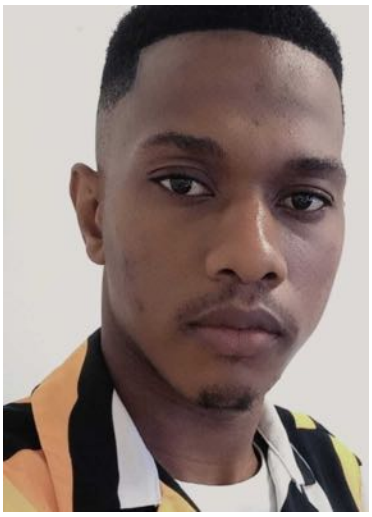
Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Afr. J. Food Agric. Nutr. Dev. 2024; 25(2): 26004-26020 https://doi.org/10.18697/ajfand.139.25390

Date	Submitted	Accepted	Published
	8th October 2024	12th December 2024	4th March 2025

KEY DRIVERS OF HOUSEHOLD FOOD SECURITY AND CONSUMPTION PATTERNS IN THE POST-COVID-19 PANDEMIC: LESSONS FROM UMZIMVUBU AND NTABANKULU LOCAL MUNICIPALITIES, EASTERN CAPE PROVINCE, SOUTH AFRICA

Skhephu A[1]*, Mayekiso A[1] and A Toko[1]



Akhona Skhephu

*Corresponding author email: 201923599@ufh.ac.za

Department of Agricultural Economics and Extension, University of Fort Hare, Private Bag X1314, Alice, 5700, South Africa

Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

ABSTRACT

Achieving food security and ensuring the consumption of healthy, nutritious food, and/or balanced diets for most rural households continues to be a challenge. This poses a significant barrier to achieving Sustainable Development Goals (SDGs) 1 (No Poverty) and 2 (Zero Hunger), disproportionately affecting rural communities and leaving fundamental human needs, such as reliable food access, unfulfilled. The current study, therefore, sought to assess the key drivers of household food security and consumption patterns in the post-COVID-19 pandemic. Primary data was collected from 165 randomly selected rural households to address the aim of the study. Descriptive analysis, Household Food Insecurity Experience Scale, and Multivariate binary logistic regression using Stata 15 software were employed to analyze the data. Descriptive statistics revealed variability in the consumption of various food groups, with starchy food (main staples and pulses) being the most consumed, followed by oil, meat or fish, sugar, vegetables, fruit, and milk (products). The results further indicated that households in these communities lack dietary diversification and balanced diets, with limited choice and reliance on affordable starchy foods. Notably, this monotonous diet regime has significant implications for micronutrient deficiencies, increased risk of chronic diseases, and compromised overall health and well-being, underscoring the need for targeted nutrition interventions to address the pervasive hunger and malnutrition in these communities. The main drivers of food insecurity in Umzimvubu and Ntabankulu municipalities are household income, monthly food expenditure, access to financial credit and the number of employed and unemployed household members. These factors, combined, significantly condition household food security status and consumption patterns across these rural areas. The study emphasizes the urgent need for targeted interventions to address the lack of formal qualifications, high unemployment and the high rate of food insecurity across these rural communities. Skill development, economic empowerment and financial inclusion for rural households are the most important strategic elements that should be considered when developing strategies to eradicate poverty and hunger. Households in rural areas should be enlightened about the importance of having and consuming balanced diets and the benefits of participating in farming.

Key words: Food security, post-COVID-19, binary logistic regression, household food consumption

ajfand Since 2001
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

INTRODUCTION

According to Fleetwood [1], food security refers to a state whereby individuals have physical and economic access to food that is safe, sufficient and nutritious. Food security consists of several dimensions [2]. These dimensions are food availability and stability, which makes food adequacy, food accessibility through one's production or purchase, and food utilization [3]. Along with other factors, these dimensions can influence individuals' food security, especially at the household level. Consequently, keeping up with food security for most households remains a major challenge, especially in rural areas [4].

Constant access to food items or resources and food security are crucial for an active, healthy human life [5]. The COVID-19 outbreak and associated lockdown restrictions, however, made it a lot more challenging for most individuals to maintain their diets and food security in general. Several researchers have noted that the COVID-19 lockdown restrictions changed the normal way of life for many individuals and significantly influenced their food security status [2, 4, 6].

