Determinant of Food Aid Access Among South Sudanese Refugees in Gambella Region, Ethiopia

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Abstract:

The war in South Sudan escalated due to the lack of a professionalized and institutionalized army, leading to the organization of militia-based armed units along ethnic lines. Consequently, conflicts and crises often force people to leave their households in search of shelter and security in refugee camps or other countries. The primary aim of this study was to determine food aid access among South Sudanese refugees in the Gambella region. A mixed-methods approach was used. A purposive sampling method was used to select four refugee camps, like Jewi, Kule, Tierkidi, and Nguenyiel camps, from the seven refugee camps. The researchers used a systematic random sampling method to select households within each camp. This study used primary and secondary data sources. The data were analyzed using descriptive and inferential statistics and a binary logit model. The study found that food aid has an impact on refugees in terms of nutritional improvement (38%), (21%) for health improvement, (24%), socioeconomic stability, (6%), psychological well-being, and dependency syndrome (11%) of the sample respondents. Findings from the binary logit model show that market access positively influences refugees' food aid access ($p=0.041$), and cultural dietary practices negatively influence refugees' household food aid access ($p=0.005$). Non-governmental and international organizations should implement long-term strategies to ensure that refugees have the opportunity to thrive and contribute to society. These methods should include effective needs assessments, food distribution mechanisms, nutritional standards, dietary diversity, cultural sensitivity, community engagement, and monitoring and evaluation.

Keywords: *Ethiopia, Food aid access, Gambella region, Nutrition security, Refugees camps, South Sudanese*

العوامل المحددة للوصول إلى المساعدات الغذائية بين اللاجئين من جنوب السودان في إقليم قمبيلا، إثيوبيا

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الملخص:

تصاعدت الحرب في جنوب السودان نتيجة لغياب جيش مهني ومؤسسي، مما أدى إلى تشكيل وحدات مسلحة قائمة على الميليشيات والانقسامات العرقية .ونتيجة لذلك، أجبرت النزاعات والأزمات العديد من الناس على مغادرة منازلهم بحثًا عن المأوى والأمان في مخيمات اللاجئين أو في بلدان أخرى . يهدف هذا البحث إلى تحديد العوامل المؤثرة في الحصول على المساعدات الغذائية بين اللاجئين من جنوب السودان في إقليم قمبيلا .استخدم الباحثون منهجية مختلطة، حيث تم اختيار أربعة مخيمات لاجئين)جوي، كولي، تيركيدي، ونجوينيل (من بين سبعة مخيمات باستخدام أسلوب العينة القصدية . كما تم اعتماد أسلوب العينة العشوائية المنتظمة لاختيار الأسر داخل كل مخيم .اعتمدت الدراسة على بيانات أولية وثانوية، وتم تحليلها باستخدام الإحصاءات الوصفية والاستدلالية ونموذج اللوغيت الثنائي.

أظهرت النتائج أن المساعدات الغذائية كان لها تأثير على اللاجئين من حيث تحسين التغذية)38(%، وتحسين الصحة)21(%، والاستقرار الاجتماعي والاقتصادي)24(%، والرفاه النفسي)6(%، ومتلازمة الاعتماد)11 (%من بين المستجيبين .كما أظهر نموذج اللوغيت الثنائي أن الوصول إلى الأسواق يؤثر بينما تؤثر الممارسات الغذائية ،(p=0.041) إيجابًا على حصول اللاجئين على المساعدات الغذائية (p=0.005). الثقافية سلبًا على حصول الأسر اللاجئة على المساعدات الغذائية

يوصي الباحثون بأن تعمل المنظمات غير الحكومية والدولية على تنفيذ استراتيجيات طويلة الأمد تضمن تمكين اللاجئين من الازدهار والمساهمة في المجتمع، وذلك من خلال تقييم الاحتياجات بفعالية، وتحسين آليات توزيع الغذاء، ووضع معايير تغذوية، وتعزيز التنوع الغذائي، ومراعاة الحساسية الثقافية، والمشاركة المجتمعية، والمتابعة والتقييم المستمر.

