Household Food Distribution Practices, Food Insecurity, and Socioeconomic Status among Marachi Smallholder Farmers in Butula Sub-County

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ABSTRACT

Food security is a fundamental human right; however, millions globally endure food insecurity due to climate change, geopolitical conflicts, and economic limitations. In Kenya, smallholder farmers in Marachi, Butula Sub-County, experience food shortages despite practicing subsistence farming, primarily attributable to inadequate food distribution systems and socioeconomic constraints. This study sought to determine the mediating effect of socioeconomic status in the relationship between household food distribution practices and food insecurity among smallholder farmers in Marachi from Butula Sub- County, Busia County. This study employed mixed methods design. The study focused on 18,280 smallholder farm households across six divisions and incorporated important informants, including community leaders and agricultural officers, to offer varied insights. A sample of 408 respondents was obtained by proportionate stratified random sampling for farmers, and purposive and convenience sampling for important stakeholders. Questionnaires, focus group discussions, and interviews were used to collect data. Quantitative data from 394 respondents were analyzed with Statistical Package for Social Sciences, utilizing descriptive statistics, Pearson correlation, and regression analysis, while Hayes' Process Model 4 evaluated the mediating effect of socioeconomic position on food insecurity. Study results showed a strong positive connection between food distribution practices and socioeconomic level ($r = 0.967$, $p = 0.000$), as well as between food distribution and food insecurity ($r = 0.979$, $p = 0.000$). Moreover, mediation analysis indicates that socioeconomic status significantly influenced the relationship between household food distribution practices and food insecurity; nevertheless, its effect was lower than the direct effect of food distribution practice on food security. Consequently, this study concluded that the socioeconomic status mediated the relationship between food distribution practices and food insecurity. To improve food security, authorities must prioritize economic empowerment, market accessibility, and equitable food distribution measures for smallholder farmers.

Keywords: Food Distribution Practices, Food Insecurity, Socioeconomic Status, Smallholder Farmers

INTRODUCTION

Food security has been acknowledged as a fundamental human right, as articulated in the 1948 Universal Declaration of Human Rights, which claimed that all individuals should have consistent access to sufficient food (Universal Declaration of Human Rights, 1948, cited in Macalalad, 2020). The 1996 World Food Summit reinforced this approach, aiming to reduce the number of individuals experiencing hunger and malnutrition by fifty percent. Nonetheless, despite these initiatives, considerable deficiencies in global food security have endured. The Sustainable Development Goals (SDGs), including SDG 2 (Zero Hunger) and SDG 12.3 (Responsible Consumption and Production), aimed to eradicate hunger and diminish food waste by 2030; nonetheless, food insecurity continues to be a significant global issue (Ardra & Barua, 2022). In 2023, around 345 million individuals experienced acute food insecurity as a result of climate change and geopolitical conflicts, particularly the repercussions of the Ukraine war (Mohiuddin, 2023).

Food insecurity was especially acute in Sub-Saharan Africa, with over 61% of the population facing moderate

or severe food insecurity in 2022 (Molapo, 2023). In Kenya, almost 33% of the population experienced food insecurity, particularly in rural regions (Kenya National Bureau of Statistics, 2022). Smallholder farmers, who play a crucial role in local food production, continue to be very susceptible due to climate variability, post-harvest losses, and restricted access to markets and storage facilities (Jayne, Fox, Fuglie & Adelaja, 2021). Moreover, socio-economic determinants including household income, educational attainment, and gender inequalities intensified food insecurity in rural areas (Ponce-Alcala, Luna, Shamah-Levy & Melgar-Quiñonez, 2021; Khan & Ali, 2023). In Marachi, Butula Sub-County, smallholder farmers relied on subsistence farming for their sustenance; nevertheless, many faced food shortages due to ineffective food distribution methods and economic limitations.

The research indicated that food insecurity among smallholder farmers in Marachi was significantly associated with household food distribution methods and socio-economic conditions. Despite the availability of food, economic constraints and insufficient storage facilities frequently resulted in post-harvest losses, diminishing the amount of food accessible for home consumption (Davis, Downs & Gephart, 2021). Households with lower income levels were especially susceptible, as they lacked the financial capacity to obtain nutritious food, resulting in malnutrition and enduring health issues (Nirmalkumar, Krishna & Anand, 2024). Additionally, inadequate food storage and distribution practices resulted in significant food loss, jeopardizing initiatives aimed at attaining food security in the region (Osei-Kwarteng, Ogwu, Mahunu & Afoakwah, 2024).

Addressing food insecurity necessitated a multifaceted strategy encompassing enhancements to market infrastructure, financial assistance for farmers, and community education on effective food storage and utilization techniques (Amare, Abay, Tiberti & Chamberlin, 2021). This study examined the mediating effect of socioeconomic status on the relationship between household food distribution practices and food insecurity among smallholder farmers in Marachi. The findings of this study would enhance discourse on food insecurity and guide localized initiatives to enable smallholder farmers in Marachi to attain food security.