In addition, most individuals (food secure and insecure) have since experienced variability in their diets and food consumption in general [7]. Therefore, most households are likely to continue to eat less healthy and nutritious foods. The COVID-19 lockdown restrictions further influenced most individuals' food security, with many struggling to afford a living [4]. To be precise, in South Africa, approximately 23.6% of the population in 2020 was found to be moderate to severe food insecure, with 14% considered to be extremely food insecure [9]. This means a significant proportion of the population in South Africa struggles to access the necessities, such as healthy and nutritious foods. With roughly 14% of the population facing severe challenges in accessing food, they are at risk of malnutrition and health issues.

A considerable proportion of the population remains economically weak and vulnerable to food insecurities [10], while most individuals continue to live below the poverty line of 663 ZAR per month. According to Olawuyi [11] and Mushunje [10], to address the issue of food insecurities, a multifaceted approach is required for a sustainable solution. For this reason, a substantial increase in food supplies has been observed over the years. However, limited or no access to food at the household level continues to be the main challenge [1]. This undermines the achievement of several Sustainable Development Goals (SDGs) and the fulfillment of individual and household basic needs. The objective for this study, therefore, was to find out if there are changes in food security and consumption in rural households in Umzimvubu and Ntabankulu local municipalities and the key drivers of this phenomenon. Also, how can the issue of food insecurity in these municipalities be

ajfand Since 2001
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

addressed? The current study provides insight into the key drivers of household food security and consumption patterns of rural households in Umzimvubu and Ntabankulu local municipalities. Exploring these factors can aid positively in addressing the issue of food insecurity and achieving the SDGs one (no poverty) and two (zero hunger).

CONCEPTUAL FRAMEWORK

Socio-economic characteristics primarily influence household food security. This has been demonstrated by several studies conducted in developing countries, like South Africa [12, 13, 14, 15, 16, 17]. Figure 1 presents the study's conceptual framework, which depicts the nexus between household food security, consumption of various food groups and household socioeconomic characteristics. Furthermore, the conceptual framework depicts how household socioeconomic characteristics, direct and indirect, influence food security at the household level.

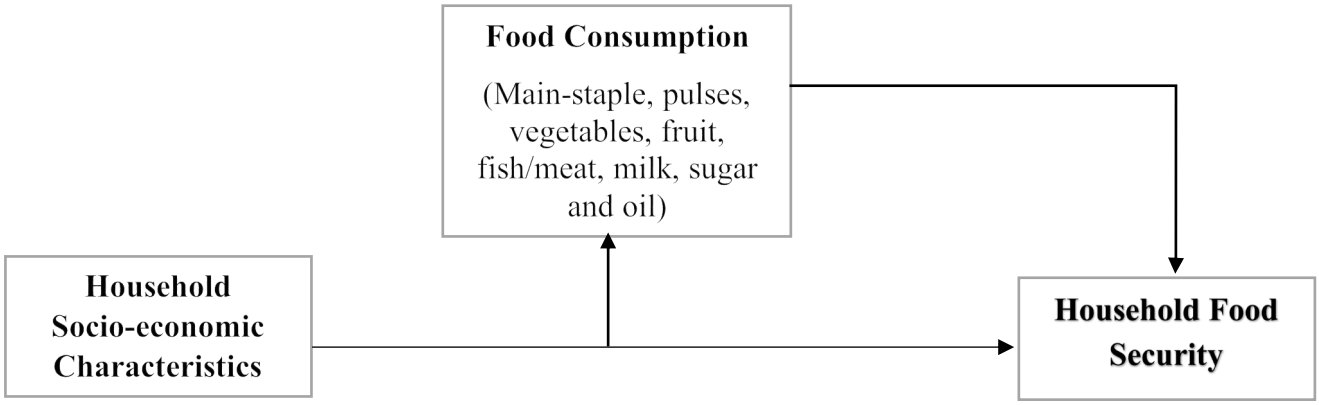


Figure 1: Conceptual framework of household food security
Source: Author's compilation