الكلمات المفتاحية: إثيوبيا، الوصول إلى المساعدات الغذائية، إقليم قمبيلا، الأمن الغذائي والتغذوي، مخيمات اللاجئين، جنوب السودان

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Introduction

The South Sudanese civil war, which began in December 2013, arose from a confluence of factors beyond ethnic division. A significant contributor to the conflict was the absence of a professionalized and institutionalized military, which led to the formation of militia-based armed units organized along ethnic lines (Rolandsen, 2015). This conflict has resulted in large-scale displacement, with many fleeing persecution, war, and violence. Although the reasons for displacement vary, conflicts frequently underpin refugee crises (Snedeker, 2019). These crises are often exacerbated by political instability, ethnic tension, religious persecution, and economic hardship. Consequently, many individuals are compelled to seek safety and security in refugee camps or other countries (Braithwaite et al., 2022).

In Ethiopia's Gambella region, refugee camps for South Sudanese were established and managed through partnerships between the United Nations High Commissioner for Refugees (UNHCR), non-governmental organizations (NGOs), and the Ethiopian government. These camp sites deliver vital facilities, such as shelter, food, medical care, and education, to thousands of refugees who fled conflict and violence in South Sudan (Gidron et al., 2021).

Despite these efforts, South Sudanese refugees in Gambella face significant challenges, particularly food insecurity and malnutrition issues. A major factor contributing to this crisis is limited access to nutritious food in refugee camps. Poor infrastructure restricts the availability of fresh produce and balanced meals, while the high cost of food further exacerbates the issue (CERF, 2016; UNICEF, 2023). Consequently, malnutrition rates, particularly among children, continue to rise, threatening their health and well-being (Ghazal & Bozoğlu, 2022). This challenge underscores the vulnerability of South Sudanese refugees, who frequently struggle to meet their basic nutritional needs (Jemal & Haidar, 2014).

Efforts to address these challenges involve collaboration between humanitarian organizations and local authorities. Initiatives such as food distribution centers and nutrition programs aim to provide refugees with regular access to balanced meals and educate them on proper nutrition (UNHCR, 2022). These interventions are crucial for improving access to adequate food and enhancing the balanced health of refugees (Taylor, 2016; UNHCR, 2019). Strengthening food aid and household nutritional security is vital for the survival and quality of life of refugees (Kussanga & Lunning, 2016). Adequate nutrition not only supports physical and mental health but also mitigates the potential for conflict over scarce resources, thereby fostering stability within camps (UNHCR et al., 2002; Save the Children 2004). Furthermore, improved nutrition empowers refugees to engage in educational and economic activities, allowing them to recover and contribute to the development of the local population (USAID, 2022).

Few researchers have focused on the nutritional benefits of food aid programs for refugee populations (Axel et al., 2018; Tranchant et al., 2019). The lack of empirical evidence limits policymakers' and humanitarian organizations' ability to design targeted, evidence-based interventions that ensure sustainable food security. The central problem addressed in this study is the limited understanding of the factors influencing access to food aid among South Sudanese refugees in Gambella. To address this problem, this study formulated the following specific objectives: (i) to examine the impact of food aid on refugees and (ii) to identify the factors that influence refugees' access to food aid in the study area. By achieving these objectives, this study will have significant implications for policymakers and humanitarian organizations in developing an effective food security model. A nuanced understanding of these determinants is essential for designing targeted and sustainable interventions to resolve the nutritional needs of this disadvantaged group.

Research Method

Study Area Description

The Gambella region accommodates the highest number of refugees in Ethiopia, largely composed of South Sudanese refugees residing in seven refugee camps, with a small number living in local settlements. Due to the region's lack of self-sufficiency in cereals, alternative sources of income, such as fishing, play a crucial role in providing essential nutrition to the population.

