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Determinants of Food Utilization amongst Rural Households: Evidence from Banja District, Ethiopia

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Abstract

The problem of food utilization is a significant concern across the Amhara Regional State, affecting various communities and regions within its boundaries. In particular, the Awi zone, which is known for its diverse agricultural practices and cultural heritage, faces its own set of challenges related to food utilization. Within this zone, the Banja district exemplifies the broader struggles experienced in the region. The study was focused on the determinants of food utilization amongst rural households in one of the Amhara Regional state, Banja district. It aimed to identify and prioritize the determinant factors that affect the food utilization levels of rural households in the study area. The research methodology employed in this study is a concurrent mixed-methods approach, incorporating both explanatory and descriptive designs. The study sample was a sample survey containing closed and open-ended questionnaires and 390 samples were selected by using multistage sampling techniques and rural households were the unit of analysis. In addition, the data collection instruments primarily included questionnaires and focus group discussions (FGDs).The data were analyzed using descriptive statistics, including percentages, means, and standard deviations, while inferential analysis was conducted using Kendall's coefficient of concordance and ordered logistic regression. At the 5% significance level, water availability and quality (P=0.002), hygiene and sanitation (P=0.015), feeding practices (P=0.017), food preparation practices (P=0.024), and household health status (P=0.044) were identified as significant determinants of food utilization in Banja district. This suggests that improvements in these factors can enhance household food utilization. In addition, descriptively, 71% of rural households considered the above variables very determinant factors for household food utilization. Based on the identified determinant factors, the study recommends that policymakers and relevant stakeholders prioritize improving access to clean and safe water, strengthening rural health facilities, and expanding hygiene and sanitation services in rural communities. The study further recommends the implementation of community-based education and awareness programs aimed at promoting appropriate feeding practices and safe food preparation methods to enhance household food utilization and nutritional outcomes.

Keywords: Food Utilization, Food Insecurity, Rural Households, Rural Ethiopia, Banja.

Introduction

Background of the Study

Food security is commonly conceptualized through four interrelated pillars availability, access, utilization, and stability with food utilization referring specifically to how the body derives nutritional benefit from consumed food. Unlike food availability (which concerns the physical supply of food through production, imports, and stocks) and food access (which focuses on households' economic and physical ability to obtain food), utilization operates at the biological and health level, emphasizing the proper use of food by the body, including digestion, absorption, and metabolism of nutrients. It is influ-

enced not only by dietary quality and food safety but also by non-food factors such as clean water, sanitation, hygiene practices, and individual health status, meaning that adequate food intake alone does not guarantee good nutritional outcomes. In contrast, utilization directly links food security to nutrition security by determining whether consumed food translates into healthy growth and development, while stability ensures that availability, access, and utilization are sustained over time despite shocks and disruptions. In 2000, Ethiopia had one of the most poverty costs within side the world, with 55.3 percent of the population residing below the worldwide poverty line of US$1.90 PPP per day and 44.2 percent of its population below the countrywide poverty line (World Bank, 2018). By 2011, 33.5 percent lived on plenty much less than the worldwide poverty line and 29.6 percent of the population was classified as poor according to national measures (Drechsler & Soer, 2016). According to (European Commission, 2016), the proportion of populace under the countrywide poverty line fell to 23.5 percent. Although Ethiopia nonetheless faces excessive tiers of food insecurity, rating as one of the hungriest international locations within side the world, the Global Hunger Index (GHI) rating has declined from 55.9 (extraordinarily alarming) in 2000 to 29.1 (serious) in 2018 (Korecha et al., 2017). Droughts and different associated disasters (consisting of crop failure, water shortage, and farm livestock' disease, land degradation, constrained family assets, and low income) are large triggers that growth vulnerability to meals lack of confidence and undermined livelihoods (Tarekegn & Ashenafi, 2022). Climate-related shocks severely affect productivity and economic growth, exacerbating social and financial issues (Daregot, 2018). The 2015 El Niño-induced drought severely affected Ethiopia, leaving more than 27 million people food insecure and approximately 18.1 million in need of humanitarian assistance in 2016. Agricultural losses were substantial, with some areas experiencing crop failures ranging from 50% to 90%. In addition, many households lost essential productive assets, including livestock.(Drechsler & Soer, 2016). While improved rainfall from June to September 2016 offered some relief, livestock mortality remained a significant concern in pastoralist regions. The Afar, Somali, and Oromia regions face severe water shortages, impacting pastoralists' ability to find pasture and leading to poor nutrition for children due to reduced milk and protein. In response to ongoing food insecurity, the Ethiopian government launched the Productive Safety Net (PSNP) in 2005, Africa's second-largest rural social safety program, offering cash or food assistance to enhance livelihoods and resilience. Most families in the Productive Safety Net Program (PSNP) have to participate in public works to qualify for assistance; based on poverty indicators like limited land access and food insecurity & it Operates in regions like Tigary, Afar, Amhara, and Oromia, Dire Dawa, Harari, South Regions, the PSNP effectively reduces food insecurity and asset poverty while boosting household spending and agricultural input use (World Food Programme, 2022). The Productive Safety Net Program (PSNP IV, 2015-2020) has helped reduce poverty for about eight million beneficiaries with a $3 billion budget, focusing on gender equity and nutrition (Daregot, 2018). The Agricultural Growth Project I (AGP I, 2010-2016) aimed to boost agricultural productivity and market access, particularly for women and youth and the ongoing AGP II aligns with the Growth and Transformation Plan II (GTP II) and operates in 157 growth-potential districts (Endalew et al., 2015). Developing countries like Ethiopia face severe food utilization, impacting millions, especially in rural areas. Many households experience chronic food shortages and rely on assistance, with a large portion of the rural population struggling with poverty and high unemployment (World Food Programme, 2022). The World Bank (World Bank, 2018) notes that Ethiopia's economy focuses on agricultural-led development and poverty alleviation while pursuing industrialization. However, recent declines in agricultural production due to climate change and limited land have hindered progress, leaving many rural households in poverty and food insecurity. Among the many focus areas of the Ethiopian economy one is to increase agricultural productivity and to attain income from this economic activity and also make farmers and non farmers food sufficient at household level. Agriculture has been the major economic activity of rural households. Thus the government of Ethiopia spent a lot of resources to improve the practices of agriculture through extensive research and development on farms and off farms to reduce food shortage across the nation. Despite the fact that agriculture is the main economic activity of the rural Ethiopia, there are a lot of determining factors for rural households being food insecure. Amongst these family size, age and sex of the households, educational level, cultural factors like food preference, taboos, eating habits, gender differences, religion and beliefs, social networks income of the household and health practices, sanitation and hygiene, child care and food preparation are the major factors affecting the rural households' livelihood. Likewise