MATERIALS AND METHODS

Description of the study area

Alfred Nzo District is located in the northeastern part of the Eastern Cape province, it stretches from the Drakensberg mountains and borders Lesotho to the north, Harry Gwala District to the east, and O.R. Tambo District to the south. Alfred Nzo District is considered the poorest in the Eastern Cape, characterized by limited job opportunities, low income and education levels, slow business development, weak local markets and difficulties in accessing finance for small businesses. The district is largely rural, with most agricultural activities confined to subsistence farming [2]. It consists of four local municipalities: Mbizana, Ntabankulu, Umzimvubu and Matatiele [2]. This study focused on two of these local municipalities, Umzimvubu and Ntabankulu because they are identified as the most vulnerable to food insecurity [18].

ajfand Since 2001
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

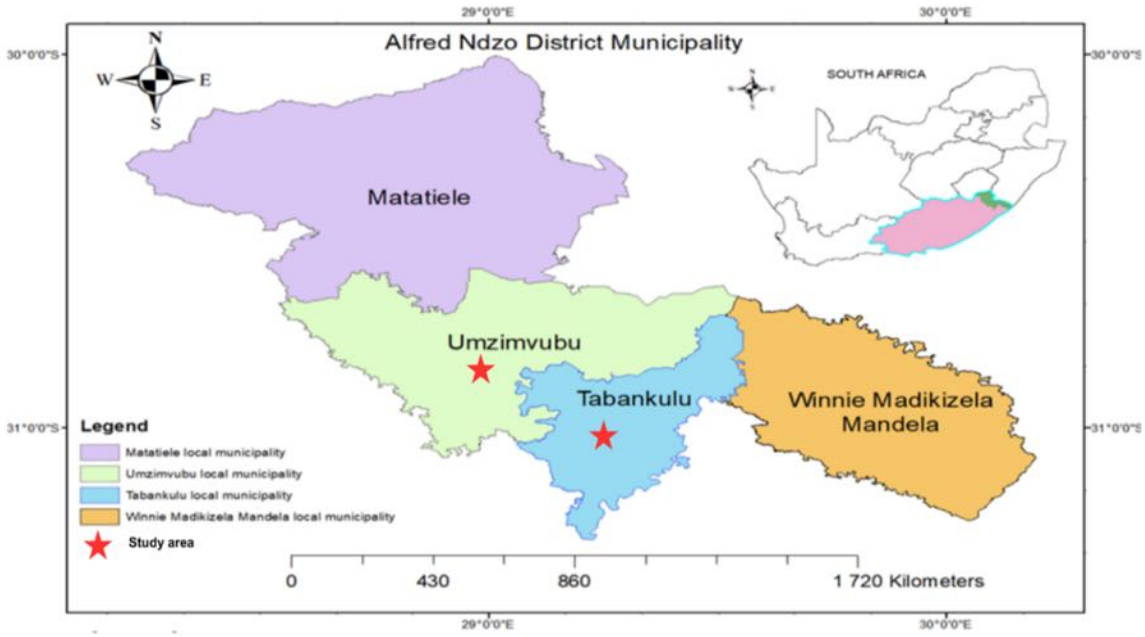


Figure 2: Map of Alfred Nzo District Municipality showing Umzimvubu and Ntabankulu local municipalities
Source: ArcGIS 10.4.1 (2023)

Data collection

The study employed a quantitative research approach and cross-sectional research design to collect primary data from household heads or the person in a position to make decisions for a household. A simple random sampling technique was employed, and 165 households were randomly selected. Structured questionnaires were used and administered during a single-visit interview, using the local language of IsiXhosa. The responses were captured using the language of English.

Ethics

The ethical clearance to collect data was obtained from the University of Fort Hare's Research Ethics Committee (UREC) with ethical clearance number MAY011SSKH01. Participants were asked to sign a consent form. Since the study involved human participants, ethical approval was necessary to ensure their safety and protection. Informed consent was obtained from all participants after explaining the research purpose and their role in it. Privacy and confidentiality were strictly upheld. Once data collection was completed, the completed questionnaires were stored securely in a locked cabinet and room to safeguard the participants' information.