Research Design

Using a cross-sectional design, this study applied a combination of qualitative and quantitative methods to holistically understand the determinants of food aid access among South Sudanese refugees in the Gambella region. Qualitative data were important for gathering rich, in-depth information on the factors influencing access to food aid by South Sudanese immigrants. Quantitative data were used for statistical analysis to identify the patterns and relationships between the variables.

Sampling Technique and Size Determination

A two-stage sampling technique was used to select the participants. In the first stage, a purposive sampling technique was employed to select four refugee camps within the Gambella region like Jewi, Kule, Tierkidi and Nguenyiel camps from the seven (7) refugee camps in the region. These camps were selected because of their large refugee sizes, demographic diversity, and unavailability of educational, food distribution, and health components, all of which represent an entire section of the region's refugee community. Selecting camps with these characteristics ensured that the findings reflected a range of living conditions and challenges faced by refugees, thereby enhancing the external validity of the study. In the second stage, a

systematic random sampling method was used to select respondents from each camp. This method was used to ensure that each participant had an equal probability of being selected, resulting in a more accurate sample selection. A crucial effort to overcome bias in systematic random sampling is to ensure that the starting point for household selection is random. This randomness reduces biases in the sample selection process. This involved creating a sampling frame by listing all households in each camp and then selecting a random starting point for every tenth household. This sampling technique helped ensure a symbolic subset of refugees in Gambella, enabling the research team to draw accurate conclusions regarding food aid and nutritional security in this region.

The Yamane formula was used to compute the study sample size (Yamane, 1967). The formula considers a 95% desired confidence level and a 5% sampling error to determine the correct sample size for this study. Using this formula, the researchers calculated the number of households that needed to be included in the sample to obtain consistent and accurate results.

$$n = \frac{N}{1 + N(e)2} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$n = \frac{431}{1 + 431(5\%)2} = 205$$

Sources and Methods of Data Collection

This study incorporated data from both primary and secondary sources. The primary sources of data collection included in-depth interviews with key stakeholders, such as community leaders, healthcare providers, and representatives of non-governmental organizations, who provided valuable insights into the current situation and potential interventions. Additionally, focus group discussions (FGD) were piloted with refugee populations to gain a nuanced understanding of the challenges they face and their perceptions of food security. Secondary data sources, such as the existing literature and reports, were reviewed to provide context and supplement the primary data.

Methods of Data Analysis

Data analysis was conducted using both descriptive and inferential statistical methods and an econometric model. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used. Qualitative and quantitative data were analyzed using chi-square and tests, respectively. The econometric model employed was a binary regression model using SPSS version 25. The choice of binary logistic regression over alternative models, such as probit or multinomial regression, is justified on theoretical and practical grounds. While probit models also handle dichotomous outcomes, the logistic regression model is preferred for its ease of interpretation, as the coefficients can be exponentiated to yield odds ratios that are

more intuitive for policymakers and practitioners. This study does not have a dependent variable with more than two categories; therefore, multinomial models are not appropriate (Muller, 2020; Kravets et al., 2024). Therefore, the binary logistic regression approach provides a robust, interpretable, and statistically appropriate framework for analyzing the determinants of food aid access among South Sudanese refugees residing in the Gambella region. This model was used because refugee food access has a dual response (0 = non-food aid access; 1= food aid access). Therefore, the mathematical expression for the model is shown below based on the binary logit framework (Gujarati, 1995; Greene, 2003).

$$P\ (Yi = 1) = \frac{1}{1+e^{-(\beta 0+\beta iXi)}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