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the majority of the Amhara people live in rural areas and their agriculture depend on rain fed subsistence agriculture. Household food security therefore depends on largely external factors like the size of the land, rainfall patterns, climate change, population size, soil fertility and low level investment on rural agricultural economy. The livelihood of the rural households in Amhara region including Banja district of Awi zone largely depends on rain fed subsistence agriculture. Since this economic activity is highly risk full and also with high population density, there is food security problem at household level. Banja district has an estimated projected population size 111, 975 of whom more than 90% is comprised rural households engaged in subsistence rain fed agriculture (Desalegn, 2019). Most empirical studies are conducted in different parts of the country and in Amhara region where areas are identified as food insecure or both in food secure and insecure areas. However, in this particular district government and non-government organizations did not give much attention on the problems of food security. Food security do not granted at local even at household level. Like other parts of areas, rural households in this district sustain their livelihood on largely rain fed subsistence agriculture and faced seasonal and temporary food shortage caused by scarcity of land, low productivity, market distance problems and different man made and natural shocks (Banja District Agricultural Office, 2022). Based on the district administrative office data 21% of the population in the district is landless 26% of the labor force is migrated temporarily to earn income to support and to secure household's food (Banja District Agricultural Office, 2022). In this district rural livelihood strategies are not diversified and even much more attention has not been given to this area and this leads to the district considered as one of the area which the problem of food insecurity is prevalent. Thus the highest number of safety net beneficiaries are registered and recorded in this district compared with other districts of Awi zone. Therefore this study conducted to investigate the determinants and level food utilization amongst rural households in Banja district.

Food Utilization in Ethiopia

Ethiopia is currently the second most populous country in Africa after Nigeria, with a population exceeding 120 million people. The country remains predominantly rural, with roughly three-quarters of the population living in rural areas and relying heavily on agriculture for their livelihoods. Agriculture continues to play a central role in the economy, contributing about one-third of national GDP and remaining the dominant source of employment and foreign exchange earnings, accounting for the majority of export revenues through commodities such as coffee, oilseeds, and livestock products. Despite being classified as a low-income country, Ethiopia has made significant progress in reducing poverty through a combination of rapid economic growth (ranging from 8% to 14% annually since 2004), sound economic policies, and substantial investments in pro-poor sectors such as education, agriculture, and health and the percentage of the population living below the national poverty line has decreased from 44.2% in 1999 to 29.6% in 2010, while the rural poverty rate has declined from 45.4% to 30.4% during the same timeframe (USAID, 2015). Ethiopia's economy relies on agriculture for one-third of GDP, 80% of exports, and 75% of employment. However, only 5% of land is irrigated, small farms yield below average, and market connections are weak, with limited use of improved seeds and fertilizers and addressing these issues could help reduce poverty and food insecurity (Food and Agriculture Organization, 2019). Ethiopia's rural livelihoods are highly sensitive to climate, with food insecurity closely tied to rainfall variability (Mekuanent, 2021). Famine instances decrease after rainy seasons, but climate shocks reduce productivity (Korecha et al., 2017). Coupled with high poverty and limited technology, this leaves individuals with few adaptive options, hindering economic progress and worsening social challenges (USAID, 2015). According to (World Food Programme, 2019), at individual level, the proportion of food insecure persons stood at 25.5 percent. This directly translates into approximately 26 million food insecure people. The number of food insecure could have been much higher had food assistance not been provided to around 18 million people through emergency food assistance and productive safety net program. Amhara Region experienced the highest percentage of food insecure households (36.1%), followed by Afar (26.1%) and Tigray (24.7%). Nearly 22.7 % of rural households and 13.9% of urban households are food insecure. Overall, rural households are more food insecure than urban households according to all indicators except calorie deficiency (World Food Programme, 2019).

Food Utilization in Amhara Region

The Amhara National Regional State (ANRS) placed with inside the north western and north imperative components of

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Ethiopia is wealthy in herbal sources consisting of water, appropriate land for agriculture, big farm animals populace, hard-working humans and sundry agro -ecological zones. Despite those potentials, the Region suffers from deep-rooted poverty and food shortage as a result of meteorological drought, hydrological drought, agricultural drought, excessive populace pressure, aid degradation and negative infrastructure (Mesfin, 2014). From the whole 126 districts, 64 (51%) districts a commonly food insecure and all are placed with inside the eastern part of the ANRS. Overall 2-3 million humans are chronically food insecure accounting for two-third of the chronically food insecure and inclined humans with inside the country (Daregot, 2018).