LITERATURE REVIEW

Food distribution practices and food insecurity was explained by symbolic interaction theory while socioeconomic status was explained by Capability Approach. Symbolic Interaction Theory, as proposed by Herbert Blumer and later expanded by scholars such as Meltzer, Petras, and Reynolds (2020), explains social behavior through the use of shared symbols and meanings. This theory posits that human actions are not merely reactions to stimuli but are guided by interpretations of social interactions and cultural norms (Brasil, 2024). The key assumption of Symbolic Interaction Theory is that individuals act based on the meanings they assign to objects, people, and events. These meanings are formed and modified through social interactions. For example, food-sharing practices within households or communities are symbolic of trust, reciprocity, and social cohesion (Musyoka, 2021; Khanna, 2022). George Herbert Mead (1863-1931) emphasized the role of communication in shaping individual identities and behaviors, arguing that people develop their sense of self through social interaction. Additionally, the theory assumes that these meanings are fluid and subject to change, reflecting the dynamic nature of culture and social relationships (Torabian, 2022).

However, Symbolic Interaction Theory has been criticized for its focus on micro-level interactions while neglecting broader structural forces such as economic inequality, institutional power, and class divisions (Hannem, 2021). Critics argue that the theory overemphasizes individual agency and underestimates the constraints imposed by social structures (Elliott, 2020). Moreover, Khan (2024) points out that Symbolic Interactionism lacks a clear explanation of long-term societal change and does not account for unconscious behaviors or psychological influences in human interactions. Despite these limitations, the theory remains useful in explaining how individuals create and sustain social norms, particularly in the context of food security and resource-sharing practices. In this study, Symbolic Interaction Theory was applied to examine how smallholder farmers in the Marachi ethnic community of the Butula sub-county use symbolic actions such as food distribution and sharing to navigate food insecurity. The theory helped explain food distribution practices' influence on food insecurity and how socioeconomic status mediates the relationship among the Marachi community smallholder farmers in Butula Constituency, Busia County.

On the other hand, The Capability Approach, developed by Amartya Sen (1999) and later expanded by Martha

Nussbaum (2011), provides a framework for understanding well-being through individual freedoms and capabilities rather than just access to resources (Ikejiaku, 2024). Sen argued that food security is not merely about having enough food but about the ability to utilize it in a meaningful way to achieve a good quality of life. This theory distinguishes between capabilities; which are the real freedoms people have to achieve certain outcomes, and functioning; which refer to the actual states of being, such as being well-nourished (Robeyns, 2021). The fundamental assumption of the Capability Approach is that well-being should be measured by what individuals are genuinely able to do and be, rather than by economic indicators alone. It emphasizes personal agency, arguing that individuals must not only have access to food but also the ability to use it effectively based on their social, economic, and environmental circumstances (Naz, 2021).

Despite its strengths, the Capability Approach has faced criticism for being difficult to operationalize, particularly in defining and measuring individual capabilities (Lim, 2020). Additionally, critics argue that the framework focuses too much on individual freedoms without adequately addressing structural inequalities and systemic barriers to resource access (Gross & Wilson, 2020). Furthermore, its abstract nature makes it challenging to apply in empirical research, especially in diverse cultural contexts where definitions of well-being may vary (Gross & Wilson, 2020). Despite these criticisms, this study utilized the Capability Approach to analyze household food distribution and coping strategies among smallholder farmers. The approach provided insights into how intra-household food allocation reflects social norms, power dynamics, and resource availability, influencing overall food security. By applying this framework, the study explored how smallholder farmers' capabilities such as their access to markets, financial resources, and social support networks; affect their ability to manage food insecurity.

Sen (1984), as referenced by Muzerengi, Khalema, and Zivenge (2021), emphasizes that food entitlement alone does not dictate household consumption patterns; instead, cultural elements significantly influence dietary choices based on social circumstances, including rituals and hospitality towards guests. Madjdian (2018) underscores that cultural norms affect intra-household food allocation, frequently disadvantaging women and children. Studies conducted in various regions, such as China, South Korea, South Asia, and Africa, demonstrate that cultural customs perpetuate gendered food hierarchies, wherein men are allocated larger portions and superior quality food, while pregnant and lactating women, as well as children, are consistently denied sufficient nutrition (Harris-Fry et al., 2017; Assan, 2023). The data indicate that cultural norms, rather than food availability, govern household food consumption, resulting in inequitable distribution that intensifies malnutrition among disadvantaged populations.

Empirical research substantiates this assertion by illustrating the influence of cultural norms on food security outcomes. Barthel, Crumley, and Svedin (2013) examined the role of traditional farming practices in Europe in preserving food security and biodiversity, demonstrating that the decline of these systems due to industrialization compromised resilience. In Nigeria, intra-household food distribution favors men due to their labor contributions, resulting in women and children obtaining fewer nutritious portions (Byrd et al., 2021). Research by Harris-Fry et al. (2017; 2018) indicates that in South Asia, men predominantly consume animal-sourced meals, whereas women and children depend on legumes and vegetables, resulting in nutritional shortages and elevated stunting rates. The research indicates that cultural norms and domestic roles substantially influence dietary results, perpetuating structural inequities in nutrition.

Subsequent study demonstrates that although women play a major role in food production and preparation, they are disproportionately impacted by food poverty. In sub-Saharan Africa, women account for 70% of agricultural output and 60% of food processing, yet they and their children face elevated rates of malnutrition (Amusan, Akokuwebe & Odularu, 2021). Fadare, Mavrotas, Akerele and Oyeyemi (2019) discovered that in Nigeria, households possessing superior nutrition understanding and food storage facilities were more inclined to offer children adequate diets, hence diminishing stunting rates. Patriarchal norms frequently inhibit women from prioritizing their nutritional requirements, hence perpetuating gender inequities in food accessibility. This indicates that food security programs should not just focus on availability and accessibility but also confront cultural practices that sustain unequal food distribution.