To simplify the presentation, we express Equation (2) as

$$P\ (Yi = 1) = \frac{1}{1+e^{-Zi}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where P (Yi=1) refers to the likelihood that refugees have access to food aid, Zi is the function of a vector comprising n independent variables, e^- stands for the base of the natural logarithm, and Equation (3) is the cumulative distribution function. If P (Yi=1) is the possibility that the refugee has food aid access, then 1-P (Yi=0) indicates the chance that refugee does not have access to food aid as shown below

$$1 - P(Yi = 1) = 1 - \frac{1}{1+e^{-Zi}} = \frac{1}{1+e^{Zi}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Therefore, we can write

$$\frac{P(Yi = 1)}{1 - P(Yi = 1)} = 1 - \frac{1+e^{Zi}}{1+e^{-Zi}} = e^{Zi} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Equation (5) presents the odds ratio, defined as the proportion of the likelihood of refugees receiving food aid to the likelihood of not receiving it. By applying the natural logarithm to Equation (5), we get

$$Li = Ln\left(\frac{P(Yi = 1)}{1 - P(Yi = 1i)}\right) = Zi \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Here, Li represents the logarithm of the odds ratio, which exhibits linearity in both the independent variable and the parameter. Therefore, with the inclusion of a random error term ui, the logit model can be expressed as

$$Zi = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 \ldots\ldots\ldots\ldots\ldots\ldots \beta nXi + ui \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

Here, β0 denotes the intercept, while β1, β2, β3…βn represent the coefficients associated with the model's predictors. Xi denotes the vector of characteristics for each respondent. Zi refers to the logarithm of the odds ratio, which is linear in both independent variables and the corresponding parameters. The study's dependent and independent variables are presented in Table 1.

Table 1. Variable definition

Variable	Nature	Measurement	Expected outcome
Dependent variable			
Food aid access	Dummy	0=Non-food aid access, 1=Food aid access	-/+
Independent variable			
Age	Continuous	Number of year	+
Cultural dietary practice	Dummy	0=Bad, 1=Good	-
Education level	Dummy	0=Illiterate, 1=Literate	+
Family size	Continuous	Total family member	+
Gender	Dummy	0=Male, 1=Female	+
Household incomes	Continuous	Ethiopian Birr	+
Marital status	Categorical	0=Married, 1=Divorce, 2=Window	+
Market access	Dummy	0=No, 1=Yes	+
Remittance access	Dummy	0=No, 1=Yes	+

Source: Own Computation (2025).

Findings

Statistical Test for Categorical Variables

A chi-square test was conducted to determine the relationship between marital status, gender, education level, access to markets, cultural dietary practices, remittance access, and food aid.

Of the refugee households, 37% were male and 63% were female, suggesting a potential gender disparity in receiving food aid and in nutritional security. The chi-square result indicated that refugee gender was not related to access to food aid ($\chi^2 = 0.029$; $p = 0.588$). This indicates that gender plays no significant role in determining food aid access among refugees in the refugee camps. Similarly, previous research found no significant effect of the household head's gender on food security among rural Ugandan women (Durairaj et al., 2019). However, other studies have suggested that gender plays a significant role in determining refugees' food aid assistance, with women and children being particularly vulnerable (Hanmer et al., 2018).

Regarding the marital status of refugees, 32% were married, 17% were divorced, and 51% were widowed ($\chi^2 = 0.848$; $p = 0.654$). The results showed no correlation between marital status and the dependent variables at any level of

significance. Thus, marital status did not influence refugees' access to food aid. This might be due to income level, education, and household size, which need to be investigated further to provide deeper insights into the possible predictors of access to food aid for refugees. A study on refugees' access to food aid revealed that marital status did not significantly affect access (Al-Kharabsheh et al., 2020). However, research has indicated that marital life and family breakup could influence refugees' quality of life, with the former particularly highlighting the function of social support and a sense of unity (Georgiadou et al., 2020).

Regarding education level, 57% of the refugees were illiterate and 43% were literate. Similarly, the chi-squared test revealed no association between the education level of refugees and the dependent variable ($\chi^2 = 2.136$; $p = 0.128$). This may be because education level was not a reliable predictor of access to food aid for refugees. Therefore, access to food aid did not significantly depend on whether a refugee was literate. Research has shown that the level of education may not influence refugee access to food aid (Hadley et al., 2010). However, some researchers have found that a lack of literacy is a common problem for food security among Burundian and Congolese refugee women in the US (McElrone et al., 2019). This suggests that a higher literacy level may be associated with better access to food assistance.