Determinants of Food Utilization

Food utilization refers to the effective use of food, supported by an adequate food, access to clean water, sanitation, food distribution, and healthcare, is essential for achieving nutritional well-being, where all physiological requirements are satisfied. This highlights the significance of non-food factors in ensuring food security. Household food utilization is negatively correlated with an increase in household size. There is an inverse relationship between the level of education attained by the head household and the likelihood of falling into food insecurity. A higher proportion of households headed by persons that can read and write were found to be better-off, in terms of food poverty and food utilization, as compared to those with heads of household who are illiterate (Tarekegn & Ashenafi, 2022). Food poverty is significantly lower among the young age group (7.9 %) but sharply increases in the prime age group (20.5%) followed by a slight decrease in the old age category (18.8%)and adjusted analysis suggested that sex of the household head is not a significant predictor of food utilization, as measured by food poverty (World Food Programme, 2019). Poor households are over represented in the food utilization category compared to the non-poor households across all food insecurity measures. Households with higher asset and wealth have a greater likelihood of food security as compared with households with lower assets and wealth (Food and Agriculture Organization, 2019). Households that earn their living from agricultural activities (crop and livestock) are generally the most food poor as compared with other households First, agricultural incomes in many settings are heavily affected by climate variability (droughts, erratic rainfall, and floods), pests, and disease outbreaks, which directly reduce yields and livestock productivity. This makes food availability and income highly unpredictable. Second, many smallholder farmers operate under rain-fed, low-input farming systems, with limited access to irrigation, improved seeds, credit, and markets, resulting in low productivity and low surplus for sale or consumption. Third, agricultural households are often net food buyers during the lean season, meaning they may sell produce after harvest when prices are low and buy food later when prices are high, worsening food access. Finally, compared to non-agricultural households, they have fewer income diversification opportunities, making it harder to cope with shocks. For these reasons, agricultural livelihoods are structurally more exposed to food insecurity and poverty in these areas. Households engaging in formal trade (including wholesale, retail and service), service trade, and salary paying jobs are more food secure as measured by food poverty (Muche et al., 2014). As stated by (Daregot, 2018), numerous research accomplished in growing nations have highlighted several of things taken into consideration as determinants of household's food utilization status. Nearly 40% of the agricultural farm family (approximately five million households) cultivates less than half of a hectare of land, from which they produce only half of in their annual food demand; moreover, they do now no longer have sufficient buying strength to shop for from the market(Daregot, 2018). Children who've come from any such member of the family are nearly malnourished. In addition the causes of food utilization in Ethiopia have always been complex given that multiple factors affect food utilization. However, socio-economics remains one of the key drivers of food utilization in Ethiopia. FAO stated (2019)(Food and Agriculture Organization, 2019) that the basic factors that cause of low household food utilization in rural regions are: family size, age of family, sex of household head, marital status, educational attainment, dependency ratio, lack of access of health, cultural factors, per-capital income, (food and non-food), access to asset, access to social services, access to domestic garden, access to subsidized food, access food resources, availability of health cares.

Status of Food Utilization in Amhara Region

The Amhara region endures from profound food frailty, caused basically by a lack of adequate nourishment of adequate wholesome esteem. The range has strikingly low generation of nutrient-dense nourishment, due to erratic rainfall, land degradation, and poor agricultural practices. The Amhara Na-

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tional regional State has a place to the primary drought-prone belt, which is characterized by rough territory, profoundly degraded soil, and climate inconstancy, within the locale the larger part of country inhabitants' vocations exclusively depends on subsistence cultivating and low beneficial livestock raising (Dawd et al., 2003). Among others, the fastest-growing rural populations coupled with seriously poverty and under-development leads to significant degradation and nutritional deficiencies within the study area (Dawd et al., 2003). To this conclusion, a closer understanding of the level and causes of food security within the Banja area can be considered as a critical case ponder. A study conducted by (Tarekegn & Ashenafi, 2022) illustrated that diverse components influence the food security status of smallholders in completely different parts of the nation. This recommends that location-specific thinks that account for undetectable differences in socio-cultural, regulation, and financial highlights will offer assistance to government specialists to create educated choices. In the region, the standing of the family is significantly influenced by factors such as the occurrence of shocks, the level of education (ability to analyze and reason), and the ownership of livestock. Food utilization basically relates to the quality of the slim down (Kidane et al., 2005). The choice of a quality diet can be basically influenced by sex and the education level of the family head. Besides, food prerequisites can too be influenced by age and sexual orientation, get to showcase, arrive at measure and salary of the families. The study area, Banja district, is one of the food uncertain areas of the Amhara region, where the larger part of country inhabitants' job exclusively depends on subsistence cultivating and livestock raises. In this respect, utilizing one of the kind & essential information from the Banja area of the Amhara region, this study builds on the existing writing by an approach to a degree of the level & status of food security.

Conceptual framework

The food utilization system presents the most determinants that influence rural family food utilization and the common place relationship between these. This consideration evaluates the determinants of the rural households' food utilization conceptual system created with alteration to address the scope and targets of this consideration. The conceptual system is outlined to appear the relationship between diverse factors, which impact the food utilization of rural household.

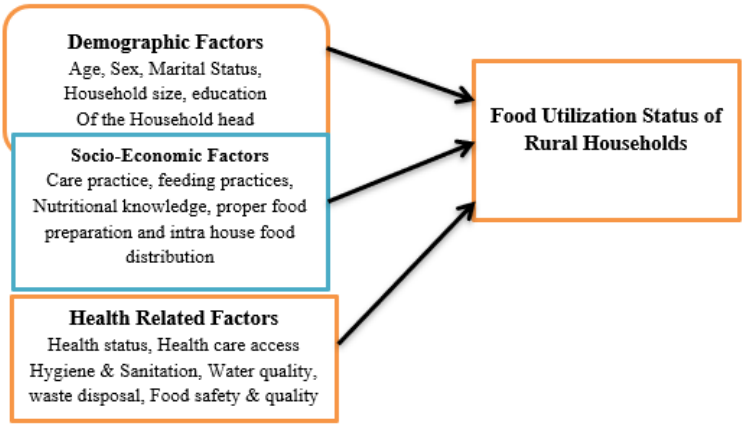


Fig. 1. Conceptual framework, Source: Developed by the author (2023)

