**Gendered Patterns in Nutritious Food Consumption: Household Dynamics, Food Affordability, and Adaptive Strategies**

Martin J. Chegere1, Doris E. Macha1and Adeline Munuo2

*1School of Economics-University of Dar es Salaam.*

*2Tanzania Food and Nutrition Centre*

### Abstract

This study explores gendered patterns in nutritious food consumption, with a particular focus on household dynamics, food affordability, and adaptive strategies in Tanzania. Motivated by the persistent gender disparities in access to nutritious food, the research examines how decision-making, budgeting, and perceptions of food prices differ between male- and female-headed households. Data were collected from 300 households across three regions in Tanzania, through surveys, focus group discussions, and in-depth interviews. The findings reveal that female-headed households face greater barriers to accessing nutritious foods, primarily due to income disparities and limited resources. Economic constraints exacerbate food insecurity, with price perceptions influencing food choices. While both male- and female-headed households reported shifting towards cheaper, less nutritious alternatives in response to rising food prices, female-headed households were more likely to experience negative impacts on dietary diversity. The study highlights the need for gender-sensitive nutrition policies that address economic and social barriers, promote equitable food access, and support women’s central role in household food security. This aligns with the UN Sustainable Development Goals, particularly Goal 2 (Zero Hunger) and Goal 5 (Gender Equality), highlighting the importance of equitable access to nutritious food for all households.

**Keywords**: Gender Disparities, Nutritious Foods, Food Affordability, Dietary Choices, Adaptive Strategies, Sustainable Development Goals (SDGs)

**JEL Classification**: I31, J16, D12, Q18, I12

# Introduction

Nutrition is a critical determinant of health, yet significant gender disparities in food consumption persist, influenced by household dynamics and economic pressures. Globally, food security is a pressing issue intricately linked to health outcomes and socio-economic factors. The United Nations Sustainable Development Goals (SDGs), particularly Goal 2 (Zero Hunger) and Goal 5 (Gender Equality), emphasize the need for equitable access to nutritious food, especially for marginalized groups, including women and female-headed households.

In many societies, traditional gender roles dictate who decides what food is purchased and consumed, skewing the allocation of financial resources toward less nutritious options. This dynamic affects the overall quality of nutrition within households, as women and children frequently bear the brunt of inadequate food access, leading to distinct nutritional needs and priorities. Research shows that women, particularly female household heads or spouses, are typically responsible for food preparation, prioritizing healthier meals, yet they often face significant barriers to accessing nutritious food due to economic and logistical challenges (Lundh, 2022).

A variety of factors exacerbate food insecurity and limit access to nutritious foods, including low incomes, rising food prices, limited access to markets, inefficiencies in food value chains, and inadequate infrastructure (Masters et al., 2018; Raghunathan et al., 2021; Ryckman et al., 2021; Bai et al., 2021; Headey et al., 2024). Although economic growth may increase wages, women continue to experience a disproportionate struggle with food affordability, due to persistent income disparities compared to men (Raghunathan et al., 2021). This issue is particularly evident in countries like Tanzania, where, despite improvements in agricultural production, food insecurity affects a significant portion of the population (about 34%), and stunting rates remain alarmingly high among children under five (UNICEF, 2019). Female-headed households in Tanzania often rely on informal markets and local food sources, limiting their access to diverse and nutritious options (FAO, 2023).

Moreover, perceptions of the high cost of nutritious foods further discourage households from purchasing healthier options. Many individuals believe that nutrient-dense foods are prohibitively expensive, leading them to opt for cheaper, less nutritious alternatives. This phenomenon is particularly pronounced among low-income families, who are constrained by tight budgets (Guan & Wang, 2024; Headey et al., 2024; Masters et al., 2018). The impact of rising food prices is particularly harsh on women, as they face systemic inequalities in both income and employment opportunities. Single-parent households, especially those headed by women, experience higher rates of food insecurity compared to their male counterparts.

This study aims to explore gendered consumption patterns of nutritious foods, with a focus on decision-making, budget allocation, accessibility, and perceptions of food prices within households. By examining data collected through structured questionnaires, this research seeks to uncover the complex interplay of factors that shape dietary choices and the strategies employed by both men and women in response to food price variability and affordability challenges.

The contributions of this paper are threefold. First, it provides a comprehensive analysis of gender disparities in food sourcing and consumption patterns among households in Tanzania. Second, it identifies economic and social barriers that hinder female-headed households from accessing nutritious food, offering insights into their unique challenges. Lastly, the paper advocates for gender-sensitive approaches in nutrition policy and education, emphasizing the need for targeted interventions to enhance food security and promote healthier eating habits, thereby contributing to the broader discourse on food security and gender equality in alignment with the SDGs.

# Material and Methods

## 2.1 Study site

This study was conducted across three regions of Tanzania: Njombe, Dodoma, and Tanga, chosen for their varying levels of malnutrition. Specifically, one region was selected with the highest malnutrition rates, one with intermediate levels, and one with the lowest. In each region, one rural district and one urban district were randomly selected for data collection. The study took place in Njombe and Wanging’ombe districts (Njombe region), Chamwino and Dodoma districts (Dodoma region), and Mkinga and Tanga Municipal districts (Tanga region). These regions were strategically selected to capture a diverse range of food accessibility and consumption patterns.

## 2.2 Data

Primary data were collected through a combination of surveys, focus group discussions (FGDs), and in-depth interviews. A total of 300 households were surveyed, with 100 households interviewed per region. Within each region, 50 households were selected from urban districts, and 50 from rural districts. The households were randomly selected by village or street leaders from an existing community membership list. Survey data were gathered through a structured questionnaire, covering topics such as 24-hour food consumption recall, perceptions of food price variability, gender and nutrition-related aspects, household spending, and demographic characteristics.

In addition to the household survey, two FGDs were conducted in each district—one with a male-only group and one with a female-only group. Each FGD consisted of eight participants, providing valuable insights into the gendered dynamics of food consumption and nutrition within households.