Refugee access to the market showed that 51% of them had access to markets, while 49% did not have market accessibility. Chi-square tests revealed a high significance between market access and the dependent variable ($\chi^2 = 4.605$; $p = 0.05$). This shows that market access is a strong predictor of refugees' access to food aid. This result supports previous research, which proved that market access influences refugees' access to food aid and stressed the complex determinants (MacPherson & Sterck, 2021; Nisbet et al., 2022). They highlighted the positive influence of development strategies, particularly cash transfers and small-scale farming, on food security. These findings suggest that access to the market may not be the only significant predictor of refugee access to food aid. Other research corroborates this and emphasizes the influence of cultural food and social factors in contributing to food security among refugees (Gingell et al., 2022).

The dietary habits of refugees showed that 49% perceived their dietary habits as good, whereas the remaining 51% perceived their dietary habits as poor. The chi-square test also indicated a relationship between cultural dietary practices and the dependent variable ($\chi^2 = 6.740$; $p = 0.01$). This indicates that cultural dietary practices are a significant predictor of refugees' access to food aid. Moffat et al. (2017) and Alkharouf et al. (2023) agree with these findings, indicating that cultural dietary practices are a significant predictor of refugees' access to food aid. They argued that the food aid provided should align with culture-based practices and food choices of the refugee population to enhance its acceptability and utilization by the refugee population. Furthermore, it has been posited that even though cultural food

consumption habits are not the sole determinant of the availability of food aid among refugees, they are a key variable in determining their food preferences and experiences (Peterman et al., 2011; Elshahat & Moffat, 2020). They reported that education, nutrition education, and family variables were correlated with the diets of refugee women.

Remittance access among refugees indicated that 51% of the participants received remittances and 49% did not receive remittances. The results show no association between remittances and food aid accessibility ($\chi^2 = 0.806$; $p = 0.369$). This may be because people spent remittances on other needs, such as shelter, healthcare, and school fees, rather than solely on food. It has been established that refugee remittances do not significantly contribute to food aid (Morris et al., 2009). However, as Ethiopian research suggests, remittances play an important role in determining refugees' access to food (Abadi et al., 2018). This study highlights the significance of considering remittances in refugee food-aid programs.

Table 2. Result of categorical variables (n=205)

Variable	Data set	Frequency	Percentage	χ2	p-value
Gender	Male	76	37	0.294	0.588
	Female	129	63		
Marital status	Married	66	32	0.848	0.654
	Divorce	35	17		
	Window	104	51		
Education level	Illiterate	117	57	2.316	0.128
	Literate	88	43		
Market access	No	104	51	4.065	0.044**
	Yes	101	49		
Cultural dietary practices	Bad	104	51	6.740	0.009*
	Good	101	49		
Remittance access	No	115	56	0.806	0.369
	Yes	90	44		

Source: Field Survey Data (2025). * & **, significant at 1% and 5% level of precision.

Statistical Test for Continuous Variables

The study employed a t-test to examine the variance in age, family size, landholding size, household income, and food aid access.

The age of the family head was not significantly correlated with refugees' access to food aid ($t = -0.020$; $p = 0.309$). This finding suggests that age did not play an important role in determining refugees' access to food. This may be because age does not necessarily affect the ability of the household head to access food aid, as other factors, such as income and household size, may have a more significant impact. This idea was supported by previous findings, which showed that the age of the family head did not influence refugees' food aid access (Pieterse & Ismail, 2003).

However, factors such as income, household size, and acculturation play a significant role in food aid access (Hadley & Sellen, 2006).