Research Methodology

Research Approach & Design

This research used both qualitative and quantitative approach. As it stated by(Saunders, 2009) mixed method approach is both qualitative and quantitative data collection and analysis methods are used. It is more than simply collecting and analyzing both kinds of data rather the use of both approaches has greater strength in the overall study than either qualitative or quantitative research. Hence, this study utilized both qualitative and quantitative approach so as to get more reliable and valid results on the determinants of food utilization amongst rural households in the study area. Among the many mixed method research design, the researcher applied concurrent triangulation mixed design. According to (Creswell, 2003),a concurrent mixed design where the quantitative data as well as the qualitative data is supposed to be collected and analyzed separately and triangulated the findings simultaneously. And also the reason why the researcher wanted to use this design is that; it helped to explain both quantitative and qualitative results and interpret the findings from the two approaches concurrently. This study was also used survey design to examine the basic research questions under-investigated in this particular study area.

Sampling Technique & Sample Size Determination

For this study, samples were drawn using multistage sampling technique. First the region was selected purposively. Secondly from the 10 zones of the region Awi zone was selected randomly and then the Banja district was selected due to the

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higher agricultural potential, unique characteristics of farm production & unique features of food utilization & food process compared with other zones of the region for example Plectranthus edulis (Agew potatoes). Within this district there are twenty six kebeles in which six of them were selected using simple random sampling techniques due to homogenous nature of the population under investigated. According to the Banja district administration, there were 16,239 farm households. And the researcher used the following statistical formula for determining the sample size of the study (Yamane, 1973).

$$\begin{aligned} n &= \frac{N}{1+N(e)^2} \\ &= \frac{16,239}{1+16,239(0.05)^2} \\ &= \frac{16,239}{41.5975} \\ &= 390.38 \approx 390 \end{aligned} \tag{1}$$

Where n is the required sample size when population greater than 10,000, N is the total number of farm households & e is the degree of accuracy desired usually set at (0.05). Based on the above sample size determination calculation, 390 sample farm households were gotten. To provide for the likely non-response, 15% of 390 were included (Halbesleben & Whitman, 2013), which were 58.5 rounded to 60 respondents to serve as a reserve respondents. This makes add up to a total sample size of 450 respondents.

Data Sources & Methods of Data Analysis

This study has used data from primary and secondary sources. This survey was conducted based on household-level data collected from farmers in Banja district through a set of logically ordered and standardized questionnaires. The questionnaires were designed to collect data on the demographic, cultural, and social-economic and health related characteristics of farmers. Secondary data were collected from documented and public sources such as books, magazine articles, meeting minutes, and reports from the district of agricultural office. The study has used both descriptive and econometric methods to analyze the data. Descriptive analysis such as percentage & mean were used to understand the demographic, socio-economic, and cultural and health related characteristics of farm households. And an econometric method of ordered logistic regression model has used to estimate the determinants of food utilization status in the study area.

Reliability Test

The reliability of the data collection instruments is interpreted based on the consistency when it measures the target attribute and concerns a measure of consistency and accuracy. In this study, to measure and ensure the reliability of the instrument Cronbach alpha test had executed and as it shown 25 items were run and the average interterm covariance was 0.0292 and 67% of the responses were consistent and explained this study .

TABLE 1
RELIABILITY TEST: CRONBACH'S ALPHA RESULTS

Statistic	Value
Average inter-item covariance	0.0292521
Number of items in the scale	25
Scale reliability coefficient	0.6728

Source: Own Survey (2023).

Model Specification

This research categorized the dependent variable of food utilization as ordinal with five levels: 5 for very high, 4 for high, 3 for uncertain, 2 for low, and 1 for very low utilization. Two models were considered: ordered probit and ordered logit, with the latter proving more robust. Consequently, the ordered logit model was chosen to estimate the probability of a household's food utilization based on explanatory variables. Let Y represent the ordinal response variable with c ordered categories (1, 2.3.., c), and let $x = (x_1, x_2, \ldots, x_p)$ represent a vector of P explanatory variables.

An ordered logistic regression model relates the dependent variable Y to the independent variable x through $c-1$ logit equations, $P(Y_i \leq j \mid X_i)$. These logits connect intercepts (αs) and regression coefficients (βs) to response non category probabilities. The coefficient β_k for variable x_k allows us to interpret $\exp(\beta_k)$ as the odds ratio (OR), reflecting the change in odds for a one-unit increase in x_k, useful for comparing response communicative categories. In the ordered logit model, the cumulative conditional probability for observation i, given xi, expressed as:

$$\pi_{ij} = P(Y_i \leq j \mid X_i), \qquad j = 1, 2, \ldots, c-1 \tag{2}$$

where π_{ij} denotes the cumulative conditional probability that observation i falls in category j or below, given the explanatory variables X_i. After fitting the ordered logit model, the estimated cumulative probabilities are represented by $\hat{\pi}_{ij}$.

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TABLE 2
SHOWS DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Variables	**Categorical Descriptions**				
Household age	18-25	26-33	34-41	42-49	50-57
frequency & percentage	40(10.26%)	39(10%)	136(34.87)	117(30%)	58(14.87)
Household age	Male	Female			
frequency & percentage	311(79.74)	79(20.26)			
Educational background of the household	Don't attend formal education	read & write	Primary	Secondary	
frequency & Percentage	117(30%)	115(29.49)	118(30.26%)	40(10.26)	
Household income level	0-2000	2001-4000	4001-6000	6001-8000	8001-12000
frequency & percentage	20(5.13%)	178(45.64%)	117(30%)	56(14.36%)	19(4.87%)
Household size	1-3	4-6			
frequency & percentage	176(45.13)	214(54.87%)			
Household religion	Orthodox Christian	Muslim	Protestant	Other	
frequency & percentage	357(91.54%)	33(8.46%)			