Furthermore, 53 in-depth interviews were conducted with key informants, including community health officers, religious leaders, local nutritionists, health officers, and nutrition specialists from non-governmental organizations (NGOs). These interviews aimed to gather expert opinions on local food security issues, gender disparities in nutrition, and coping mechanisms employed by households facing food affordability challenges.

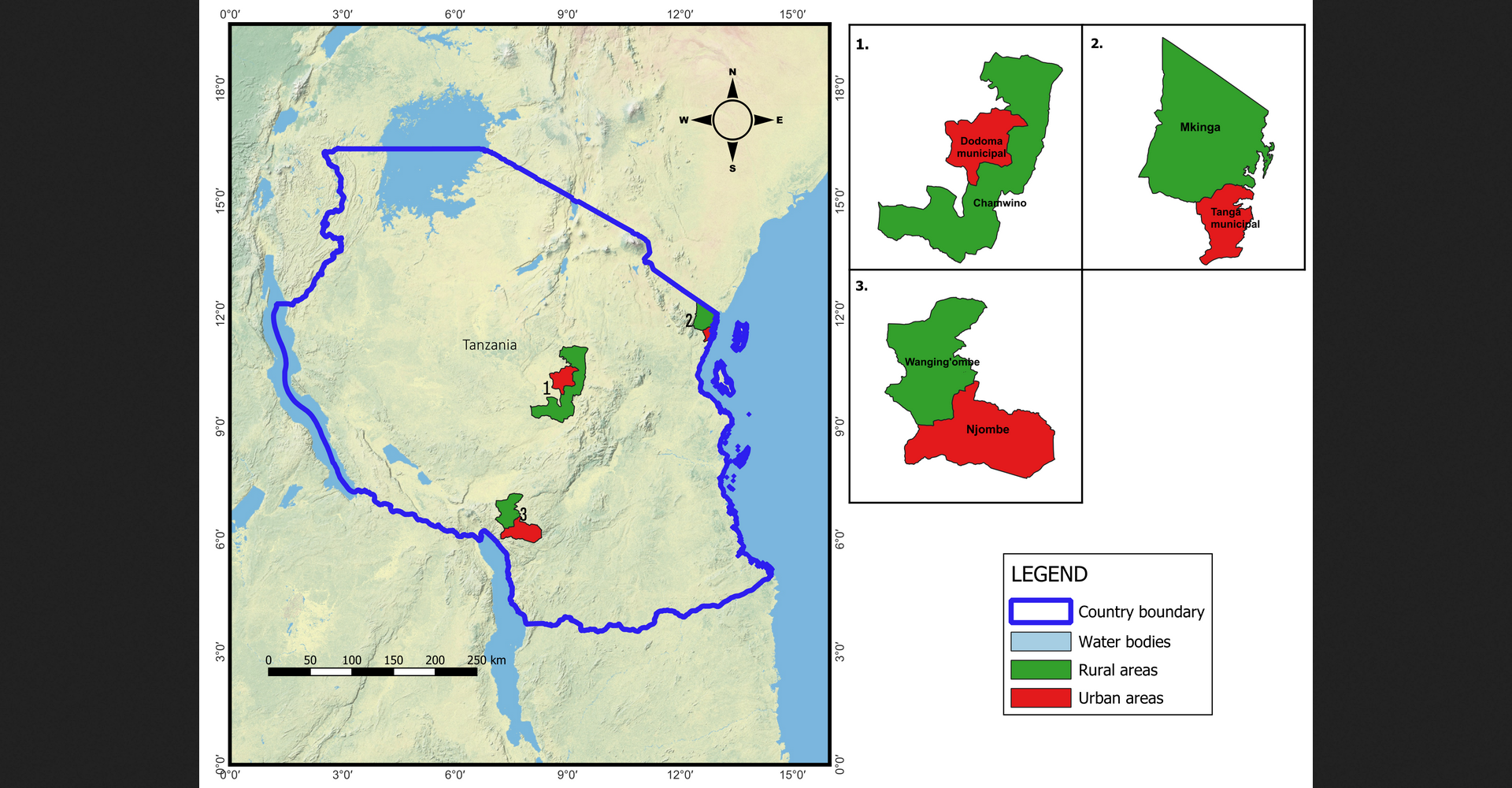


Figure 1: Study site Area of data collection

Source: Authors

## 2.3 Methodology

The study utilized a mixed-methods approach, combining both quantitative and qualitative research techniques to provide a comprehensive understanding of gendered patterns in food consumption.

For the quantitative analysis, descriptive statistics were employed, alongside graphical representations (e.g., charts and graphs), to illustrate household responses related to food consumption, perceptions of food cost and price variability, and coping strategies in male- and female-headed households. Frequencies and means were calculated to summarize the survey data and provide a clear picture of the gendered patterns in food consumption and affordability.

For the qualitative analysis, thematic and content analysis methods were used to analyze the data from the focus group discussions and in-depth interviews. Themes were identified based on recurrent patterns and issues related to food access, gender roles, and economic constraints, allowing for an in-depth understanding of how these factors influence dietary choices and nutritional outcomes in different household structures.

This mixed-methods design enabled the triangulation of findings, providing a richer and more nuanced understanding of the complex factors that shape food consumption patterns and nutritional disparities in Tanzanian households.