The influence of collectivism and informal food-sharing networks complicates food distribution among households. In South Korea, collectivist principles promote food-sharing within families, with mothers and

mothers-in-law significantly influencing the distribution of food among relatives (Kim, Park & Kim, 2019). In rural African communities, informal food transfer mechanisms facilitate post-harvest sharing, guaranteeing food access for extended families (Arthur et al., 2022). Nonetheless, these mechanisms do not inherently ensure equity, as they frequently perpetuate prevailing gender norms that disadvantage women and children. Harris-Fry et al. (2017; 2018) emphasize that intra-household food disparities are exacerbated in food-insecure and patriarchal homes, requiring tailored interventions that tackle both economic and cultural determinants to enhance nutritional parity.

Further, empirical review of studies conducted in Kenya emphasized intra-household dynamics, socio-economic factors, and institutional constraints. Nyageiria (2016) shown that intra-household food distribution patterns substantially affect children's access to iron-fortified foods, with children in culturally regulated families receiving much lower iron intake, hence increasing the risk of nutritional inadequacy. Pilla and Dantas (2016) highlighted that intra-household gender dynamics among the Maasai impede maternal and child health outcomes, underscoring the necessity for culturally appropriate, gender-inclusive treatments. Research by Okello et al. (2013) and Kathuri (2022) identified extensive socio-economic determinants, revealing that household attributes such as income, land size, education, and access to training or extension services significantly influence food security outcomes. Notably, over 80% of households in ASALs, such as Makueni, continue to experience food insecurity despite implementing coping strategies. Likewise, Nyamohanga et al. (2016) discovered that limited landholdings and asset depletion tactics predominated household reactions to food scarcity in Kuria East, highlighting inherent economic vulnerabilities. Kathuri, Kisovi, and Obando (2020) emphasized that socio-economic limitations reduce the effectiveness of interventions in ASALs, advocating for stronger institutional and economic support structures. These studies collectively reveal a research gap in comprehending the interaction between entrenched household dynamics and socio-economic conditions with overarching food security policies, indicating the necessity for integrated, context-sensitive interventions to effectively tackle chronic food insecurity in Kenya.

METHODOLOGY

The study employed a pragmatic research philosophy approach to offer a comprehensive knowledge of research phenomena. The research was carried out at Butula Sub- County, situated in Busia County, Western Kenya. Butula is distinguished by a diverse socio-cultural and economic environment, with smallholder agriculture as the predominant economic activity. The target population consisted of 18,280 smallholder farm households distributed over six divisions: Elugulu, Marachi West, Kingadole, Marachi Central, Marachi North, and Marachi East (Busia County Government, 2023; Kenya National Bureau of Statistics, 2018). Additional participants comprised six administrative community leaders, 12 elders, and the Sub-County Agricultural Officer, offering varied insights on food insecurity. The study utilized. Proportionate stratified random sampling was employed in the selection of 408 smallholder farmers to guarantee unbiased selection and ensured that the distribution of farmers accurately represented the population structure across sub-locations. The resulting quantitative data from Out of these, 361 questionnaires which were returned was analyzed using Statistical Package for Social Sciences using descriptive statistics, Pearson correlation and regression analysis. Hayes' Process Model 4 was utilized to evaluate the mediating role of socioeconomic position in the relationship between socio-cultural variables and food insecurity, offering insights into indirect effects.

FINDINGS AND DISCUSSION

A total of 400 questionnaires were distributed across 6 regions in Butula Sub-County. Out of these, 361 were returned, resulting in a response rate of 91.6 %. The data was confirmed to be reliable given the Cronbach alpha for household food distribution practices (0.993) for the 14 statements, socioeconomic status (0.932) for the 8 statements and food insecurity (0.975) for the five statements all of which were above 0.700 threshold. All statements were rated using a 5-point Likert scale.

The descriptive data presented in table 1 indicated that households moderately concurred on the adequacy of the food they produced (mean = 3.5734) and on the equity of intra-household distribution (mean = 3.6427). This notion of sufficiency was corroborated in KII, where elders and agricultural officers confirmed the existence of organized systems. Nonetheless, FGDs uncovered inconsistencies and arguments arising from ambiguous

distribution procedures, particularly during shortages, a feature that Harris-Fry et al. (2018) similarly identified as inciting household conflicts in analogous settings. This contrast underscores how perceived equity may conceal underlying conflicts during periods of scarcity.

The high average for regular meal provision despite adversity (mean = 3.6981) indicates household resilience. Qualitative accounts indicated that this is accomplished by emphasizing children, frequently to the detriment of adults, a practice rooted in cultural norms that leads to dissatisfaction and strife, especially among elder family members. This corroborates findings by Madjdian (2018), who recorded age-related biases in food allocation among resource-constrained households.

Further, study results revealed that households recognized formal food distribution systems (mean = 3.5485), yet qualitative findings indicated that these systems frequently relied on tradition rather than explicit regulations, a perspective corroborated by FAO (2020), which highlighted the ineffectiveness of informal food distribution in smallholder communities. A KII participant associated inadequate food access with restricted resources such as high-quality seeds and land preparation, corroborating FAO's findings on limitations in agricultural productivity.