Source: Author's Survey (2023)

(McCullagh, 1980). The ordered logit model, also known as the proportional odds model, is used when the dependent variable is ordinal in nature, meaning that the response categories have a natural ordering. The model estimates the relationship between explanatory variables and the probability of an observation falling within a particular response category or below. Specifically, it models the cumulative log odds of the response variable as a linear function of the predictors. The ordered logit model is expressed as:

$$\log\left(\frac{P(Y_i \leq j \mid X_i)}{P(Y_i > j \mid X_i)}\right) = \alpha_j - \beta X_i, \qquad j = 1, 2, \ldots, c-1 \tag{3}$$

where $P(Y_i \leq j \mid X_i)$ represents the cumulative probability that observation i falls in category j or below; α_j denotes the threshold (cut-point) parameters; and β is a vector of regression coefficients associated with the explanatory variables.

A key assumption of the ordered logit model is the proportional odds assumption, which states that the effects of the explanatory variables remain constant across all response categories (Agresti, 2010; McCullagh, 1980).

RESULT AND DISCUSSIONS

Response Rate

As per the standardization of the sample used for this study, and 450 questionnaires were distributed for respondents and 390 respondents returned the questionnaires. And based on the distributed questionnaires; the response rates is 86.7%.

Demographic Characteristics of Respondents

As it has shown in table 2 the demographic characteristics of respondents depicts that 136 (34.87%) of the respondents fall under the age of 34-41. Secondly, 117(30%) of respondents were categorized under the age of 42-49; 58(14.87%) of respondents are observed and associated with the age 50-57 and 40(10.26%) of the respondents' age associated with the age of 18-25 and 39 (10%) of the respondent were categorized under the age of 26-33. Similarly, from the total 390 respondents 311(79.74%) and 79(20.26%) of them were male and female respectively. Educational background of the household has also been studied and from the total of 390 respondents 118(30.26%) and 117(30%) and 115(29.49%) of them were primarily educated, do not attend formal educational and can read and write respectively. In this study, the household income from non-farming activities distribution has also been studied and the income that the household earn is between 2001-4000 Ethiopian Birr and this accounts 178 (45.64%) and the income earn of the household is between 4001-6000 Ethiopian birr and this accounts 117(30%) of the respondents. The other household income earning that has observed and associated with the frequency of 56(14.36%) is 6001-8000 Ethiopian birr. The last household income earning that has observed and associated with the frequency of 19(4.87%) is 8001-12000 Ethiopian birr The last two demographic characteristics of the respondent were household size and religion. And from the total respondents of 390 household, 214 (54.87%) of them have 4-6 family members and 176 (45.13%) of them have 1-3 family members and the majority of these households were orthodox Christian and the statistics of this were 357 (91.54%).

Results of Ordered Logistic Regression model

Ordered logistic regression analysis is used to identify the most important determinant factors which affect food utilization of

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TABLE 3
DETERMINANTS OF FOOD UTILIZATION AMONG RURAL HOUSEHOLDS

Number of observations = 390						
LR chi^2(11) = 30.84	**Prob > chi^2 = 0.0012**					
Log likelihood = -502.803	**Pseudo R^2 = 0.0298**					
Food Utilization	**Coef.**	**Std. Err.**	**Z**	**P>|z|**	**[95% Conf. Interval]**	
					Lower	**Upper**
Household health Status	0.3203063	0.1591112	2.01	0.044	0.008454	0.6321586
Household health care access	0.001257	0.1724897	0.01	0.994	-0.3368167	0.3393307
Household hygiene & sanitation	0.4308157	0.1779832	2.42	0.015	0.0819749	0.7796564
Household Water availability & quality	-0.4501281	0.148581	-3.03	0.002	-0.7413416	-0.1589146
Waste disposal Practice of the household	-0.2132662	0.1646477	-1.30	0.195	-0.5359697	0.1094373
Food safety quality of the household	0.2310744	0.1809981	1.28	0.202	-0.1236754	0.5858241
Household care practice	0.0163576	0.1406574	0.12	0.907	-0.2593257	0.292041
Household feeding practice	0.2717612	0.1135204	2.39	0.017	0.0492654	0.4942571
Household food preparation	-0.2419121	0.1073886	-2.25	0.024	-0.45239	-0.0314343
Household nutritional knowledge	-0.0904721	0.0741546	-1.22	0.222	-0.2358125	0.0548683
Household food distribution	0.0757874	0.0755747	1.00	0.316	-0.0723364	0.2239111

Source: Author's Survey (2023)

rural households in the study area. Before providing further analysis and interpretation to results of the model, one has to check whether or not the model fits the data well. Thus, for this particular study, the likelihood ratio (LR) Chi-square test, Pseudo R-square and log likelihood test is used and according to this test, if the P-value of the likelihood ratio (LR) Chi-square test goodness of fit test statistic $p = 0.0012 < 0.05$, the model is statistically significant overall. It is assumed that there is no difference between observed & predicted values, implying that the model fits the data at acceptable level. The value of likelihood ratio (LR) Chi-square test statistic has P value of 0.0012, Pseudo R square of 0.0298 and log likelihood value of -502.803 indicated that the model has a good fit as shown in table 3. After the assessment of the overall model & goodness of fit test, statistical test and individual predictors are conducted to identify the determinants of food utilization of rural households of Banja district. As shown table 3 above; household health status, household hygiene and sanitation, water availability and quality, household feeding practice and food preparation are found to be the determinant factors. Whereas, the other variables like household health care access, waste disposal practice of the household, food safety and quality of the household, household nutritional knowledge and household food distribution were not significantly associated with food utilization of the rural households of the Banja district.