Analysis tools

Table 1 lists the food groups that were used to determine household food consumption patterns in Umzimvubu and Ntabankulu local municipalities. The study

Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

also employed a multivariate binary logistic regression to determine the socioeconomic factors that influence household food security. The socio-economic characteristics of households as presented in Table 2, were treated as independent variables. These socioeconomic characteristics were then regressed against multivariate binary dependent variables, which for the study, was food security status (HFIS questions with binary responses (Yes/No).

Dependent variable	Dependent Variables outcomes	Logistic regression model
Y_1 -(HFIS [Q1-Q8]	$Y1 = \{ \begin{matrix} 1, & Yes \\ 0, & No \end{matrix}$	$P(\ \ ) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \cdots + \beta_{22} X_{16})}}$

Where:

- e is the base of the natural logarithm,
- β_0 is the intercept, and β_1, $\beta_0 \ldots$, β_{22} are the coefficients for predictor variables
- $X_1 \ldots$, X_{22} these are the coefficients representing the log odds of the event (dependent variable = 1) occurring for each respective model.

The explanatory variables that were fitted in the model are explained in Table 2.

RESULTS AND DISCUSSION

Socio-economic characteristics of households in the study area

Table 3 shows the socio-economic characteristics of the households in the study area. On average, the age of the household head was 49 years, with a standard deviation of 18, which suggests that the age of the respondents was clustered closely around 49 (below or above). The average household size consisted of five members, which shows a reasonable number of household members. This is consistent with the findings of Christian *et al.* [19], in a study conducted in the Eastern Cape, which found that the average household size was five persons.

Women made up the majority (62%) of the respondents in this study, while men made up about 38%. Women's dominance in this study can be associated with the fact that in most rural households, women are responsible for groceries and food preparation. Similarly, a study conducted in the same district, found that about 66.04% of the households were female-headed [20]. Contrary to that, another study found that most households were male-headed [19].

Regarding education, most (55%) of the respondents attended secondary school, while 27% only attended primary school, 12% never attended any formal education, 5% attended tertiary and the remaining 1% attended other forms of schooling. About 40% of the respondents were single, 39% married, 14% widowed, 3% divorced, 2% separated and the remaining 2% were living together. Approximately 85% of the respondents were not employed, only 15% were employed, as shown in Table 3. According to studies, a lack of educational qualifications among people, especially

ajfand Since 2001
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

household heads, results in poor income since professional and skilled occupations are scarce [17,21].

Food Consumption Patterns

This section presents food consumption and distribution in the post-COVID-19 pandemic from the study area (Umzimvubu and Ntabankulu municipalities), as shown in Figure 3.

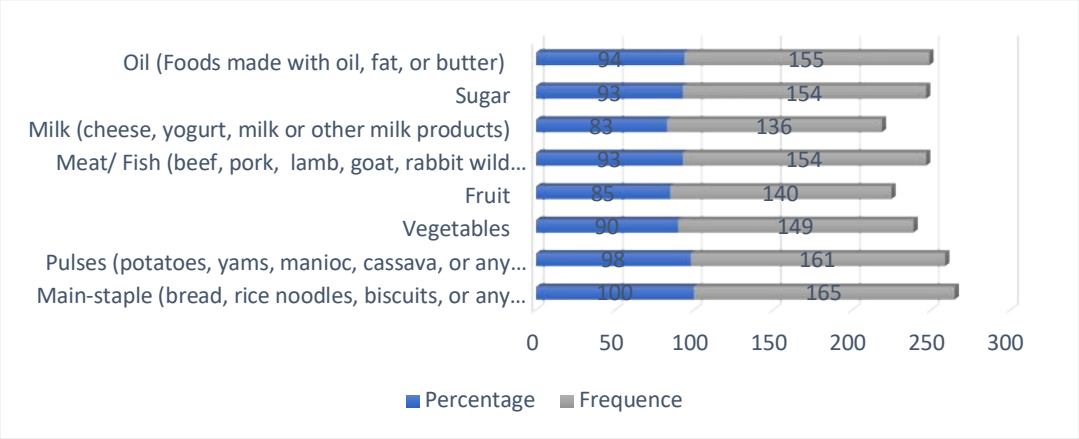


Figure 3: Food Consumption Patterns
Source: Survey Results (2024)

As shown in Figure 3, the consumption of main-staple food was at 100%. This indicates that all the sampled households (165) had consumed the main staple foods. About 98% (161) of the households consumed pulses. These results reveal that consumption of starchy foods was common across the study area. Followed by consumption of oil at 94% (155). Consumption of both meat, fish and sugar came in at 93% (154). The results further reveal that consumption of vegetables was at 90% (149). Again, fruit consumption was at 85% (140), which indicated a significant proportion of the households did not consume fruit at the time of the study. Lastly, consumption of milk and/or milk products was at 83% (136).