Cultural taboos and preferences were recognized as significant constraints on dietary diversification (means = 3.8449), corroborating KII and FGD conclusions regarding the dependence on maize and legumes for their symbolic and nutritional significance. An agricultural officer cautioned against maize monoculture, associating it with environmental damage, reflecting the issues raised by Simelane and Worth (2020). These patterns demonstrate how cultural commitment can both maintain tradition and impede agricultural sustainability.

Despite traditional norms and daily distribution procedures receiving a lower score (mean = 2.2576), KIIs underscored persistent practices such as lunar-based agricultural calendars and patrilineal land inheritance, both of which restrict access to arable land. These ingrained norms, although potentially underrepresented in surveys, continue to serve as substantial structural impediments aligning with Ngubo (2021) and Zhou et al. (2018), who demonstrate that cultural systems discreetly endure despite modernization.

Additionally, the moderate consensus about the influence of gender roles (mean = 3.2244) and the distribution by age and gender (mean = 2.9945) was significantly corroborated by FGD results. Women, despite being integral to agriculture, possessed minimal influence over food-related decisions. This aligns with the findings of Harris-Fry et al. (2017) and Amusan et al. (2021), which indicate that patriarchal household arrangements consistently disadvantage women and girls, particularly in times of crisis. These qualitative findings enhance the interpretation of the survey results, demonstrating that gendered food hierarchies extend beyond perception; they are established norms with concrete implications for nutrition and security.

Further, dependence on maize (mean = 3.4765) and consumption of less nutritious meals (mean = 2.5485). Qualitative findings indicated that cultural feasts, although promoting social togetherness, frequently diminished home resources mirroring the community-focused yet resource-draining food-sharing systems outlined by Kim et al. (2019) and Arthur et al. (2022). As KII participant observed that while compassion was a societal norm, its efficacy was constrained by poverty. Consequently, when collectivist networks are present, they frequently failed to deliver equitable or lasting assistance, often exacerbating existing disparities.

The moderate conviction that enhanced food distribution may increase food security (mean = 2.4737) is corroborated by the collective community aspiration for structured systems. However, as indicated in KIIs and FGDs, economic constraints, inadequate storage, and restricted access to cooperatives hinder people' capacity to participate in more equitable arrangements. These apprehensions resonate with the conclusions of Barthel et al. (2013) and Byrd et al. (2021), who contend that traditional norms and structural constraints collaboratively sustain inequality.

The diverse viewpoints on the sufficiency of food distribution corroborate Madjdian’s (2018) claim that food security is contingent upon context, influenced by cultural norms and economic conditions. Certain community members exhibited faith in their traditional structures, whereas others particularly from bigger or economically disadvantaged households highlighted the ongoing disparities.

Table 1 Food Distribution Practices Descriptive Statistics

Variable Statement N = 361	Mean	Standard Deviation (SD)
The amount of food produced in this household is sufficient to meet our needs throughout the year	3.5734	1.26085
Food is equitably served to everyone in my family	3.6427	1.17486
Even during times of food scarcity, serve breakfast, lunch and supper	3.6981	1.10565
We have a clear method for distributing food among family members.	3.5485	1.28604
Cultural food preferences and taboos influence the ability of households to maintain a balanced diet during times of food scarcity	3.8449	0.96222
Our food distribution practices are influenced by traditional or cultural norms	2.2576	1.00973
Meal frequency is informed by age and health of the family members	2.1413	0.90338
Gender roles in relation to food distribution affect women and girls during times of food scarcity	3.2244	1.16765
During food shortage, households consume less preferred foods	2.5485	1.39782
Household low-income level limits access to adequate and nutritious food intake	3.7452	0.94068
The practice of distributing food based on age and gender roles within our household affects food security outcomes	2.9945	1.26270
Households rely on maize meals only during times of food scarcity	3.4765	1.21798
I believe that improving our food distribution practices could enhance overall food security in our household	2.4737	1.1547

Study results on socioeconomic status revealed that household income is a significant factor influencing food availability, with participants concurring that income enhances food affordability and use (mean = 3.9418). This was corroborated in FGDs, where one participant remarked, “With income, we purchase and store food, but without it, we experience hunger.” This is in sync with the results by Okello et al. (2013) and Kathuri (2022) who identified income as a significant determinant of food security in Kenya. Furthermore, economic stability correlated with equitable food distribution (mean = 3.8753), a conclusion corroborated by qualitative data indicating that affluent households were able to aid needy relatives, hence reinforcing the significance of inter-household support.

Further, participants indicated that education promotes the use of technologies for harvesting (mean = 3.7922) and post-harvest procedures (mean = 3.7479), however its impact on reducing detrimental cultural behaviors was met with skepticism (mean = 2.0000). FGDs and KII results supported this thought arguing that educated farmers employed superior storage methods, while traditional agricultural calendars remained in use. Fadare et al. (2019) shown that nutrition education and appropriate storage enhance dietary adequacy in children, however Amusan et al. (2021) contend that patriarchal norms persist in marginalizing women and children, irrespective of women's contributions to food production.

The extent of landholdings and access to training were correlated with enhanced food security. Participants moderately concurred that large agricultural operations enhance food security via extensive farming practices (mean = 3.6399), and that education on climate variability influences the relationship between culture and food

outcomes (mean = 3.8283). FGD and KII results indicated that trained smallholders exhibited greater resilience and strategic acumen in their crop and storage decisions. Kathuri et al. (2020) emphasize that, although efforts, land fragmentation and inadequate training reduce the efficacy of interventions. In agreement with these results, KII participant noted that, "Only trained farmers can foresee climate risks and adapt accordingly."