## 2.4 Summary Statistics

The summary statistics for the surveyed households are presented in the table below, which provides key descriptive information on household characteristics, head demographics, and socio-economic factors that influence food sourcing and consumption patterns.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | N | Mean | Std. Dev. | Min | Max |
| Household size | 300 | 5.12 | 2.277 | 1 | 16 |
| Sex of the Head (Male=1) | 300 | .733 | .443 | 0 | 1 |
| Marital status of the Head (Married=1) | 300 | .727 | .446 | 0 | 1 |
| *Education level of the Head* |  |  |  |  |  |
| No formal education | 300 | .09 | .287 | 0 | 1 |
| Primary | 300 | .613 | .488 | 0 | 1 |
| Secondary | 300 | .26 | .439 | 0 | 1 |
| Tertiary | 300 | .037 | .188 | 0 | 1 |
| Rural residence | 300 | .5 | .501 | 0 | 1 |
| Household head age | 300 | 41.317 | 15.117 | 18 | 85 |
| *Main Occupation of the Head* |  |  |  |  |  |
| Agriculture occupation | 300 | .4 | .491 | 0 | 1 |
| Government | 300 | .023 | .151 | 0 | 1 |
| Private | 300 | .47 | .5 | 0 | 1 |
| No occupation  Hhd weekly Income (TZS). | 300  300 | .107  42,712.5 | .309  91,913.73 | 0  2,500 | 1  1,500,000 |
| Distance to market (minutes) | 300 | 24.237 | 24.071 | 1 | 180 |
| Distance to major road (min) | 300 | 15.203 | 22.085 | 1 | 180 |

The surveyed households had an average size of 5 members, with household sizes ranging from a minimum of 1 to a maximum of 16 members. The gender distribution of household heads shows that 73.3% of the households are male-headed, while 26.7% are female-headed. 73.7% of the household heads are married, highlighting a relatively high level of marital stability within the sample. The average age of household heads is 41.32 years, with ages ranging from 18 to 85 years.

In terms of education, a significant portion of household heads has completed primary education (61.3%), while 26% have secondary education, and a smaller fraction, 3.7%, have attained tertiary education. Notably, 9% of the household heads have no formal education, which may impact their access to information about nutrition and food security.

Regarding main occupations, 40% of the household heads are engaged in agriculture, 47% work in the private sector, and 2.3% are employed in government positions. Additionally, 10.7% of the household heads reported having no formal occupation.

The average weekly household income is approximately TZS 42,712.50, with a wide range observed from TZS 2,500 to TZS 1,500,000. This variation suggests significant income disparities that could influence the purchasing power for nutritious foods.

On average, households are situated 24 minutes away from the nearest market and 15 minutes from a major road, which may affect the accessibility and affordability of food, particularly for rural households.

These summary statistics provide essential context for understanding the socio-economic and demographic factors that contribute to food access and consumption patterns in the study areas.

# Results

This section presents the results of the study, focusing on gendered patterns in food consumption, awareness, and accessibility. It examines the influence of nutrition training, decision-making processes, and economic constraints on food choices. Additionally, it explores perceptions of food prices and adaptive strategies employed by male- and female-headed households and men and women within household to cope with food affordability challenges.

## 3.1 Nutrition Training, Awareness and Food Consumption Decision-Making

This section explores the gender disparities in nutrition training, awareness, and decision-making processes regarding food consumption within households, focusing on how these factors influence dietary patterns.

Table 1: Nutrition Training Participation and Gender Role Contents

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Training on nutrition | | | Did the training involve aspects of gender role | | |
| Female-headed | Male-headed | Total | Female-headed | Male-headed | Total |
| Yes | 30 | 45.45 | 41.33 | 50 | 40 | 41.94 |
| No | 70 | 54.55 | 58.67 | 50 | 60 | 58.06 |

Table 1 highlights the disparities in nutrition training received by households. In male-headed households, 45.45% reported receiving nutrition training compared to 30% in female-headed households. However, both types of households showed similar levels of training that included gender role aspects, with 50% of female-headed households and 40% of male-headed households indicating such coverage. These findings suggest that while training is more prevalent in male-headed households, awareness of gender roles in nutrition is addressed in both contexts.

Table 2: Recipients of Nutrition Training by Gender

|  |  |  |  |
| --- | --- | --- | --- |
| Who received training | | | |
|  | Female-headed | Male-headed | Total |
| Male adults | 4.17 | 25 | 20.97 |
| Female adults | 95.83 | 90 | 91.13 |
| Male children | 4.17 | 5 | 4.84 |
| Female children | 0 | 4 | 3.23 |

Table 2 illustrates the distribution of nutrition training within the households surveyed. A significant majority of the training was received by female adults, accounting for 95.83% of female-headed and 90% of male-headed households. In contrast, male adults received very little training, with only 4.17% of female-headed households and 25% of male-headed households participating. This disparity points to a gender imbalance, suggesting that women are often prioritized in nutrition education or that men may not perceive nutrition as their responsibility. The findings are similar to Li (2017) that demonstrated that women are often prioritized for health-related education due to their roles as primary caregivers. The low percentage of children receiving nutrition training indicates a missed opportunity to engage all household members in improving nutritional knowledge.

Table 3: Changes in Food Consumption Patterns Post-Training

|  |  |  |  |
| --- | --- | --- | --- |
| Change in consumption pattern due to training | | | |
|  | Female-headed | Male-headed | Total |
| Increased consumption of fruits and vegetables | 83.33 | 75 | 76.61 |
| Decreased intake of processed foods and sugary drinks | 41.67 | 38 | 38.71 |
| Reduced portion size and mindful eating | 12.5 | 20 | 18.55 |
| Greater variety in food choices and meal planning | 20.83 | 30 | 28.23 |
| Understanding of nutritional labels and ingredients | 8.33 | 19 | 16.94 |
| Adoption of healthier cooking methods | 16.67 | 22 | 20.97 |
| Enhance awareness of dietary needs and food related behaviours | 16.67 | 18 | 17.74 |

Table 3 presents changes in consumption patterns attributed to nutrition training. In both household types, a high percentage reported increased consumption of fruits and vegetables (83.33% for female-headed and 75% for male-headed) after receiving nutrition training. Other positive changes included reduced intake of processed foods and a broader variety in food choices. These findings align with the study by Saaka and Hoeschle-Zeledon (2021), which emphasized that nutrition education significantly enhances fruit and vegetable consumption in households. While the overall impact of training on food consumption patterns is evident, the data indicates room for improvement in aspects such as understanding nutritional labels and adopting healthier cooking methods, particularly in female-headed households.

