high burden of food insecurity in the study area. Lowland agro-ecology, poorest household wealth index and large family size were contributing factors towards food insecurity in pastoralist communities. Therefore, it advises to invest economical support and agricultural technology for small land holders to tackle food insecurity.

ETHICAL CONSIDERATION

Ethical approval was secured from the Ethics and Higher Degrees Committee of the University of South Africa (UNISA) and the UNISA Ethiopia office provided the researchers with a letter of support for the project. A permission letter was secured from the Regional Health Bureau and the South Omo Zone Health Department, respectively. The purpose and objectives of the study, the risks and benefits were explained by data collectors to the respondents. Moreover, the roles and responsibilities of the study respondents clearly described. Agreed respondent, then signed in the informed consent. The individuals who were not interested in participating were given the right to do so. Confidentiality of the data was preserved and the confidentiality of respondents were ensured, not mentioned the name of the respondents throughout the project.

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