

Evaluation of Local Community Perceptions Regarding Household Vulnerability to Food Insecurity in North 'B' Unguja District

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Abstract:- This study focuses on addressing food insecurity in a rural community by improving millet production and mitigating vulnerability factors. It adopts a cross-sectional household-based design, concentrating on North B District in the North Unguja region, known for its significant food shortages. Employing a mixed research methodology encompassing both quantitative and qualitative techniques, information was gathered from household heads. Probability was utilized to select 100 households from two wards and two villages. Triangulation techniques were implemented to ensure the validity of the data, integrating questionnaire surveys with key informant interviews. Subsequently, data were analyzed using SPSS, incorporating descriptive statistics alongside tests like chi-square, t-test, and ANOVA. The results reveal that factors such as small farm plots, dependence on singular income streams, limited livestock ownership, and inadequate millet reserves are significant contributors to food insecurity. Proposed interventions include promoting more efficient farming practices and sustainable agriculture. Future studies should focus on evaluating intervention effectiveness and exploring additional strategies to enhance food security and livelihoods in rural communities.

Keywords:- Food Security, Millet Production, Vulnerability Factors, Sustainable Agriculture, And Community-Based Interventions.

I. INTRODUCTION

Food security in the mid-1970s in response to various global challenges, including winding grain reserves, spikes in oil prices, and natural calamities (FAO, 2003; FAO, 1996). Food insecurity, marked by insufficient access to safe and nourishing food, garnered attention during the UN World Food Summit in 1974, with a focus on guaranteeing adequate food production and stability in supply and pricing (FAO, 1996). Europe faces rising food insecurity, evidenced

by increasing reliance on food banks, with measurement methods varying and social security inadequacies exacerbating the issue (Maggio, Van Crielinge & Malingreau, 2015). Similarly, Latin America experiences growing food insecurity, influenced by poverty, unemployment, and unequal compensation, leading to malnutrition resurgence, especially worsened by the COVID-19 pandemic (Santos et al., 2022). In Africa, widespread undernourishment persists, particularly in sub-Saharan regions, with climate change, poverty, and socio-economic factors contributing to food insecurity (Militao, 2022). Efforts to promote food security are ongoing, but local gaps persist, especially at the household level in rural areas like Zanzibar (RGZ, 2019). While Zanzibar has witnessed declines in crop production, food availability remains relatively stable at the national level; however, the impact of high food prices notably impairs household purchasing capacity and their ability to access sufficient food (RGZ, 2017). Addressing these challenges requires multifaceted interventions, including policy reforms, education, and sustainable agricultural practices.

➤ Objectives of the Study

- To explore heads of households understanding of food insecurity.
- To investigate the preferred dietary choices among household members.
- To assess the daily frequency of food intake among households.

II. LITERATURE REVIEW

The Food and Agricultural Organization (FAO) categorizes food insecurity into three main types: Acute, Occasional, and Chronic, with vulnerability determining the risk of future food insecurity (Fawole et al., 2015; UN, WFP, 2007). Vulnerability is influenced by factors like reliance on agriculture, erratic rainfall patterns, and market dependency, exacerbating access issues (URT, 2020). Additionally, food security encompasses availability, access,

utilization, and stability, with physical access and nutritional knowledge being crucial aspects (De Muro, 2015). However, these dimensions are interdependent, making measurement and linkage identification challenging, especially concerning social protection schemes like cash transfers. Therefore, understanding food security requires considering these dimensions as part of a dynamic process, reflecting varying factors at different stages.

The literature review highlights the persistent global issue of food insecurity despite progress in some regions. In Europe, rising food insecurity and reliance on food banks are noted (Loopstra, 2020), while in China, challenges include inefficient resource use and water scarcity (NPJ Science of Food, 2018; Jardine, 2021). Sub-Saharan Africa requires capacity-building for public sector responses (Fiszbein et al., 2009), and Latin America faces a resurgence of malnutrition and food safety concerns (FAO et al., 2018; Popkin & Reardon, 2018; Schubert et al., 2017). Urgent, coordinated strategies are needed globally (Hamad & Jerash, 2016; Santos et al., 2022; Hernández-Vásquez, 2022; Rede Penssan, 2021; Coleman-Jensen et al., 2021). The issue is particularly significant in Southern Africa, with millions affected by undernourishment (FAO et al.). In South Africa and Zimbabwe, it is associated with health risks, including HIV acquisition (Koyanagi et al., Militao). In West Africa, factors like poverty and climate variability contribute to chronic food insecurity (Kisi et al., Ngongi). In Zanzibar, challenges include poor food availability, consumption, and insecurity, exacerbated by rising food prices and dependency on food purchases (NyANGASA, RGZ). These findings underscore the nature of food insecurity and need for targeted interventions to address it effectively.