Table 4: Awareness of Nutritious Foods and Balanced Diets by Household Member

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Who is more aware about nutritious foods in a household | | | Who in your household tends to be more aware about “Balanced Diet” | | |
| Female-headed | Male-headed | Total | Female-headed | Male-headed | Total |
| Male adults | 11.25 | 49.09 | 39 | 8.75 | 49.55 | 38.67 |
| Female adults | 63.75 | 75 | 72 | 67.5 | 78.64 | 75.67 |
| Male children | 11.25 | 8.18 | 9 | 7.5 | 8.64 | 8.33 |
| Female children | 20 | 8.18 | 11.33 | 15 | 9.55 | 11 |

Awareness of nutritious foods and balanced diets is predominantly higher among female household members. In Table 4, 63.75% of females in female-headed households are aware of nutritious foods, while only 11.25% of males demonstrate similar awareness. For balanced diets, 67.5% of females in female-headed households are knowledgeable compared to 8.75% of their male counterparts, highlighting a gender gap in nutritional awareness. These findings are consistent with other studies, such as Barak et al. (2021), which highlight that women are typically more engaged in nutrition education and awareness within families compared to men.

Table 5: Household Food Budgeting Practices

|  |  |  |  |
| --- | --- | --- | --- |
| Does your household set budget for food | | | |
|  | Female-headed | Male-headed | Total |
| Yes | 36.25 | 50.91 | 47 |
| No | 63.75 | 49.09 | 53 |

Budget allocation presents further insights. Table 5 shows that 63.75% of female-headed households do not set a food budget, compared to 49.09% in male-headed households. This lack of budgeting in female-headed households may lead to difficulties in managing food expenses and prioritizing nutrition, ultimately affecting the overall dietary quality and food security.

Table 6: Decision-Making in Food Consumption and Budgeting

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Who primarily makes decision regarding what food to consume | | | Who primarily makes decision regarding food budget and purchase | | |
| Female-headed | Male-headed | Total | Female-headed | Male-headed | Total |
| Male spouse | 1.25 | 16.82 | 12.67 | 1.25 | 29.55 | 22 |
| Female spouse | 51.25 | 52.73 | 52.33 | 50 | 38.18 | 41.33 |
| Jointly | 2.5 | 27.73 | 21 | 3.75 | 30 | 23 |
| Other members | 45 | 2.73 | 14 | 45 | 2.27 | 13.67 |

Decision-making regarding food consumption reveals that female spouses often dominate this area, regardless of household type. According to Table 6, 52.33% of food consumption decisions are made by female spouses, with a notable influence from male spouses in male-headed households (16.82%). Budgeting decisions also involve female spouses significantly (50%) in female-headed households, while male spouses contribute notably in male-headed households (29.55%). %). These findings align with Lundh (2022), who notes that decisions about food are typically made by female adults, whether they are spouses or household heads. This indicates that traditional gender roles remain prevalent, but women play a pivotal role in shaping nutritional choices.

Table 7: Decision-Making in Food Production for Home and Sale

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Who primarily make decision regarding what food to produce for home consumption | | | Who primarily make decision regarding what food to produce for sale | | |
|  | Female-headed | Male-headed | Total | Female-headed | Male-headed | Total |
| Male spouse | 1.25 | 21.36 | 16 | 1.25 | 26.36 | 19.67 |
| Female spouse | 31.25 | 18.18 | 21.67 | 26.25 | 7.73 | 12.67 |
| Jointly | 3.75 | 33.64 | 25.67 | 3.75 | 33.64 | 25.67 |
| Other members | 26.25 | 2.27 | 8.67 | 15 | 1.82 | 5.33 |
| We don't produce | 37.5 | 24.55 | 28 | 30 | 19.09 | 22 |
| We don’t sell |  |  |  | 23.75 | 11.36 | 1 |

Table 7 examines decision-making regarding food production for home consumption and sale. In both household types, joint decisions play a significant role, with 33.64% of decisions being made collaboratively in male-headed households. However, in female-headed households, other members significantly influence food production, accounting for 26.25% of decisions regarding home consumption. Female spouses make 31.25% of these decisions, highlighting their crucial role, while male spouses have minimal influence (1.25%). In contrast, male spouses dominate decision-making in male-headed households, with 21.36% for home consumption and 26.36% for sales. These findings are consistent with the study by Aberman and Roopnaraine (2020), which highlights that household decisions on crop production, consumption, and sale are often made jointly. This indicates that, while female spouses are key decision-makers, the dynamics reveal traditional roles and the importance of collective decision-making within households.

The findings reveal significant gender differences in nutrition training and its impact on food consumption. Male-headed households receive more training (45.45%) compared to female-headed households (30%), although both acknowledge gender roles in the training. Female adults are the primary recipients of this education, indicating a gender imbalance that limits broader household engagement, particularly among children.

Awareness of nutritious foods and balanced diets is notably higher among females, with 63.75% of females in female-headed households demonstrating knowledge, compared to just 11.25% of males. Following training, both household types reported increased fruit and vegetable consumption, yet understanding of nutritional labels remains low, suggesting room for improvement. Additionally, the lack of a food budget in 63.75% of female-headed households highlights challenges in managing food expenses, which can adversely affect nutritional quality. Overall, traditional gender dynamics continue to influence food decision-making, emphasizing the need for targeted interventions to enhance food security and health outcomes for all household members.

## 3.2 Accessibility, Utilization and Consumption Pattern of Nutritious Food

This section examines the accessibility, utilization, and consumption patterns of nutritious foods, highlighting gender disparities and their implications for dietary choices and overall health outcomes.

Table 8: Main Source of Food

|  |  |  |  |
| --- | --- | --- | --- |
| Main source of food | | | |
|  | Female-headed | Male-headed | Total |
| Own production | 26.25 | 43.18 | 38.67 |
| Periodic market | 32.5 | 15.91 | 20.33 |
| Local market | 17.5 | 19.09 | 18.67 |
| Retail market | 22.5 | 21.36 | 21.67 |
| food aid/support | 1.25 | 0 | 0.33 |
| Others | 0 | 0.45 | 0.33 |

The data reveals significant gender disparities in food sourcing. As illustrated in Table 8, male-headed households primarily depend on their own production (43.18%), while female-headed households tend to utilize periodic markets more (32.5%). Household’s own production plays a key role in improving foo self-sufficiency (Pinto-Correia et al., 2019). This indicates that male-headed households demonstrate greater self-sufficiency, which enhances their food security. However, a substantial portion of both household types relies on periodic markets, stressing their importance as vital access points for nutritious food. The reliance on external sources, including local and retail markets, highlights the crucial role these markets play in shaping dietary choices and food security, particularly in areas where self-production is limited. Overall, the significance of local markets is evident, serving as a major source of food for both household types.