As it shown in table 4 shows the determinants of food utilization in Banja district and the very determinants factors that determine food utilization was household food preparation which constitutes 208 (53.33%) form the total respondents. And from the total 390 respondents 178 (45.6%) of the respondents considered household health status is the very determinant factor for household food utilization. The third and the very determinants factors is water availability and quality in the household and 141(36.15%) of the respondents considered as a very determinant factor for household food utilization. In addition from the total of 390 respondents 119(30.51%) of the respondents also considered that household sanitation and hygiene the fourth most important determinant factors for household food utilization The last very determinant factor, which affected the household food utilization was household feeding practice of the households which it constitutes 99 (25.3%) form the total respondents.

Table 5 describes the descriptive results of the determinants of food utilization in rural households and the minimum value that determinants of food utilization was 1 and the maximum value of the rank was 5. As it shown in the above table a discussed above, 5: very determinant factor 4-4.9: determinant factor 3-3.9: undecided 2-2.9: not determinant factor 1-1.9: highly undetermined factor. Thus, Household health status has a mean rank 4.379487 which was the first determinant factor for household food utilization. The second determinant factor for household food utilization was household food preparation which it's mean value 4.320513 and standard deviation of 0.94. The third determinant factor for household food utilization was household hygiene & sanitation and its mean value was 4.253846 and its standard deviation 0.59. The fourth and fifth determinants for the use of household food were the availability of water & quality in the household and the household feeding practice, the mean value of which was

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TABLE 4
RANKING OF DETERMINANTS OF FOOD UTILIZATION IN RURAL HOUSEHOLDS OF THE DISTRICT

Food Utilization Determinants	V.D	D	U.D	NDt	H.N.D	Total
Household food preparation	208 (53.33%)	138 (35.38%)	16 (4.10%)	17 (4.36%)	11 (2.82%)	390
Household health status	178 (45.64%)	197 (50.51%)	–	15 (3.85%)	–	390
Water availability & quality in the household	141 (36.15%)	217 (55.64%)	8 (2.05%)	22 (5.64%)	2 (0.51%)	390
Household hygiene & sanitation	119 (30.51%)	261 (66.92%)	2 (0.51%)	6 (1.54%)	2 (0.51%)	390
Household feeding practice	99 (25.38%)	239 (61.28%)	22 (5.64%)	12 (3.08%)	18 (4.62%)	390

Source: Author's Survey (2023)
Where, V.D = Very Determinant , D = Determinant
U.D = Undecided
N.D = Non Determinant, H.N.D = Highly Non determinant

TABLE 5
INTERPRETATION OF DETERMINANTS OF FOOD UTILIZATION IN RURAL HOUSEHOLDS

Determinants of Food Utilization	Frequency	Minimum Rank	Maximum Rank	Mean	Standard Deviation
Household food preparation	390	1	5	4.320513	0.9498152
Household health status	390	2	5	4.379487	0.6836991
Water availability & quality in the household	390	1	5	4.212821	0.7811005
Household hygiene & sanitation	390	1	5	4.253846	0.5953315
Household feeding practice	390	1	5	3.997436	0.9224387

Source: Author's Survey (2023)

TABLE 6
RANKING OF DETERMINANTS OF FOOD UTILIZATION

Food Utilization Determinants	V.D	D	U.D	N.D	H.N.D	Total
Household food preparation	208 (53.33%)	138 (35.38%)	16 (4.10%)	17 (4.36%)	11 (2.82%)	390
Household health status	178 (45.64%)	197 (50.51%)	–	15 (3.85%)	–	390
Water availability & quality in the household	141 (36.15%)	217 (55.64%)	8 (2.05%)	22 (5.64%)	2 (0.51%)	390
Household hygiene & sanitation	119 (30.51%)	261 (66.92%)	2 (0.51%)	6 (1.54%)	2 (0.51%)	390
Household feeding practice	99 (25.38%)	239 (61.28%)	22 (5.64%)	12 (3.08%)	18 (4.62%)	390

Source: Author's Survey (2023)

4.2112821, 3.997436 and the standard deviation 0.78, 0. 92 respectively.

Model 2: Kendall's Coefficient of Concordance (W Test) to know determinants that significantly affect Food Utilization of Banja rural households

In order to compute the Kendall's W test of concordance, there should be no missing observations in the data set used. Five determinants of food utilization were used to execute this test. These determinants were household food preparation, household health Status, water availability and quality in the household, household hygiene and sanitation and household feeding practice. The scale was divided from 1 to 5. The meaning assign to this rank which was quite different from previous one; 5: Very determinant (V. D), 4: Determinant (D), 3: Undecided (U.D), 1: Non-determinant (N.D), and 1: Highly non-determinant (H. N. D) and. The output of the distribution is presented in table 6 below. As it shown in table 6 shows the determinants of food utilization in Banja district and the very determinants factors that determine food utilization was household food preparation which constitutes 208(53.33%) form the total respondents. And from the total 390 respondents 178 (45.6%) of the respondents considered household health status is the very determinant factor for household food utilization. The third and the very determinants factors is water availability and quality in the household and 141 (36.15%) of the respondents considered as a very determinant factor for household food utilization. In addition from the total of 390 respondents 119(30.51%) of the respondents also considered that household sanitation and hygiene the fourth most important determinant factors for household food utilization The last very determinant factors which affected the household food utilization household feeding practice of the households which it constitutes 99(25.3%) form the total respondents.

Outputs of Kendall's Test

The execution of Kendall's test is classified in to three parts. And these parts are 1: descriptive statistics, 2: ranks and 3: test statistics. All these parts are discussed below.