The observed results on food consumption patterns show a variability in consumption among several food groups. Furthermore, the results suggest that a proportion of the sampled households face challenges in accessing and utilizing some of the food groups such as fruit and milk. For instance, a study found comparable results within the Eastern Cape Province [22]. The study results discovered that most rural households experience a lack of dietary diversification, with a high intake of foods like maize and beans and minimal consumption of other foods like oil, sugar, and milk is common in most rural areas. In addition, the results of the current and previous studies on food security suggest that most rural households consume what is affordable and accessible for their survival. Hence, these households are less likely to consume healthy and nutritious food.

Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Determinants of household food security

This section presents the factors that influence household food security in Umzimvubu and Ntabankulu local municipalities.

a. Number of employed household members

The number of employed household members had a positive and significant influence on household food security (HFIS), with a p-value of 0.072. The results reveal that an increase in the number of employed household members is likely to improve food security in the household. Similarly, other studies reveal that unemployment and low income at the household level contribute to food insecurity [13, 26]. On a similar note, several studies have highlighted that households with high- incomes are likely to be food secure [15, 22, 23, 24]. The results of the current study and previous studies therefore prove that the number of household-employed individuals plays a crucial role in food security.

b. Number of unemployed household members

Contrary to the anticipated outcome, the number of unemployed household members had a positive association with household food security (HFIS) status, with a p-value of 0.066. This can be explained by the fact that larger households with more unemployed members tend to be eligible for social protection and support such as food parcels and unemployment benefits. Additionally, most rural household individuals are the beneficiaries of social grants such as the Social Relief of Distress (SRD) grant and engage in farming activities. This form of grant and farming activities are likely to improve food accessibility and availability at the household level. These findings concur with those of Mabasa *et al.* [14], who shared that home gardens and farming play a crucial role in improving food accessibility and availability within households, which eventually results in household food security. On a similar note, another study observed that SRD grants enhance household food security and effectively influence household well-being [20].

c. Access to financial credit

Access to credit for the study was measured by the household's ability to access credit from formal financial institutions rather than informal sources. Access to financial credit had a positive relationship with household food (HFIS) security, at a p-value of 0.091. The results suggest that additional access to financial credit improves the likelihood of food security within a household. These findings can be linked to the fact that additional access to financial credit enables households to invest in several livelihood and economic activities. In this regard, households can afford more food items in the case of financial constraints than their counterparts. On the contrary, a study observed that households with access to financial credit are likely to be food insecure [25]. Also, access to financial credit presents an additional opportunity for most households to ensure food security, if obtained at the right time

Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

and for the right reasons, such as to invest in economic activities that could support their food access and availability.

d. Monthly food expenditure

Household monthly food expenditure for the study was measured by the overall amount allocated for food per month in ZAR. Monthly food expenditure had a negative influence on household food (HFIS) security. The results suggest that an increase in the amount allocated for food is likely to improve food accessibility and availability. These results concur with Amao *et al.* [26], who stated that an increase in food expenditure is associated with an increase in consumption of diverse diets. An additional amount for food therefore enables households to acquire more food items, thus promoting chances of food security in a household.

e. Household monthly income

Household monthly income was measured by adding up all the monthly income received for each household member. The household monthly income had a significant positive *($p = 0.022$)* association with household food security (HFIS) status. The results show that a unit increase in household monthly income is likely to improve household food security. This can be linked to the fact that, for households with additional income, food accessibility and availability can be ensured. The results are in line with Abegunde *et al.* [23], who observed that an increase in household income increases the likelihood of food security within a household.