Access to food aid was significantly correlated with the family size of refugee households ($t = 1.650$; $p = 0.099$). This finding indicates that refugee household size influences access to food aid. A larger family size may have resulted in a greater need for food assistance, leading to increased food access for the family. This idea was supported by a study of refugee households, which found that larger families were more likely to receive food aid (Forsen et al., 2016). They found a positive correlation between household size and the amount of food aid received, suggesting that larger households were allocated more food assistance than smaller households. These findings highlight the importance of considering family size when determining eligibility and allocating food aid to refugees. Nevertheless, some researchers have noted the vital role of humanitarian food assistance and the potential benefits of a developmental approach (Guli et al., 2023). These studies collectively suggest that family size may not directly impact food aid access; various factors, including cultural considerations, policy interventions, and the nature of the aid itself, significantly shape refugee food security.

The landholding size of refugee households was not significantly correlated with access to food aid ($t = 0.463$; $p = 0.644$). This suggests that landholding size does not play a significant role in determining refugees' food access. This may be because food aid allocation was primarily based on household size rather than landholding size. Similarly, the size of landholdings of refugee households did not significantly impact their access to food aid, as food aid allocation was primarily based on household size (Hoddinott, 2004). Nonetheless, others opposed this finding by stating that landholding strongly influences household food and nutrition security in rural areas of Myanmar (Rammohan & Pritchard, 2014). Similarly, in rural Kenya, increased land size is linked to higher food consumption (Muraoka et al., 2018).

Household income was not significantly correlated with access to food aid ($t = -0.727$; $p = 0.468$). This indicates that the revenue received by a refugee household does not directly impact their access to food aid. This may mean that other factors, such as food aid availability and distribution or refugee eligibility and application processes, were more influential in determining access to food aid. Some studies have also emphasized that food aid is influenced by non-economic factors, such as social and cultural institutions (Mallick & Rafi, 2010). However, research has found that monetary aid to refugees has a pivotal impact on the local economy, suggesting that higher household income may be linked to access to food aid (Taylor et al., 2016; Alloush et al., 2017).

Table 3. Result of continuous variables (n=205)

Variable	Mean difference	Standard error difference	t-test	p-value
Age	2.475	2.408	1.020	0.309
Family size	0.072	0.837	1.650***	0.099
Landholding size	0.435	0.939	0.463	0.644
Household incomes	-312.566	429.928	-0.727	0.468

Source: Field Survey Data (2025). ***, mean different at 10% level of precision.

Impact of Food Aid on Refugees

The impact of food aid on refugees is an important aspect to consider when analyzing the overall well-being and survival of displaced populations. This study revealed that access to food aid positively influenced the majority of the sample respondents, with only a minority reporting a negative impact on their lives. The impact of food aid on nutritional improvement was 38% for sample respondents, 21% for health improvement, 24% for socioeconomic stability, 6% for psychological well-being, and 11% for dependency syndrome (Philip et al., 2018; Kahsay & Lemma, 2021; Ejiohuo et al., 2024).

Table 4. Food aid impact on refugee (n=205)

Category	Frequency	Percentage
Nutritional improvement	77	38
Health improvement	43	21
Socio-economic stability	50	24
Psychological well-being	13	6
Dependency syndrome	22	11

Source: Field Survey Data (2025).

Factors Influencing Refugee Food Aid Access

The binary logit model revealed that only two of the ten (10) independent variables were statistically significant. The variables were market access and cultural dietary practices, which are described below.

Refugee market access influences food-aid access. As expected, market access positively influenced refugees' access to food aid ($p = 0.041$). This means that when refugees had market access, their chances of accessing food aid increased by 1.910. This highlights that the availability and accessibility of markets play crucial roles in determining refugees' access to food aid (Eslami et al., 2023).

Cultural dietary practices are also vital factors influencing refugees' access to food. As expected, the cultural dietary practices of refugee households negatively influenced their access to food aid ($P = 0.005$). This indicates that when refugees strictly adhered to their cultural dietary practices, their chances of accessing food aid decreased by 0.415. Refugees who strongly adhere to their cultural diets are at a

disadvantage when it comes to food aid because the aid provided often does not match their dietary needs or preferences (Lee & Lee, 2024).