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TABLE 7
DESCRIPTIVE STATISTICS OF DETERMINANTS OF FOOD UTILIZATION

Determinants of Food Utilization	Frequency	Min. Rank	Max. Rank	Mean	Std. Deviation
Household health status	390	2	5	4.379487	0.6836991
Household food preparation	390	1	5	4.320513	0.9498152
Household hygiene & sanitation	390	1	5	4.253846	0.5953315
Water availability & quality in the household	390	1	5	4.212821	0.7811005
Household feeding practice	390	1	5	3.997436	0.9224387

Source: Author's Survey (2023)

Table 7 describes the descriptive results of the determinants of food in rural households and the minimum value that determinants of food utilization was 1 and the maximum value of the rank was 5. As it shown in the above table a discussed above, 5: very determinant factor 4-4.9: determinant factor 3-3.9: undecided 2-2.9: not determinant factor 1-1.9: highly undetermined factor. Thus, Household health status has a mean rank 4.37 which was the first determinant factor for household food utilization. The second determinant factor for household food utilization was household food preparation which it's mean value 4.32 and standard deviation of 0.94. The third determinant factor for household food utilization was household hygiene & sanitation and its mean value was 4.2 and its standard deviation 0.59. The fourth and fifth determinants factors for household food utilization was water availability & quality in the household and household feeding practice which its mean value was 4.21, 3.99 and standard deviation of 0.78, 0. 92 respectively.

Kendall's W test

TABLE 8
RANKS OF DETERMINANTS OF FOOD UTILIZATION

Determinants of Food Utilization	Mean
Household health status	4.379487
Household food preparation	4.320513
Household hygiene & sanitation	4.253846
Water availability & quality in the household	4.212821
Household feeding practice	3.997436

Source: Author's Survey (2023)

TABLE 9
KENDALL'S COEFFICIENT OF CONCORDANCE TEST STATISTICS

Test Statistic	Value
Number of observations	390
Kendall's W	0.712
Chi-square	345.21
Degrees of freedom	4
Asymptotic significance	0.000

Source: Author's Survey (2023)

As it already discussed in the above table, Kendall's rank test (Kendall's coefficient of concordance) used to measure inter rater agreements between rural households. That is the extent to which raters agree on an issue. The scale is from 1-5. A mean rank closer 5 is very determinant than a mean rank closer to 1 because 5 represents very determinant and 1 represents highly undermining. Hence household health status obtained the highest mean rank of 4.37 which indicates that it is the determinant factor for household food utilization. The second determinant factor was household food preparation. This is because it has the second highest mean rank of 4.32. And the third determinant factor of food utilization was household hygiene and sanitation since it has the mean rank of 4.25. The Kendall's W in table 8 indicates that 71.2% of rural households agreed that household health status the first determinant factor for household food utilization. Household food preparation was the second determinant factor for household food utilization in rural Banja. Household hygiene and sanitation was ranked as the third determinant factor for household food utilization in rural households. This is followed by water availability and quality and it was ranked as the fourth important determinant factor for household food utilization. We can also have additional interpretation that is assigned to the Kendall's W. There is 71.2% inter rater agreement by rural households to the order of the ranking of determinants of household food utilization and household health status the first of the first important factor for household food utilization followed by household food preparation followed by household hygiene and sanitation followed by water availability and quality in the household and household feeding practice respectively. The asymptotic significance of 0.000 from the Kendall's coefficient of concordance test statistic shown in table 8 is a test of the significance of the differences in determinants of food utilization in rural households of Banja. In other words, it shows the significant effect of the importance of the various factors in the rural household food utilization. An asymptotic significance of 0.000 therefore imply that the differences in agreement of the rankings of the importance

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of rural households food utilization were highly significant at 5% significance level because it is less than a p-value of 0.05 ($p < 0.05$). To add also, the rural household's agreements to the orders of importance of the determinants of food utilization were highly significant.

Discussion

The aim of this study was to examine the factors which determine food utilization of rural households in Banja district, Amhara regional state, Ethiopia & suggested way forward towards addressing the problem of food utilization. The study used ordered logistic regression model to analyze the determinants of food utilization in rural households. Mekuanent (2021) (Mekuanent, 2021) conducted a research on the status and levels of rural household in Amhara region & his study showed that about 61.54% & 38.46% households were food secure & food insecure, respectively. His logistic model result also showed that age, family size, dependency ratio, size of the land, numbers of livestock, and education level of the household head and shock related with agriculture were found to be statistically significant determinant factors of food security status & utilization of the rural household. However in this paper the independent variables were household health status, household heath care access, household food preparation, household hygiene and sanitation water availability and quality of the household, household food distribution, household nutritional knowledge, food safety & quality of the household, waste disposal practice of the household and household feeding practice. This study revealed that household health status, household food preparation, household hygiene and sanitation, water availability and quality of the household and household feeding practice were all significant factors in explaining the variation in food utilization of the rural households. The results of this study show that household healthcare access, household waste disposal practice, food safety and quality of the household, food distribution of the household, and household nutritional knowledge were all insignificant factors in explaining food utilization levels of the rural households. Similarly (Mesfin, 2014) has done a study on analysis of household vulnerability & food insecurity in Amhara regional state using value at risk analysis. And his empirical findings showed that idiosyncratic health related shocks, covariate economic and environmental shocks have larger impact on vulnerability food insecurity. He also investigated that education, diversification of livelihoods & resources which raise consumption is crucial for the attainment of food security. Abebaw & Mesele (2022) also studied the determinants of food insecurity in Northern Shewa zone and their results showed that family size, age of the household, educational level the household head, off farm activities, monthly income of the households and distance from the market were the major determinants of rural households' food security in Northern Shewa zone. In addition, Achenef, Alemayehu & Abera (2016) conducted a study and results showed that the prevalence of food insecurity was 55.3% in east & west Gojjam. (Desalegn, 2019) also conducted a study on the determinants of rural poverty in Awi zone and his result showed that household size was significantly and positively influence poverty whereas number of livestock, educational level of the household head, input utilization, asset ownership and access to credit negatively influence poverty in the study area. His study also suggested that improving adult education, provisions of input for smallholder farmers, improving access and availability of credit is the important policy interventions of the government of Ethiopia. The finding of this study also indicated that 71.2% of rural households agreed that household health status the first determinant factor for household food utilization. Household food preparation was the second determinant factor for household food utilization in rural Banja. Household hygiene and sanitation was ranked as the third determinant factor for household food utilization in rural households. This is followed by water availability and quality and it was ranked as the fourth important determinant factor for household food utilization.