CONCLUSION AND RECOMMENDATIONS FOR DEVELOPMENT

Food insecurity remains among the top alarming challenges faced by most rural households. The study focused on food consumption and the key drivers of household food security in Umzimvubu and Ntabankulu local municipalities. The study's socio-economic findings reveal that the average household head was 49 years old, with households typically consisting of five members. Most respondents were female. Educational levels varied, with many having attended secondary school, but a significant portion had little to no formal education. Employment was notably low, with 85% of respondents unemployed. Descriptive statistics revealed variability in the consumption of various food groups, with starchy food (main staples and pulses) being the most consumed, followed by oil, meat or fish, sugar, vegetables, fruit and milk (products).

The number of employed household members, the number of unemployed household members, access to financial credit, monthly food expenditure, and household monthly income are the main drivers of food insecurity in Umzimvubu and Ntabankulu local municipalities. Hence, both these socioeconomic and institutional

Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

characteristics need to be considered to curb the issue of food insecurity, especially in rural areas.

Most households within the study area lacked formal qualifications and access to financial credit, therefore, skill development programs, the creation of employment opportunities and support for entrepreneurial and economic activities should be prioritized. To ensure access to financial credit, access to basic financial education should be made easily accessible, as this can aid in household financial literacy, which eventually can improve food security.

With regards to recommendation, improving access to education is crucial, with a focus on providing vocational training and higher education opportunities to enhance employability, especially for household heads. Additionally, creating employment opportunities, particularly in sectors such as agriculture and small business development, is essential in reducing the high unemployment rates. Given the dominance of women in managing rural households, targeted economic empowerment programs for women, including support for female-led enterprises and agricultural activities, could significantly improve household incomes and food security. Strengthening social protection programs is also necessary to alleviate the economic pressures faced by the large number of unemployed individuals. Finally, encouraging community-based development projects can help stimulate local economies, creating additional resources for education and employment while fostering self-sufficiency.

ACKNOWLEDGEMENTS

The authors are grateful to the communities in Umzimvubu and Ntabankulu local municipalities for the permission granted to conduct the study and the participation.

Competing Interest:
The authors declare no competing interests.

Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 1: Household Food Consumption Patterns Scoring

Food groups	Weight	Score	Yes = award score: No = 0
Bread, rice noodles, biscuits, or any other foods made from millet, sorghum, maize, rice, or wheat.	Main staple	2	
Potatoes, yams, manioc, cassava, or any other foods made from roots or tubers.	Pulses	3	
Any vegetables.	Vegetables	1	
Any fruit.	Fruit	1	
Beef, pork, lamb, goat, rabbit wild game, chicken, duck, or other birds, liver, kidney, heart, fresh or dried fish or shellfish, or other organ meats?	Meat/Fish	4	
Cheese, yogurt, milk, or other milk products.	Milk	4	
Sugar or honey.	Sugar	0.5	
Foods made with oil, fat, or butter	Oil	0.5	
Total score			

Source: FAO (2020)

ajfand Since 2001
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 2: Descriptions of variables and their expected outcome

Explanatory variable	Variable measurement	Expected outcome
Age of the household head	Actual age (Years)	+/-
Gender	0 = male; 1 = female (Dummy)	+
Level of education	0 = no education 1 = primary 2 = secondary 3 = tertiary 4 = other; (Categorical)	+/-
Household size	Number of household members (Count variable)	-
Household head	0 = Yes 1 = No (Dummy)	+
Not a household head	0 = Yes 1 = No (Dummy)	-
Marital status	0 = Single 1 = Married 2 = divorced 3 = Widowed 4 = Separated 5 = living together (Categorical)	+
Household head employment status	0 = employed 1 = Unemployed (Dummy)	+
Number of employed household members	The exact number (Count variable)	+
Number of unemployed household members	The exact number (Count variable)	-
Number of household members below 18 years	The exact number (Count variable)	-
Household disability status	0 = Yes; 1 = No (Dummy)	+/-
Source of income	0 = Yes; 1 = No (Dummy)	+/-
Household monthly income	The exact amount in ZAR (Count variable)	+
Access to food markets	0 = have access; 1 = do not have access (Dummy)	+
Access to arable land	0 = have access; 1 = do not have access (Dummy)	+
Practicing farming	0 = Yes; 1 = No (Dummy)	+
Purposes for farming	0= Subsistence; 1=Markets; 2=Both (categorical)	+
Type of farming operation	0 = livestock production; 1 = Crop production; 2 = Both (Categorical)	+
Access to financial credit	0 = have access; 1 = do not have access (Dummy)	+/-