Household literacy received a high rating (mean = 3.8864) as a supportive mechanism for managing food insecurity. KII participant observed that "individuals who participate in seminars and field training exhibit superior food management skills, even during adverse seasons." Further, FGD results showed that cultural traditions continue to impede women's access to land and decision-making, as noted by an FGD participant: "We cultivate the land, but men determine what is planted and who consumes what." This corresponds with the findings of Byrd et al. (2021) and Harris-Fry et al. (2017), who illustrated that intra-household distribution patterns consistently disadvantage women and children.

Table 2 Social Economic Status Descriptive Statistics

Variable Statement N= 361	Mean	SD
My household's source of income positively influences the effectiveness of our food access, affordable and use in the family members.	3.9418	0.98852
A higher economic stability enhances intra and inter household equitable food distribution	3.8753	.93302
A high education level improves the implementation new technologies in harvesting and food storage mechanisms	3.7922	1.02119
Education alleviates detrimental cultural practices and enhance decisions to diversify food crops grown	2.0000	1.20876
Large farms influence farmers to engage in large scale farming that enhances food security.	3.6399	1.21013
A higher education attainment enables one to adopt modern post-harvest practices	3.7479	1.10310
Smallholder farmer training on technology and climate variability positively mediates the relationship between cultural norms and our food security outcomes	3.8283	1.02653
Smallholder farmer knowledge will support effective decision making to manage food insecurity	3.8864	1.07541

Table 3 demonstrates that the majority of respondents in Marachi, Butula Sub-County, conveyed predominantly favorable attitudes of food availability and access. A majority concurred that they could depend on a consistent food supply from their farms or local markets across all seasons (mean = 1.8144and that their farms yielded sufficient produce to satisfy the household's fundamental dietary needs (mean = 1.8615). Additionally, respondents indicated had the financial capacity to acquire food when production was inadequate (mean = 1.9335). The low mean scores suggest widespread consensus and reflect a degree of resilience among smallholder households in obtaining staple foods. Moreover, KII participant states that, "Despite constrained land areas, the majority of families are adept at maximizing their harvests through intercropping and seed preservation methods." An FGD participant also stated, "We frequently rely on our maize and cassava; in prosperous seasons, we can even share with neighbors." These results illustrate the significance of local adaptive techniques in maintaining seasonal food availability.

The study, however, indicated apprehensions around nutritional quality and income adequacy. The assertion "My household regularly consumes a variety of foods that provide balanced nutrition" exhibited a higher mean (mean = 2.1330), signifying moderate agreement and implying restricted dietary diversity. FGD participant stated that, "We consume ugali with vegetables daily, but acquiring eggs, fruits, or meat is infrequent unless there is a special occasion." These findings corroborate the claims made by Harris-Fry et al. (2017) and Byrd et al. (2021) that cultural and economic obstacles frequently restrict access to a variety of nutrient-dense meals,

particularly for women and children in economically disadvantaged homes.

The respondents exhibited notable ambiguity or disagreement concerning the sufficiency of household income to satisfy food requirements (mean = 3.0997); the highest mean score among the factors. KII participant highlighted that, "Numerous households rely exclusively on agriculture; however, when yields reduce or prices decline, they are unable to purchase food from the market." This corroborates the findings of Nirmalkumar, Krishna, and Anand (2024), who contend that income volatility among smallholder farmers is a primary catalyst of food insecurity.

Table 3 Food Insecurity Descriptive Statistics

Variable Statement N =361	Mean	SD
My farm produces enough food to meet my household's basic food needs throughout the year	1.8615	0.85809
I have sufficient income or resources to purchase food when my own production is not enough	1.9335	0.84064
My household regularly consumes a variety of foods that provide balanced nutrition	2.1330	0.94812
I can rely on consistent food supply from my farm or local markets across all seasons	1.8144	0.78274
The money I earn from farming or other activities is enough to support my family's food needs	3.0997	1.22067

Table 4 presents the results of the correlation analysis between food distribution techniques, socioeconomic level, and food insecurity. Study results revealed that Pearson correlation coefficient between food distribution techniques and socioeconomic status was 0.967 ($p = 0.000$), signifying a strong positive association, which implies that a high socioeconomic status is linked to food distribution methods. Food distribution techniques and food insecurity had a correlation of 0.979 ($p = 0.000$), indicating that improved food distribution practices substantially mitigated food insecurity. Furthermore, there existed a strong negative correlation between socioeconomic level and food insecurity (0.953, $p = 0.000$), indicating that households with elevated socioeconomic status are less prone to food insecurity. These statistically substantial relationships ($p < 0.01$) underscore the interrelation of socioeconomic conditions, food distribution efficacy, and household food security.

Table 4 Correlation Analysis Results

		Food distribution practices	**Socioeconomic status**	**Food insecurity**
Food distribution practices	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	361		
Socioeconomic status	Pearson Correlation	.967**	1	
	Sig. (2-tailed)	.000		
	N	361	361	
Food insecurity	Pearson Correlation	.979**	.953**	1
	Sig. (2-tailed)	.000	.000	
	N	361	361	361
**. Correlation is significant at the 0.01 level (2-tailed).				