Table 9: Accessibility of Nutritious Food

|  |  |  |  |
| --- | --- | --- | --- |
| Accessibility of nutritious food | | | |
|  | Female-headed | Male-headed | Total |
| Very accessible | 11.25 | 15 | 14 |
| Somewhat accessible | 52.5 | 60.91 | 58.67 |
| Not very accessible | 33.75 | 22.73 | 25.67 |
| Not accessible at all | 2.5 | 1.36 | 1.67 |

Table 9 illustrates the accessibility of nutritious food among different household types. Approximately 75% of male-headed households report that nutritious food is very or somewhat accessible, compared to only 63% of female-headed households. This disparity indicates that male-headed households generally experience better access to nutritious food options. Additionally, 33.75% of female-headed households indicate that nutritious food is not very accessible, further highlighting the challenges they face. Overall, these findings reveal significant differences in access to nutritious food, with implications for dietary choices and nutritional adequacy.

Table 10: Factors Influencing Accessibility of Nutritious Food

|  |  |  |  |
| --- | --- | --- | --- |
| Factors influencing accessibility of nutritious food | | | |
|  | Female-headed | Male-headed | Total |
| Income level | 95 | 92.73 | 93.33 |
| Proximity to market | 6.25 | 10.45 | 9.33 |
| Knowledge about nutrition | 17.5 | 27.27 | 24.67 |

Income level emerges as a crucial factor affecting access to nutritious food (Headey et al., 2024). Table 10 reveals that 95% of female-headed households and 92.73% of male-headed households cite income as a significant barrier. While proximity to markets and nutritional knowledge also play roles, their influence is comparatively minor, accentuating the dominant impact of economic factors on food access across both household types.

Table 11: Awareness of Nutritious Food When Purchasing

|  |  |  |  |
| --- | --- | --- | --- |
| How do you rate your awareness of nutritious food when purchasing | | | |
|  | Female-headed | Male-headed | Total |
| Very much aware | 3.75 | 5.45 | 5 |
| Sufficiently aware | 12.5 | 18.18 | 16.67 |
| A little aware | 67.5 | 57.73 | 60.33 |
| Not aware at all | 16.25 | 16.36 | 16.33 |
| Not sure | 0 | 2.27 | 1.67 |

Trust and awareness are important when marking decision to purchase healthy food (Firoozzare et al., 2024). Table 11 evaluates household members' awareness of nutritious food when making purchases. Only 23% of male-headed households report being very or sufficiently aware, while awareness is even lower in female-headed households at approximately 16%. The majority of respondents, particularly in female-headed households, indicate they are only a little aware (67.5%), with a small fraction claiming no awareness at all (16.25%). This low level of awareness emphasizes the need for enhanced nutrition education, as it plays a crucial role in making informed dietary choices and improving overall health outcomes.

Table 12: Factors Influencing Decision to Purchase Nutritious Food

|  |  |  |  |
| --- | --- | --- | --- |
| Factors influencing decision to purchase nutritious food | | | |
|  | Female-headed | Male-headed | Total |
| Price | 95 | 86.82 | 89 |
| Taste and preference | 10 | 19.55 | 17 |
| Health benefits | 3.75 | 10.45 | 8.67 |
| Convenience | 8.75 | 15 | 13.33 |

Price is the primary consideration when purchasing nutritious food (Alam et al., 2024, Ameye et al., 2021), particularly for female-headed households, as indicated in Table 12 (95%). While taste and health benefits also factor into decisions, their impact is markedly lower. This highlights the critical role of affordability in shaping dietary choices and points to economic constraints that influence food purchasing behaviours.

Table13: Meal Frequency Distribution by Gender of the Head of Households

|  |  |  |  |
| --- | --- | --- | --- |
| Number of meals a household has per day | | | |
|  | Female-headed | Male-headed | Total |
| One meal | 1.25 | 1.82 | 1.67 |
| Two meals | 52.5 | 29.09 | 35.33 |
| Three meals | 45 | 65.45 | 60 |
| Four+ meals | 1.25 | 3.64 | 3 |

Table 13 presents the distribution of meal frequency among households, highlighting significant differences in dietary habits. While a notable portion of male-headed households consumes three meals per day, 31% of male-headed households eat only one or two meals daily. In contrast, 53.75% of female-headed households also consume only one or two meals. This reflects the nutritional challenges faced by female-headed households, potentially impacting their overall health and well-being. The disparity suggests that economic constraints and traditional gender roles may limit access to resources and food choices for women.

Table 14: Frequency of Nutritious Food and Balanced Diet Consumption by Household Type

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | How often do you eat nutritious foods in your household? | | | How often do you eat a “balance diet” in your household? | | |
| Female-headed | Male-headed | Total | Female-headed | Male-headed | Total |
| In every meal of the day | 3.75 | 13.18 | 10.67 | 2.5 | 5.91 | 5 |
| Once everyday | 16.25 | 21.82 | 20.33 | 11.25 | 16.36 | 15 |
| A few days in a week | 38.75 | 35.45 | 36.33 | 40 | 37.73 | 38.33 |
| Once a week | 15 | 7.73 | 9.67 | 11.25 | 11.82 | 11.67 |
| Very rarely | 26.25 | 20.45 | 22 | 32.5 | 23.18 | 25.67 |
| Never | 0 | 1.36 | 1 | 2.5 | 5 | 4.33 |

Consumption patterns further reflect these disparities. Table 14 presents insights into the frequency of nutritious food and balanced diet consumption among households, revealing significant disparities between female-headed and male-headed households. Female-headed households consume nutritious foods daily at a rate of 3.75%, while male-headed households do so at 13.18%. Additionally, the combined proportions of those who consume nutritious foods very rarely or never stand at 26.25% for female-headed households and 21.81% for male-headed households, indicating that female-headed households face greater challenges in accessing nutritious foods. For balanced diets, 2.5% of female-headed households consume a balanced diet at every meal, compared to 5.91% of male-headed households. The combined figures for those consuming a balanced diet very rarely or never are 35% for female-headed households and 28.18% for male-headed households, further highlighting the nutritional challenges faced by female-headed households. Overall, these findings point to the need for targeted interventions to improve dietary practices, particularly among female-headed households.