Source: Researchers' Compilation (2023)

Since 2001 ajfand AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 3: Socio-economic characteristics of households (n=165)

Explanatory variables	Mean	Standard deviation
Age	49	18
Household size	5	3
	Frequency	**Percentage (%)**
Gender		
Male	63	38
Female	102	62
Educational level		
No education	19	12
Primary	45	27
Secondary	92	55
Tertiary	8	5
Other	1	1
Marital Status		
Single	66	40
Married	64	39
Divorced	5	3
Widowed	24	14
Separated	3	2
Living together	3	2
Employment status of the household head		
Yes	25	15
No	140	85

Source: Survey Results (2024)

ajfand Since 2001
AFRICAN JOURNAL OF FOOD, AGRICULTURE, NUTRITION AND DEVELOPMENT
SCHOLARLY, PEER REVIEWED
Volume 25 No. 2
February 2025
PUBLISHED BY AFRICAN SCHOLARLY SCIENCE COMMUNICATIONS TRUST
ISSN 1684 5374

Table 4: Determinants of household food security (HFIS)

Variables	Coef.	t	*p-value*
Gender	.0255949	0.51	0.608
Age	.0002575	0.14	0.893
Level of education	-.012793	-0.32	0.750
Household head	.0546968	0.41	0.685
Not household head	-.051339	-0.74	0.462
Marital status	-.0119202	-0.60	0.550
Employment	.0066184	0.10	0.922
Number employed	.0517332	1.82	0.072*
Number of unemployed	.0352557	1.85	0.066*
Number of individuals below 18 years	.0254685	1.05	0.293
Disability	.0038921	0.06	0.954
Income source	.1269833	0.90	0.371
Income sources	-.0031561	-0.68	0.495
Access to food markets	-.0107668	-0.13	0.896
Access to financial credit	.1605697	1.70	0.091*
Access to arable land	.0151514	0.28	0.777
Practice farming	-.0396962	-0.36	0.720
Purpose for farming	.000339	0.01	0.993
Farm operations	.0231164	0.68	0.500
Food expenditure	-.0001862	-5.99	0.000***
Household size	.0130081	0.64	0.523
Household monthly income	.0000137	2.31	0.022**
Constant	.7218675	3.77	0.000

Source: Survey Results (2024)

REFERENCES

1. **Fleetwood J** Social justice, food loss, and the sustainable development goals in the era of COVID-19. *Sustainability.* 2020; **12(12):**5027.

2. **Kekana MV** Socio-Economic Factors Influencing Market Participation of Horticultural Smallholder Farmers in the Alfred Nzo District. Tshwane University of Technology 2017.

3. **Ngwenya BN, Akinnifesi FK, Akanbi WB, Ajayi OC and WA Mphinyane** Food systems and COVID-19 in Africa: Impacts and implications for food security and sovereignty. *Food Security*. 2021; **13(3):**625-630.

4. **Mdiya L and L Mdoda** Socio-economic factors affecting home gardens as a livelihood strategy in rural areas of the Eastern Cape province, South Africa. *South African Journal of Agricultural Extension.* 2021; **49(3):**1-15.

5. **Sekhampu TJ** Association of food security and household demographics in a South African township. *International Journal of Social Sciences and Humanity Studies*. 2017; **9(2):**157-170.

6. **Oduniyi OS and SS Tekana** Status and socioeconomic determinants of farming households' food security in Ngaka Modiri Molema District, South Africa. *Social Indicators Research*. 2020; **149(2):**719-732.

7. **Naicker A, Palmer K, Makanjana O and PF Nzama** The impact of the COVID-19 pandemic on food consumption habits, food purchasing behaviours, and food security status among South Africans. *African Journal of Inter/Multidisciplinary Studies.* 2021 Dec 31; **3(1):**131-43.