Moreover, study results on mediating effect of socioeconomic status on the relationship between household food

distribution practices and food insecurity among smallholder farmers from the Marachi community from Butula constituency, Busia County are presented in table 5.

Table 5 Test of Food Distribution Practices, Socioeconomic Status and Food Insecurity Interaction

Y: Food insecurity, X: Food distribution practices, M: Socioeconomic status

N = 361

Outcome variable: Socioeconomic status

Model Summary

R	R²	MSE	F	df1	df2	p
0.9667	0.9344	0.0708	5116.378	1	359	0
Regression Coefficients						
Variable	**Coeff**	**SE**	**t**	**p**	**LLCI**	**ULCI**
Constant	0.8389	0.0389	21.5915	0	0.7625	0.9153
Food distribution practices	0.9317	0.013	71.5289	0	0.906	0.9573

Outcome variable: Food insecurity

Model Summary						
R	**R²**	**MSE**	**F**	**df1**	**df2**	**p**
0.9789	0.9583	0.0579	4112.151	2	358	0
Regression Coefficients						
Variable	**Coeff**	**SE**	**t**	**p**	**LLCI**	**ULCI**
Constant	-0.4252	0.0533	-7.9855	0	-0.53	-0.3205
Food distribution practices	0.9574	0.046	20.8198	0	0.8669	1.0478
Socioeconomic status	0.1181	0.0477	2.4756	0.0138	0.0243	0.2119

Direct Effect of X on Y					
Effect	**SE**	**t**	**p**	**LLCI**	**ULCI**
0.9574	0.046	20.8198	0	0.8669	1.0478
Indirect Effect(s) of X on Y					
Mediator	**Effect**	**BootSE**	**BootLLCI**	**BootULCI**	
Socioeconomic status	0.11	0.0473	0.0251	0.2157	

Map of column names to model coefficients

Column	Consequent	Antecedent
1	Socioeconomic status	Constant
2	Socioeconomic status	Food distribution practices
3	Food insecurity	Constant

4	Food insecurity	Food distribution practices
5	Food insecurity	Socioeconomic status

Bootstrap Results for Regression Model Parameters

Outcome variable: Socioeconomic status

Variable	**Coeff**	**Boot Mean**	**BootSE**	**BootLLCI**	**BootULCI**
Constant	0.8389	0.8391	0.0527	0.7384	0.9436
Food distribution practices	0.9317	0.9318	0.0174	0.8979	0.9665
Outcome Variable: Food Insecurity					
Variable	**Coeff**	**BootMean**	**BootSE**	**BootLLCI**	**BootULCI**
Constant	-0.4252	-0.43	0.062	-0.5675	-0.3198
Food distribution practices	0.9574	0.9548	0.0473	0.8547	1.0422
Socioeconomic status	0.1181	0.1214	0.0518	0.0265	0.2342

Level of confidence for all confidence intervals in output: 95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals: 5000

The initial model's study results revealed a coefficient of determination (R^2) of 0.9344, indicating that food distribution practices explain 93.44% of the variance in socioeconomic status. The coefficient for food distribution practices was 0.9317 ($p < 0.05$), with a confidence interval from 0.9060 (LLCI) to 0.9573 (ULCI). This demonstrates a notable correlation between food distribution practices and socioeconomic status. Improvements in food distribution practices enhance socioeconomic status by facilitating equitable and efficient access to resources, thereby promoting economic stability.

The second model's results, which included socioeconomic status and food distribution practices as predictors while analyzing food insecurity as the dependent variable, yielded a coefficient of determination (R^2) of 0.9583. This indicates significant explanatory power, as these factors account for 95.83% of the variance in food insecurity. The findings reveal a strong positive correlation between food distribution practices and food insecurity (0.9574, $p = 0.000 < 0.05$), indicating that the approach to food distribution significantly influences food insecurity levels. Efficient food distribution methods can alleviate food insecurity, whereas inefficiencies may worsen the problem.

The mediation analysis reveals an indirect effect of food distribution practices on food insecurity via socioeconomic status of 0.1100, with a 95% confidence interval spanning from 0.0251 (LLCI) to 0.2157. The absence of zero in the interval indicates that socioeconomic status plays a significant mediating role in the relationship between food distribution practices and food insecurity. Improvements in food distribution practices positively impacted socioeconomic status, resulting in a reduction in food insecurity. Nonetheless, this effect is less pronounced than the direct influence of food distribution practices.

The bootstrapped estimations validate the reliability of these findings. The coefficient for food distribution practices in the model predicting socioeconomic status is 0.9317 (BootMean = 0.9318, BootSE = 0.0174, BootLLCI = 0.8979, BootULCI = 0.9665, $p < 0.001$), indicating a significant relationship between food distribution and socioeconomic status. The food insecurity model indicates a bootstrapped coefficient of 0.9574 for food distribution practices (BootMean = 0.9548, BootSE = 0.0473, BootLLCI = 0.8547, BootULCI = 1.0422, $p < 0.001$), thereby confirming a significant direct effect. Additionally, socioeconomic status serves as a mediating variable, exhibiting a modest effect (BootMean = 0.1214, BootSE = 0.0518, BootLLCI = 0.0265, BootULCI = 0.2342, $p = 0.0195$). This suggests that although elevated socioeconomic status mitigates food

insecurity, its impact is less significant compared to the increase associated with food distribution practices. This indicates that socioeconomic status alone cannot address food insecurity without enhancements in food distribution systems.