Conclusion & Recommendations

Creating and advancing rural holistic health infrastructure is the most significant part to reduce the problems associated food utilization of the rural households. Both regional and local governments at different levels are advised to create optimal health institutions to promote rural household health status and to raise awareness on hygiene and sanitation for rural communities. This institution has also a potential advantage in promoting health education and awareness rising in the areas of household feeding practice and how balanced and nutritional food can be prepared at household level. Thus, the importance of health institutions in rural setting is very crucial and one of the policy intervention of regional and

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local government especially the health bureau and local health offices advised to work on changing the functional areas of the health sector to focus on improving rural households' health status, hygiene and sanitation and educating rural households' to promote and work on their way of food preparation and feeding practice of their families. The second policy intervention that is needed based on the findings of this study is that in particular in the Banja rural district where access to better drinking water supplies and sanitation is limited, quality of drinking water has always been a major public health concern. Therefore adequate interventions by regional and local government, such as the upgrading of existing water source infrastructures and access to sanitation services, are required for the quality of drinking water in study areas. Animal waste, garbage and liquid manure are often disposed of improperly on the fields around Banja rural district. In such a case, water sources could be contaminated. At any point in the supply network, water may be contaminated. Although it is the first line of defense against contamination, protecting water sources from pollution is the best way to ensure safe drinking water. To ensure that rural communities are provided with safe and good quality drinking water, a continuous monitoring and control system for water sources needs to be established. There is a far-reaching impact on health, productivity and quality of life from providing an adequate water supply to the population.

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Author Contributions

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation. The author has made a considerable contribution to the concept or design of the article; or the acquisition, analysis, or interpretation of knowledge for the article; and drafted the article or revised it critically for important intellectual content. The author has agreed to be answerable for all aspects of the work in ensuring that questions associated with the accuracy or integrity of any a part of the work are appropriately investigated and resolved.

References

Agresti, A. (2010). *Analysis of ordinal categorical data* (2nd ed.). Wiley.

Banja District Agricultural Office. (2022). *Agricultural office report*.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Sage.

Daregot, B. (2018). *Food security and rural livelihood analysis of the amhara region, ethiopia* (Published on ResearchGate).

Dawd, K. Y., Musimba, N. K. R., Ekaya, W. N., & Farah, K. O. (2003). The nutritional value of ziziphus spina-christi for goat production among pastoralists of kalu district, south wello, ethiopia. *Journal details not specified*.

Desalegn, T. (2019). *Determinants of rural poverty in banja district of awi zone, amhara region, ethiopia* [Doctoral dissertation, Haramaya University].

Drechsler, M., & Soer, W. (2016). *Early warning, early action: The use of predictive tools in drought response through ethiopia's productive safety net program* (tech. rep. No. Policy Research Working Paper 7716). World Bank.

Endalew, B., Muche, M., & Tadesse, S. (2015). Assessment of food security situation in ethiopia: A review. *Asian Journal of Agricultural Research*, *9*, 55–68.

European Commission. (2016). *Humanitarian aid and civil protection: Echo factsheet ethiopia*.

Food and Agriculture Organization. (2019). *Ethiopia: Integrated food security phase classification*. FAO Regional Office for Africa.

Halbesleben, J. R., & Whitman, M. V. (2013). Evaluating survey quality in health service research: A decision framework for assessing nonresponse bias. *Health Services Research*, *48*(3), 913–930. https://doi.org/10.1111/1475-6773.12002

Kidane, H., Alemu, Z. G., & Kundhlande, G. (2005). Causes of household food insecurity in koredegaga peasant association, oromia zone, ethiopia. *Journal details not specified*.

https://doi.org/10.20372/gvja.v1.i1.2026.002 © 2026 Green Valley Journals. All rights reserved.

Korecha, D., Lemma, M., Rowland, J., Williams, E., & Verdin, J. (2017). A climate trend analysis of ethiopia: Examining sub-seasonal climate impacts on crops and pasture conditions. *Climatic Change*, *142*(1), 169–182.

McCullagh, P. (1980). Regression models for ordinal data. *Journal of the Royal Statistical Society Series B*, *42*(2), 109–142.

Mekuanent, L. (2021). *Determinants of food security among rural households: The case of dangila woreda, awi zone, amhara region state, ethiopia* [Doctoral dissertation, Bahir Dar University].

Mesfin. (2014). Analysis of households vulnerability and food insecurity in amhara regional state of ethiopia: Using value at risk analysis. *Ethiopian Journal of Economics*, *23*(2).

Muche, M., Endalew, B., & Koricho, T. (2014). Determinants of household food security among southwest ethiopia rural households. *Asian Journal of Agricultural Research*.

Saunders, M. (2009). *Research methods for business students* (5th ed.). Prentice Hall.

Tarekegn, F., & Ashenafi, M. (2022). Food safety knowledge and practice and food insecurity experience among households with under-five children in urban injibara and rural kessa chewesa, awi zone, ethiopia. *Ethiopian Journal of Biological Sciences*, *20*(1).

USAID. (2015). *Food security country frameworks of ethiopia*.

World Bank. (2018). *World development report 2018: Agriculture for development*. Washington, DC.

World Food Programme. (2019). *Saving lives, changing lives in ethiopia*. Addis Ababa, Ethiopia.

World Food Programme. (2022). *Saving lives, changing lives in ethiopia*. Addis Ababa, Ethiopia.

Yamane, T. (1973). *Statistics: An introductory analysis*. John Weather Hill.

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