Table 15: Meal Consumption Patterns and Balanced Diet Intake by Household Members

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Who consumes more meals in day in a household | | | Who in your household tends to eat more “Balanced Diet” | | |
| Female-headed | Male-headed | Total | Female-headed | Male-headed | Total |
| Male adults | 18.75 | 36.82 | 32 | 16.25 | 50.45 | 41.33 |
| Female adults | 51.5 | 37.27 | 41 | 52.5 | 50.45 | 51 |
| Male children | 42.5 | 59.09 | 54.67 | 51.25 | 59.09 | 57 |
| Female children | 61.25 | 64.09 | 63.33 | 62.5 | 65.45 | 64.67 |

Table 15 examines meal consumption and balanced diet patterns within households, revealing notable gender disparities. Among male adults, 36.82% in male-headed households consume more meals compared to 18.75% in female-headed households. In contrast, female adults in female-headed households are more likely to consume meals, with 51.5% compared to 37.27% in male-headed households.

Interestingly, male children also show higher consumption rates in male-headed households (59.09%) versus female-headed (42.5%). However, female children consistently consume more meals across both types, with 61.25% in female-headed households and 64.09% in male-headed households.

When it comes to eating a balanced diet, male adults in male-headed households demonstrate higher rates (50.45%) than their female-headed counterparts (16.25%). Conversely, female adults in both household types show similar levels of balanced diet consumption, with slightly higher figures in female-headed households (52.5%). These findings highlight the varying dynamics of meal consumption and dietary choices within households, indicating the need for interventions tailored to enhance nutritional practices across different demographics.

## 3.3 Perceptions and Strategies Regarding Nutrient-Rich Food Prices

Understanding perceptions of nutrient-rich food prices is essential for addressing dietary choices. Our analysis aims to reveal how gender and household type influence perceptions of affordability, barriers to access, and coping strategies related to food pricing.

Table 16: Affordability of Nutritious Food by Household Type

|  |  |  |  |
| --- | --- | --- | --- |
| Affordability of nutritious food | | | |
|  | Female-headed | Male-headed | Total |
| Very affordable | 0 | 0.45 | 0.33 |
| Affordable | 27.5 | 34.55 | 32.67 |
| Expensive | 52.5 | 45 | 47 |
| Very expensive | 20 | 20 | 20 |

This table reveals that a considerable proportion of both female-headed (52.5%) and male-headed (45%) households perceive nutritious food as expensive. Notably, no female-headed households find these foods very affordable, highlighting economic constraints that may limit healthy dietary choices. The results align with findings from previous research (Raghunathan et al., 2021; Ryckman et al., 2021; Bai et al., 2021; Herforth et al., 2020; WFP, 2019; Hirvonen et al., 2019). These studies consistently highlight that the affordability of nutritious food is a significant barrier to obtaining a healthy, balanced diet that meets dietary needs.

Table 17: Comparison of Nutrient-Rich Food Prices to Less Nutritious Foods

|  |  |  |  |
| --- | --- | --- | --- |
| Comparison of nutrient-rich food prices to less nutritious foods | | | |
|  | Female-headed | Male-headed | Total |
| Very high | 23.75 | 20.91 | 21.67 |
| Higher | 52.5 | 54.09 | 53.67 |
| Almost the same | 12.5 | 14.09 | 13.67 |
| Lower | 11.25 | 10.91 | 11 |

The data reveals that over 75% of both female-headed and male-headed households perceive nutrient-rich foods as more expensive compared to less nutritious options. This widespread perception emphasizes a significant barrier to accessing healthier food choices, potentially leading to compromises in dietary quality across both household types. These results are similar to findings by (Masters et al., 2018; Raghunathan et al., 2021; Ryckman et al., 2021; Bai et al., 2021) that show that majority of households perceive that nutrient-rich foods (animal source foods, legumes, pulses, and fruits) to be more expensive compared to less nutritious foods (foods high in sugar, salt, and fats).

Table 18: Effects of Rising Food Prices on Consumption Patterns

|  |  |  |  |
| --- | --- | --- | --- |
| Effect of rise in food prices | | | |
|  | Female-headed | Male-headed | Total |
| Consumption of less nutritious food | 78.75 | 69.55 | 72 |
| Consumption of less food | 47.5 | 43.64 | 44.67 |
| Switching to less desirable food | 33.75 | 32.27 | 32.67 |

The findings indicate that a majority of households, regardless of gender, feel the impact of rising food prices. Among female-headed households, 78.75% report consuming less nutritious food, compared to 69.55% of male-headed households. Additionally, 47.5% of female-headed and 43.64% of male-headed households are consuming less overall food. Furthermore, both groups show similar tendencies in switching to less desirable foods, with 33.75% of female-headed and 32.27% of male-headed households making this adjustment. These patterns reflect the broader economic pressures influencing food choices across different household types. These results are consistent with studies by Brinkman (2020), Bai (2021), and Headey (2024), which demonstrate that rising food prices lead households to alter their consumption patterns, often reducing dietary diversity and opting for less nutritious foods.