8. **Arndt C, Davies R, Gabriel S, Harris L, Makrelov K, Robinson S, Levy S, Simbanegavi W, Van Seventer D and L Anderson** Covid-19 lockdowns, income distribution, and food security: An analysis for South Africa. *Global Food Security*. 2020; **26**: 100410.

9. **Sambo TA, Oguttu JW and TP Mbombo-Dweba** Analysis of the dietary diversity status of agricultural households in the Nkomazi Local Municipality, South Africa. *Agriculture & Food Security*. 2022; **11(1):** 46.

10. **Fall F and A Steenkamp** Building an inclusive social protection system in South Africa 2020. https://one.oecd.org/document/ECO/WKP(2020)28/en/pdf *Accessed October 2023.*

11. **Olawuyi SO and A Mushunje** Access to special COVID-19 relief from distress grant and livelihood outcome of livestock farming households in Eastern Cape Province, South Africa. *AIMS Agriculture and Food*. 2023; **8(2**): 98-614.

12. **Owusu-Sekyere E** Food security and vulnerability of households in South Africa during the COVID-19 pandemic. *Food Security*. 2021; **13(1):**211-224.

13. **Ngumbela XG, Khalema EN and TI Nzimakwe** Local worlds: Vulnerability and food insecurity in the Eastern Cape province of South Africa. Jàmbá: *Journal of Disaster Risk Studies*. 2020; **12(1):**1-10.

14. **Mabasa T, Sikhwari TD and R Mokgatle** Food security and access to markets for smallholder farmers in South Africa during the COVID-19 pandemic. *Agriculture*. 2021; **11(2):**139.

15. **May J** Food insecurity in South Africa during COVID-19. *World Development*. 136, 105149.

16. **Mnukwa ML, Nontu Y, Mdoda L and M Aliber** The effects of socio-economic factors on the food security status of rural households in the Eastern Cape Province: evidence from farming households. *Journal of Agribusiness and Rural Development*. 2022; **64(2):**141-151.

17. **Oluwatayo IB, Marutha MI and MP Modika** Food security in South Africa: Are the correlates the same for rural and urban households? *Food Res*. 2021; ***5*(1):** 36-42.

18. **Alfred Nzo District Municipality.** Integrated Development Plan 2017/2022. Pamphlet 2020. Retrieved from https://www.andm.gov.za/wp-content/uploads/2020/10/IDP-2017-2022.pdf *Accessed August 2023.*

19. **Christian M, Obi A and IK Agbugba** Adoption of irrigation technology to combat household food insecurity in the resource-constrained farming systems of the Eastern Cape Province, South Africa. *South African Journal of Agricultural Extension*. 2019; **47(2):** 94-104.

20. **Mbewana V and I Kaseeram** The determinants of livelihood diversification among small-scale rural farmers in Alfred Nzo and King Cetshwayo District, South Africa. *Cogent Economics & Finance*. 2024; **12(1):**2368901.

21. **Ningi T, Taruvinga A, Zhou L and S Ngarava** Factors that influence household food security in Hamburg and Melani, Eastern Cape, South Africa. *African Journal of Science, Technology, Innovation and Development.* 2022; **14(4):**1050-1058.

22. **Cheteni P, Khamfula Y and G Mah** Exploring food security and household dietary diversity in the Eastern Cape Province, South Africa. *Sustainability.* 2020; **12(5):**1851.

23. **Abegunde VO, Sibanda M and A Obi** Effect of climate-smart agriculture on household food security in small-scale production systems: A micro-level analysis from South Africa. *Cogent Social Sciences*. 2022; **8(1):**2086343.

24. **Food and Agriculture Organization (FAO**). Rome declaration on world food security and World Food Summit Plan of Action, 2020. Retrieved from http://www.fao.org/3/w3613e/w3613e00.htm *Accessed March 2023.*

25. **Cele T and M Mudhara** Impact of market participation on household food security among smallholder irrigators in KwaZulu-Natal, South Africa. *Agriculture*. 2022; **12(2):**261.

26. **Amao IO, Ogunniyi AI, Mavrotas G and AO Omotayo** Factors Affecting Food Security among Households in Nigeria: The Role of Crop Diversity. *Sustainability.* 2023; **15(11):**8534.