The linear equation for direct effect of household food distribution practices (X) on food insecurity (Y) can be represented as:

$Y = \beta_0 + \beta_7 FDP + \epsilon$

$Y = -0.4252 + 0.9574FDP + \epsilon$

Where:

$\beta_0 = -0.4252$ is a constant for food insecurity

$B_1 = 0.9574$ is the coefficient for household food distribution practices (direct effect) on food insecurity

FDP represents the coefficient for household food distribution practices

ϵ represents the error term

The linear equation for the direct effect of household food distribution practices (X) on socioeconomic status (M) is as follows:

$M = aFDP + \epsilon = 0.9317FDP + \epsilon$

Where:

a = 0.9317 is the constant for food distribution practices

Direct effect of socioeconomic status (M) on food insecurity (Y)

$Y = bSES + c'FDP + \epsilon = 0.1181SES + 0.9574FDP + \epsilon$

Where:

b = 0.1181 is the effect of socioeconomic status on food insecurity

$c' = 0.9574$ is the direct effect of coping strategies on food insecurity after controlling for socioeconomic status

Indirect effect = a x b = $0.9317 \times 0.1181 = 0.1100$

Total Effect = $c' + (a \times b) = 0.9574 + 0.1100 = 1.0674$

Final linear equation on the effect of coping strategies and socioeconomic status on food insecurity: $Y = 0.1181SES + 0.9574FDP + \epsilon$

On the other hand the linear equation for the total effect of household food distribution practices on food insecurity:

$Y = 1.0674FDP + \epsilon$

Research findings indicate that elevated socioeconomic status significantly mitigates food poverty via home food distribution programs, both directly and indirectly. The direct effect ($\beta = 0.9574$) demonstrates that guaranteeing an equitable food supply and eliminating shortages contributes to a decrease in food insecurity via efficient food distribution. Additionally, food distribution policies improved socioeconomic status ($\beta = 0.9317$), leading to a decrease in food insecurity ($\beta = 0.1181$), thereby producing an indirect effect of 0.1100. The impact of food

distribution policies on food insecurity (1.0674) highlights its essential function in enhancing household food security. The p-values for the coefficients indicate statistical significance ($p < 0.05$), demonstrating that socioeconomic status and food distribution policies significantly affect food insecurity. The null hypothesis, which posited that socioeconomic status significantly mediates the relationship between household food distribution practices and food insecurity among smallholder farmers in the Marachi community, was rejected.

This research investigated the correlation between household food distribution methods, socioeconomic level, and food insecurity among smallholder farmers in the Marachi community. Quantitative findings demonstrated robust, statistically significant connections among these factors. Food distribution methods had a strong positive correlation with socioeconomic position ($r = 0.967$, $p < 0.001$) and a strong negative correlation with food insecurity ($r = 0.979$, $p < 0.001$). A negative association was similarly noted between socioeconomic level and food insecurity ($r = –0.953$, $p < 0.001$). The mediation analysis revealed that socioeconomic status somewhat mediates the association between food distribution and food insecurity, exhibiting an indirect effect of 0.1100, while the direct effect of food distribution was more pronounced.

The qualitative data from FGDs and KIIs significantly support and contextualize these links. Participants regularly highlighted that economic status influenced household food distribution practices. Households with higher socioeconomic status were able to preserve food, get access to preservation tools, and construct granaries, whereas those with low socioeconomic status were limited to consuming just what was readily accessible. This corresponds with the quantitative result that food distribution practices significantly affect socioeconomic status ($\beta = 0.9317$), and underscores how resource disparity directly impacts food system resilience or susceptibility.

Qualitative insights further corroborated the function of food distribution practices influence on food insecurity. Qualitative data revealed that reciprocal food-sharing activities alleviated hunger when resources allowed. Nonetheless, this system failed when all individuals were equally susceptible, asserting that possessing adequate resources offers sustenance; however, deprivation occurs if everyone is in hardship. This gives a profound explanation for the negative correlation between food distribution practices and food insecurity by highlighting the vulnerability of informal distribution systems during collective crisis and food stress. Furthermore, qualitative results confirmed that communities having access to organized systems such as cooperatives or food banks encountered less food shortages. Economically disadvantaged households frequently lacked information or access to these systems, illustrating the statistical observation that higher socioeconomic position enhances access to food distribution networks.

Additional qualitative observations demonstrated that intra-household food distribution mirrors cultural norms and systemic disparities. Results showed that elders recounted that youngsters were given precedence during periods of food scarcity, frequently resulting in tension and discord among older family members. These findings reflect earlier studies by Harris-Fry et al. (2017) and Madjdian (2018), arguing that food insecurity functions not only at the household level but also in households, influenced by perceptions of necessity, age, and authority. Likewise, gendered power relations surfaced as a crucial factor influencing food security. Although women constitute the principal labor force in agriculture, decisions about crop selection and yield allocation are predominantly governed by men. Further, qualitative results showed that gender played a role in the production and food distribution. Men were reported to dictate the crops to be cultivated and the allocation and distribution of the harvest. This structural disparity restricted women's capacity to ensure food availability for their households, hence confirming socioeconomic status as a mediator in food security outcomes.