Table 19: Perceived Barriers to Accessing Nutritious Food

|  |  |  |  |
| --- | --- | --- | --- |
| Effect of food affordability on access and utilization of nutritious option | | | |
|  | Female-headed | Male-headed | Total |
| Significant barrier | 50 | 34.55 | 38.67 |
| Somewhat a barrier | 46.25 | 55.45 | 53 |
| Not a barrier | 3.75 | 10 | 8.33 |

The data reveals significant differences in how food affordability affects access to nutritious options between female-headed and male-headed households. A notable 50% of female-headed households consider affordability a significant barrier, compared to 34.55% of male-headed households. Additionally, 46.25% of female-headed respondents feel it is somewhat a barrier, while 55.45% of male-headed households share this sentiment. Only 3.75% of female-headed households reported that affordability is not a barrier, in contrast to 10% of male-headed households. This indicates that female-headed households face greater challenges in accessing nutritious food options, highlighting the need for targeted interventions to address these disparities. These results are consistent with studies by Brinkman (2020), Bai (2021), and Headey (2024), which demonstrate that low affordability leads households to alter their consumption patterns, often reducing dietary diversity and opting for less nutritious foods.

Table 20: Responses to Increases in Nutritious Food Prices

|  |  |  |  |
| --- | --- | --- | --- |
| Response to sharp increase in nutritious food price | | | |
|  | Female-headed | Male-headed | Total |
| Seeking cheaper alternative | 66.25 | 57.73 | 60 |
| Adjusting consumption pattern | 51.25 | 47.27 | 48.33 |
| Cutting back on non-essentials | 50 | 45.91 | 47 |
| Growing food at home | 27.5 | 35.91 | 33.67 |
| Seeking additional source of income | 8.75 | 8.18 | 8.33 |
| Bulk buying and stockpiling | 6.25 | 14.09 | 12 |
| Reduce food waste | 5 | 8.64 | 7.67 |

Both female-headed and male-headed households respond to rising nutritious food prices by seeking cheaper alternatives, with 66.25% of female-headed and 57.73% of male-headed households adopting this strategy. Many also adjust their consumption patterns, with 51.25% of female-headed and 47.27% of male-headed households changing their eating habits. Notably, 27.5% of female-headed households grow food at home, compared to 35.91% of male-headed households, showing a more proactive approach among men. Additionally, 6.25% of female-headed households and 14.09% of male-headed households engage in bulk buying. These differences reflect varying coping strategies between household types. These variations reflect differing levels of resource access and coping mechanisms between household types. Consistent with Brinkman (2020), Bai (2021), and Headey (2024), households often reduce dietary diversity and shift to cheaper, calorie-dense, nutrient-deficient foods such as oils and sugars

Table 21: Coping Strategies in Response to Nutritious Food Price Changes

|  |  |  |
| --- | --- | --- |
| Coping strategies to changes of nutritious food prices | | |
|  | Females | Males |
| Seeking cheaper sources | 60.07 | 63.24 |
| Meal planning and budgeting | 48.12 | 50.99 |
| Reducing food waste | 38.23 | 17.39 |
| Adjusting Portion size | 30.38 | 29.64 |
| Growing fruits and vegetables | 22.87 | 17 |
| Utilizing leftover | 19.45 | 7.51 |
| Prioritizing cheaper staple food | 17.41 | 18.18 |
| Use food supplements | 3.75 | 3.16 |
| Sharing resources with neighbours | 1.02 | 0.79 |
| Others | 1.02 | 6.32 |

The coping strategies employed by female-headed and male-headed households show notable differences. Both genders prioritize seeking cheaper sources, with 60.07% of females and 63.24% of males adopting this approach. Meal planning and budgeting are similarly emphasized, with 48.12% of females and 50.99% of males utilizing these strategies. However, significant disparities arise in reducing food waste, where 38.23% of females practice this compared to only 17.39% of males. Additionally, a higher proportion of females (22.87%) grow fruits and vegetables at home compared to males (17%), indicating that women may be more inclined to engage in sustainable practices to cope with rising food prices.

Table 22: Strategies to Enhance Consumption of Nutritious Food and Balanced Diet

|  |  |  |  |
| --- | --- | --- | --- |
| Ways to improve consumption of nutritious food and balanced diet | | | |
|  | Female-headed | Male-headed | Total |
| Meal planning | 50 | 50.91 | 50.67 |
| More fruits and vegetables | 55 | 52.73 | 53.33 |
| Growing food | 28.75 | 25 | 26 |
| Eating meals together as a family | 27.5 | 32.73 | 31.33 |
| Seeking nutritional guidance | 23.75 | 12.27 | 15.33 |
| Limiting processed and sugary foods | 12.5 | 19.55 | 17.67 |
| Cooking from scratch | 6.25 | 12.27 | 10.67 |

The data reveals that both female-headed (50%) and male-headed (50.91%) households prioritize meal planning equally as a strategy to improve nutritious food consumption. Notably, more female-headed households (55%) emphasize increasing fruits and vegetables compared to male-headed households (52.73%). Growing food at home is slightly favoured by female-headed households (28.75%) versus male-headed households (25%). Interestingly, a higher percentage of male-headed households (19.55%) advocate for limiting processed and sugary foods than their female counterparts (12.5%). Overall, these findings highlight commonalities and differences in approaches to enhancing dietary quality between household types.

The data reveals significant insights into how perceptions of food prices impact dietary choices across different household types. A majority of both female-headed (52.5%) and male-headed (45%) households perceive nutritious food as expensive, with no female-headed households considering these foods very affordable. This suggests that economic constraints are a substantial barrier to healthy eating, particularly for female-headed households, which may face more financial pressure overall.

# Discussion

The study findings highlight critical factors influencing food consumption, nutrition training, and decision-making across gender lines. A significant gender difference was observed in nutrition training, with male-headed households receiving more training than female-headed ones. Specifically, 45.45% of male-headed households had access to nutrition education compared to 30% of female-headed households. Despite this, both groups recognized gender roles in the distribution of training, with females being the primary recipients due to their role as caregivers and meal preparers (Lundh, 2022). This trend aligns with previous findings by Li (2017) and Barak et al. (2021), who emphasized that women are typically the focus of nutrition education due to their caregiving responsibilities.