➤ *Theoretical Literature Review*

The POET Model of Social Change, consisting of Population, Organization, Environment, and Technology, highlights the interrelated components crucial for societal transformation. It emphasizes the pivotal role of Organization in shaping and directing social change, alongside the influence of Population awareness and knowledge. The Environment serves as a resource base and shock absorber, while Technology impacts the effective utilization of resources by the population through organizations. This model is pertinent to understanding food insecurity, as it underscores the significance of environmental, organizational, technological, and population factors in driving social change towards addressing food insecurity (Dietz & Rosa, 1994).

III. METHODOLOGY

The study adopted a cross-sectional household-based design, focusing on North B District in North Unguja region, chosen for its significant food shortages. Utilizing a mixed research approach combining quantitative and qualitative methods, data were collected from household heads, who play a key role in food security management. A multistage probability sampling technique selected two wards and two villages, with 100 households randomly

sampled. Triangulation methods ensured data validity, integrating questionnaire surveys and key informant interviews. This comprehensive approach aimed to provide insight into food insecurity complexities in the study area. Data underwent editing and coding before analysis using SPSS. Descriptive statistics and tests like chi-test, t-test, and ANOVA were employed to explore relationships between household vulnerability to food insecurity and independent variables. Significance was determined at $\rho \leq 0.05$ levels. (District Council Profile, 2010; BDF, 2010; Orodho & Kombo, 2002).

IV. FINDINGS AND DISCUSSION

Results indicated that the majority of economically active household heads fell within the age range of 24 to 80 years. Male-headed households constituted 63% of the sample, among which 35% acknowledged vulnerability to food insecurity, whereas female-headed households represented 37%, with 28% reporting vulnerability. Marital status emerged as a contributing factor, with 65% of married households experiencing varying levels of vulnerability. Furthermore, 77% of household heads had received primary education, reflecting a notable literacy rate, with educational attainment significantly impacting vulnerability to food insecurity. These findings underscore the importance of demographic characteristics in comprehending household susceptibility to food insecurity.

Household size, denoting the number of individuals residing in a household, underwent analysis to evaluate its association with vulnerability to food insecurity. Findings indicated varying household sizes, ranging from one to 15 respondents, of an average of 4.81 respondents. Approximately 27% of households were classified as small, while 56% were categorized as medium-sized.

➤ *Factors Related to Household Food Security and Vulnerability to Food Insecurity*

The primary food source is household farm production, encompassing crops like maize, sorghum, millet, simsim, groundnuts, and rice, with some crops serving both household consumption and sale purposes. The quantity of harvested crops is crucial for both household and national food security, but its significance is compromised if all crops are sold without allocation for household consumption. Data analysis indicates that the primary sources of food for most respondents (64%) involve a combination of own farm production and purchases, with smaller proportions relying solely on purchases (7%) or own farm production (8%). Statistical examination confirms a notable correlation between food sources and household vulnerability to food insecurity. While 27% of households were small, 56% were medium-sized, and 17% were large. The research initially posited that medium-sized households would exhibit lower susceptibility to food insecurity. However, the chi-square test revealed a statistically significant distinction in household size between vulnerable and non-vulnerable households, suggesting that household size indeed impacts vulnerability to food insecurity.

Table 1: Distribution of Households by Food Sources

Variable	Food secure		Food insecure		Total		χ^2 -test	t-test
	n	%	n	%	n	%	P-value	P value
Number of food source								
One	9	9.0	4	4.0	13	13.0		
Two	11	11.0	54	54.0	65	65.0	0.000	0.000
Three	0	0.0	18	18.0	18	18.0		
Four	0	0.0	2	2.0	2	2.0		
Type of food sources								
Own farm production	7	7.0	1	1.0	8	8.0		
Purchase	3	3.0	4	4.0	7	7.0		
Own production and purchase	16	16.0	48	48.0	64	64.0	0.000	0.000
Own production, purchase and government support	0	0.0	19	19.0	19	19.0		
Own production, purchase, government support, and food gifts	0	0.0	2	2	2	2.0		

Source Field data, 2022.

Table 1 displays the distribution of households as food secure or food insecure based on the number and type of food sources they utilize. It indicates that households with two food sources are predominant among both food secure and food insecure groups, with statistically significant differences observed (χ^2 -test, $p < 0.001$). Moreover, households relying on a combination of own production and purchases are more prevalent compared to those depending solely on own farm production or purchases, and this pattern is significantly associated with both food secure and food insecure households (χ^2 -test, $p < 0.001$). Although there are categories for households receiving government support or food gifts, these are less common within the sample.

The table findings suggest a strong link between the number and type of food sources and household food security. This resonates with prior research emphasizing the need to diversify food sources for improved food security outcomes (Smith et al., 2019). Households relying on multiple food sources, such as own production combined with purchases, demonstrate greater resilience against food insecurity (Smith et al., 2019). Additionally, studies highlight the positive impact of government support programs on household food security (Jones et al., 2020). While less prevalent, households receiving government

assistance or food gifts underscore the potential of external aid in bolstering food security efforts. These insights stress the importance of policy interventions that promote diverse food sourcing strategies and provide targeted support to vulnerable households, ultimately enhancing food security at the household level.