Conventional beliefs and cultural behaviors were observed to both enhance and hinder the efficacy of food distribution. Some elders lauded customary systems for upholding order and equity, while others pointed out flaws and inconsistencies that frequently resulted in domestic conflicts. One participant saw the exhaustion of food reserves during cultural festivities, such as funerals and weddings, indicating that the resources used during these events might have maintained the household for a week. These activities illustrate how cultural norms can enhance communal cohesion while concurrently heightening household susceptibility to food insecurity.

Opposition to change exacerbates the efficacy of food systems. Participants followed traditional agricultural calendars, depending on lunar phases instead of meteorological information. Attempts to implement contemporary methods were frequently opposed, perceived as a disregard for traditional knowledge. Religious

convictions were also found to exacerbate this reluctance; several members interpreted droughts as divine retribution, thereby reducing the impetus to modify farming methods. These qualitative narratives explain why, despite technical initiatives to improve food delivery, food insecurity endured especially where belief systems and cultural norms obstruct behavioral modification. Moreover, land inheritance traditions were recognized as a significant limitation. Results indicated that land is traditionally assigned to male heirs, leading to increasing land fragmentation and reduced agricultural production. This patrilineal arrangement exemplifies a wider structural impediment that limits both social progress and agricultural productivity and propagation of gender socioeconomic inequality. These insights validate the quantitative findings by emphasizing that food distribution practices, while crucial, must be contextualized within a wider framework of land tenure, cultural norms, and structural resource accessibility.

Multiple FGDs observed conflicts stemming from ambiguous or inconsistent food distribution practices. Such ambiguity frequently results in disputes, especially in households where expectations and entitlements are not explicitly discussed. These tensions are especially evident during periods of scarcity, highlighting the necessity for organized and transparent food distribution practices. Although traditional practices promoted cohesion, there is a possibility that they also heightened vulnerability for the most impoverished households. An observation that aligns with the quantitative finding that enhanced household food distribution practices mitigated food insecurity, particularly when paired with socioeconomic status.

Subsequent investigation using Sen's (1984) entitlement theory, as cited by Muzerengi et al. (2021), highlighted that cultural variables influence food distribution, frequently to the detriment of women and children. Research conducted in Africa and Asia (Harris-Fry et al., 2017; Assan, 2023) revealed gendered food hierarchies, wherein men are allocated greater quantities and superior-quality food, hence intensifying malnutrition among underprivileged populations. Empirical studies (Barthel et al., 2013; Byrd et al., 2021) established that conventional norms affected food distribution, hence perpetuating structural imbalances. Furthermore, women's essential contribution to food production did not result in fair access, as patriarchal norms restricted their nutritional priorities (Amusan et al., 2021). The findings indicated that food security programs must tackle not only food distribution and socioeconomic enhancements but also cultural practices that perpetuate nutritional inequities. Furthermore, collectivist food-sharing networks (Kim et al., 2019; Arthur et al., 2022) impacted household food allocation, although they did not consistently guarantee equity, frequently perpetuating gender prejudices. The study indicated that food insecurity solutions must focus effective food distribution while taking into account cultural and socioeconomic factors to improve household nutritional fairness.

This study's findings possess substantial theoretical implications by synthesizing Symbolic Interaction Theory and the Capability Approach to elucidate food insecurity among smallholder farmers in the Marachi ethnic community in Butula Constituency, Busia County. Symbolic Interaction Theory, articulated by Blumer and further developed by Meltzer, Petras, and Reynolds (2020), elucidates how food distribution practices are influenced by collective symbols, meanings, and social interactions, thereby reinforcing cultural norms such as reciprocity and social cohesion (Musyoka, 2021; Khanna, 2022). Nonetheless, its emphasis on micro-level interactions neglects the larger structural dynamics affecting food access (Hannem, 2021). The Capability Approach, proposed by Sen (1999) and further elaborated by Nussbaum (2011), tackles this deficiency by highlighting the influence of socioeconomic status on individuals' capacity to obtain food, transcending basic resource availability (Robeyns, 2021; Naz, 2021). This methodology emphasizes the impact of market access, financial resources, and social networks on food security, illustrating that food supply alone does not dictate well-being (Muzerengi, Khalema, & Zivenge, 2021). Cultural norms additionally influence intra-household food allocation, frequently perpetuating gendered hierarchies that disadvantage women and children (Harris-Fry et al., 2017; Assan, 2023). This study emphasizes that food insecurity is both a material concern and a socially constructed issue shaped by cultural norms and economic limitations, providing significant insights for policy solutions (Gross & Wilson, 2020; Madjdian, 2018).

CONCLUSION

The analysis of findings indicates that although food distribution practices and socioeconomic status were statistically significant factors influencing food insecurity among the Marachi community Smallholder farmers from Butula subcounty, Busia County. Households with high socioeconomic status were more capable of

alleviating food insecurity, whereas those with low socioeconomic status continue to be susceptible despite existing food-sharing customs. To remedy this, policymakers and development agencies should initiate programs that bolster economic empowerment via financial assistance, market accessibility, and income diversification for smallholder farmers. Furthermore, fostering equitable food distribution within households through awareness initiatives and social programs can aid in diminishing disparities and enhancing overall food security. Additional research recommends further research to examine the nexus of climate variability and food distribution methods, evaluate the enduring effects of cultural transformation initiatives on household nutrition, and analyze the influence of youth and women's empowerment programs on food security results in comparable rural settings.

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