The training's impact was evident in the increased consumption of fruits and vegetables. Female-headed households showed an 83.33% increase in fruit and vegetable intake, while male-headed households had a 75% increase. These results are consistent with Boeing et al. (2012), who found that higher fruit and vegetable consumption is linked to improved health. Privitera et al. (2018) noted that women are more likely to prioritize health over cost when purchasing these foods, even in the face of price hikes. Understanding nutritional labels also improved in both groups, though more so in male-headed households (19%) than female-headed ones (8.33%), supporting Grunert et al. (2010), who found that label knowledge fosters healthier eating habits. Moreover, healthier cooking methods were adopted, with a larger increase observed in male-headed households (20.97%) than female-headed ones (16.67%), highlighting the role of cooking methods in nutrient retention (Razzak et al., 2023). Additionally, there was a reduction in the consumption of processed foods and sugary drinks in both groups, with female-headed households showing a more significant decrease (41.67%) than male-headed ones (38.71%), which aligns with research indicating the health benefits of reducing processed foods (Monteiro et al., 2018).

Regarding food budgeting and consumption decisions, women in female-headed households were primarily responsible for food management, while men assumed this role in male-headed households (Mohammed et al., 2023). However, female-headed households were less likely to set food budgets, which was more common in male-headed households, where joint decision-making was observed. These results emphasize that traditional gender roles still dominate food-related decision-making, which suggests that interventions targeting both men and women are necessary to promote equitable nutrition education, budgeting, and food security.

Economic and social factors also played a significant role in the accessibility of nutritious food. Female-headed households faced greater challenges in accessing nutritious food due to income disparities. Many reported that nutritious food was "not very accessible," with the limited financial resources of female-headed households constraining their ability to purchase healthier options (Headey et al., 2024). These households tend to rely more heavily on periodic markets, which further exacerbates food insecurity, as noted by Pinto-Correia et al. (2019). Price was identified as the most influential factor in food purchasing, particularly for female-headed households, who must balance affordability with nutrition. This finding aligns with previous research indicating that lower-income households prioritize cost over health when purchasing food (Herforth et al., 2020; Hirvonen et al., 2019; Masters et al., 2018).

The study also found that meal frequency and dietary diversity were lower in female-headed households. These households consumed fewer meals, often eating only one or two meals a day, which points to the broader issue of food insecurity. In contrast, male-headed households, which generally had better access to markets and higher incomes, consumed more balanced meals, aligning with findings from Ryckman et al. (2021) and Bai et al. (2021) that suggest higher-income households have better dietary habits. Proximity to markets was also a factor, though it was less significant than income and price, indicating that economic factors directly affect access to nutritious food (Kuai & Zhao, 2017; Hu et al., 2020).

Women's central role in food security within households is critical, especially in female-headed households, where they are often the primary decision-makers regarding food purchases and meal preparation. Their involvement in food management influences nutritional outcomes, especially regarding dietary diversity (Quisumbing & Doss, 2021; Clement et al., 2019). However, despite their key role, female-headed households face significant barriers to achieving food security and balanced nutrition, emphasizing the need for interventions that address these gender-based disparities (Firoozzare et al., 2024).

The perceptions of food prices also highlight gender-based challenges. A large portion of both female-headed (52.5%) and male-headed (45%) households perceive nutritious foods as expensive, with none of the female-headed households viewing these foods as "very affordable." This perception mirrors earlier research, which identified food affordability as a major barrier to healthy eating (Raghunathan et al., 2021; Ryckman et al., 2021; Bai et al., 2021). The economic pressures on female-headed households were more pronounced, with 78.75% reporting fewer nutritious food purchases due to rising prices compared to 69.55% of male-headed households. This pattern is consistent with studies showing that economic pressures disproportionately affect female-headed households, leading to poorer dietary choices and potentially worse health outcomes (Compton et al., 2010; Kumar & Quisumbing, 2013).

In response to rising food prices, households across both groups sought cheaper alternatives, but notable differences in coping strategies emerged. More male-headed households (35.91%) reported growing food at home compared to female-headed households (27.5%). This discrepancy suggests that male-headed households may have better access to resources or adopt more proactive coping strategies, as confirmed by previous studies (Brinkman, 2020; Bai, 2021; Headey, 2024). Both groups shifted consumption patterns towards less nutritious, calorie-dense foods, which could negatively impact health and dietary diversity, as noted by Brinkman et al. (2010) and Headey & Alderman (2019).

Gender disparities in food access and coping mechanisms further reflect broader socioeconomic dynamics. Research by Muhammad et al. (2017) and Privitera et al. (2018) highlights thatwomen, particularly in low-income households, are more affected by food price increases. Despite this, women tend to prioritize the purchase of nutritious foods, even when prices rise, reflecting their critical role in household nutrition. These findings stress the need for policies that address food affordability, particularly for female-headed households, and emphasize the importance of financial and educational support to improve dietary quality.

# Conclusions and Policy Implications

This study highlights the significant gender disparities in nutritious food consumption and the factors influencing these patterns within Tanzanian households. Motivated by the growing concerns of food insecurity and gender inequalities, the research sheds light on the complex interplay between household decision-making, food affordability, and gender roles in food distribution. The data, collected through surveys, focus groups, and interviews, indicate that while both male- and female-headed households face challenges in accessing nutritious food, female-headed households experience more severe barriers, primarily due to lower incomes and greater economic pressures. Female-headed households were more likely to perceive nutritious food as unaffordable and, as a result, frequently opted for cheaper, less nutritious alternatives. Additionally, these households reported lower meal frequency and dietary diversity, pointing to the broader issue of food insecurity and limited access to healthy foods.

Despite these challenges, female-headed households displayed a higher uptake of nutrition education, which positively influenced their consumption of fruits and vegetables, highlighting the importance of nutrition training. However, male-headed households showed greater engagement in budgeting and food management, underscoring the role of joint decision-making in ensuring better nutritional outcomes. The study emphasizes the need for targeted interventions that consider gendered barriers to food access, particularly for female-headed households, who play a critical role in managing household nutrition. Policies aimed at improving food affordability, enhancing market access, and promoting gender-sensitive nutrition education are essential to improving food security and health outcomes, particularly for marginalized groups. These findings contribute to the broader discourse on food security and gender equality, offering valuable insights for achieving the United Nations Sustainable Development Goals related to hunger and gender equality.

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