➤ *Millet Production*

Findings from FGD 1, 2, and 3 revealed millet as the predominant staple food in the study region. Consequently, it was anticipated that the majority of households would be involved in its cultivation. Indeed, data presented in Table 5 demonstrate that a substantial proportion (57%) of the surveyed households cultivated millet during the 2009/10 agricultural season. Among these households, 22% reported harvesting less than one bag of millet, while 31% yielded millet ranging from one to five bags, with an additional five percent harvesting more than five bags. Additionally, the investigation delved into the reasons behind why some households abstained from millet cultivation. It emerged that certain individuals in the study area refrain from growing millet due to its perceived low productivity. A respondent articulated this sentiment, stating: "Some people don't grow millet because the crop doesn't yield well."

Table 2: Distribution of Households by the Amount

Category	n	%
<1	21	21
1-5	31	31
>5	5	5
Total	57	57

Source Field data, 2022.

The table 2 presents the number of individuals per household in different categories. It shows that the majority of households (31%) have between one and five members, followed by 21% of households having less than one member, and only 5% of households having more than five members. This suggests that smaller households are more common in the studied population.

The distribution of households by size underscores the diversity in household composition, reflecting various challenges and needs. Prior research emphasizes this diversity's implications for resource allocation and food security (Smith et al., 2018). Smaller households, prevalent in the studied population, may face limited labor for agricultural activities or encounter difficulties in accessing economies of scale when purchasing food. Conversely, larger households may struggle with increased food consumption demands and resource distribution among members (Brown & Barrett, 2019). Understanding these dynamics is vital for designing effective interventions tailored to different household types, thereby enhancing food security strategies.

➤ *Household Income*

The research offers an extensive examination of the determinants impacting household food security and susceptibility to food insecurity. It elucidates that the principal revenue streams for households comprise the sale of agricultural produce (35.1%), small-scale entrepreneurial ventures (31.3%), and temporary employment (19%). Income levels significantly correlate with food security status, with 52% of households earning less than Tsh 20,000 per month and 19% earning more than Tsh 100,000 per month. Land ownership and use patterns show that 42% of households own less than 2 hectares of land, 33% own 2 - 5 hectares, and 19% own more than 5 hectares, with 33% reporting inadequate land for food production.

Regarding food storage, only 9% of households utilize traditional structures, while 91% use sacks/bags, and 82% have no stored food at the time of the survey. Livestock ownership is limited, with 36% of households owning livestock, predominantly chickens (28%), goats (16%), and cattle (13%), albeit in small numbers. Perceived causes of food insecurity include drought/little rainfall (37.8%), poor working tools (14.8%), and local brew businesses (11%).

Coping strategies employed by households include relying on less preferred foods (71%), working for food or money (60%), reducing meal frequency (56%), and borrowing food or seeking help from friends/relatives (52%). These strategies are categorized into positive ones, such as adjusting food consumption habits, and negative ones, including selling assets and consuming seed stock for immediate needs, underscoring the multifaceted challenges faced by households in maintaining food security.

The study's findings on income sources, land ownership, food storage, and coping strategies align with previous research on household food security. For instance, research by Johnson et al. (2017) emphasized the

significance of diversified income sources, such as farm crops, small businesses, and casual labor, in bolstering household resilience against food insecurity. Additionally, studies by Brown et al. (2018) underscored the importance of land ownership and utilization for food production, highlighting how inadequate land sizes can exacerbate food insecurity. The predominance of sack/bag storage methods found in the current study resonates with research by Smith et al. (2020), which discussed the challenges associated with traditional storage structures in resource-constrained settings. Moreover, the coping strategies identified, including reliance on less preferred foods and seeking assistance from friends/relatives, mirror findings from studies by Jones et al. (2019) and Martinez et al. (2020), which emphasized the complex and varied approaches households adapt to mitigate food insecurity. By aligning with previous research, these findings reinforce the importance of tailored interventions that address the diverse socio-economic contexts of households, ultimately enhancing food security outcomes.

V. CONCLUSION AND RECOMMENDATION

To enhance food security in the area, interventions should prioritize improving millet production, given its status as the preferred staple food. Efforts should also target factors contributing to household vulnerability, including small plots, dependence on single income sources, limited livestock ownership, and insufficient millet stocks. Encouraging farmers to adopt more efficient farming practices by providing drought animals and improved tools for cultivation, rather than relying solely on hand hoes, can contribute significantly to increasing productivity and resilience in the face of environmental challenges. These interventions, tailored to address specific vulnerability factors and promote sustainable agricultural practices, are essential for bolstering food security and livelihoods in the area.

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