Table 5. Result of binary logit model (n=205)

Variable	**B**	**Sig.**	**Exp(B)**
Gender	-.047	0.884	0.954
Marital status	.491	0.269	1.634
Education level	.397	0.207	1.487
Market access	.647	0.041**	1.910
Cultural dietary practices	-.880	0.005*	0.415
Remittance access	.065	0.840	1.067
Age	-.011	0.243	0.989
Family size	-.012	0.660	0.988
Landholding size	-.011	0.656	0.989
Household incomes	.000	0.680	1.000

Source: Software Output (2025). * & **, significant at 1% and 5% level of precision.

Discussion

Food assistance is at the core of addressing malnutrition among refugees who have basic dietary requirements. The findings show that food aid significantly influences nutritional outcomes and thus serves the role of feeding vulnerable groups with nutritious items. This is consistent with other studies that have found similar positive impacts of targeted food assistance, which can reduce the negative impacts of food insecurity, especially when received in the context of displacement, and support overall health and development (Measham et al., 2014; Yachouh, 2018). This, theoretically, highlights the role of humanitarian interventions in responding to immediate physiological requirements, as indicated in Maslow's hierarchy of needs, with nutrition serving as the foundation upon which human development can occur. From a policy perspective, these results advocate for the sustained provision of organized and sufficiently funded food assistance programs within refugee contexts to support nutritional improvement. More generally than nutrition, food aid has been described as "enhancing health more broadly, strengthening physiological resistance, and decreasing susceptibility to disease." Consistent access to and consumption of sufficient food positively affect the immune system and help prevent malnutrition-related health issues (Riggs et al., 2016; Mastrorillo et al., 2022). This places humanitarian assistance and public health in a common sphere of concern, suggesting that food programs should be linked with health initiatives to maximize their public health impact. Practically, humanitarian services should integrate support, such as vaccination campaigns and health education, in conjunction with food assistance if we want to improve refugee well-being holistically.

Food assistance also fuels socioeconomic stability by reducing immediate hunger and allowing people time and resources for productive activities. Refugees with sustainable food needs can transfer their energy away from these needs for education, vocational skills, or a micro-economy, helping to build family and community resilience. This effect reinforces the wider developmental view of humanitarian assistance and the belief that food programs can function as an enabling regime for social and economic empowerment (Clark & Taylor, 2001; Khuri et al., 2022). Thus, food assistance, along with skill-building and cash-based interventions to support self-sufficiency for resource-constrained families, must be considered by policymakers. Food aid also impacts psychological well-being by alleviating stress, anxiety, and worry related to food insecurity through access to adequate nutrition. Although not as directly observable as improved nutrition or health, its effects on psychological outcomes are noteworthy. This underscores the multi-faceted nature of food assistance benefits (Maharaj et al., 2017). Theoretically, this corresponds with those frameworks that foreground the psychosocial aspects of humanitarian assistance, which include the provision of security that food assistance can provide to emotional and mental well-being. In practice, the co-location of mental health support and food assistance programs could enhance these benefits and improve overall resilience. This study also suggests the risk of dependency syndrome, where prolonged reliance on food aid decreases self-sufficiency motivation. However, it poses a theoretical challenge to established humanitarian models, as dependency can affect long-term development and independence (Mabiso et al., 2014; Stark, 2021). From a policy perspective, these findings highlight the need for a blended strategy of food aid with empowerment-based strategies such as education, skills training, and access to income generation. Proactive interventions to address dependency can meet the immediate nutritional needs of refugees and promote long-term self-reliance.

Access to markets is a crucial factor in food aid allocation. Refugees who could access local markets were more likely to receive food aid, providing evidence that infrastructure and local economic incorporation influenced the effectiveness of aid (Clemens et al., 2018). This illustrates the politics of humanitarianism within market contexts and identifies potential pathways to access and dietary diversity through market participation (MacPherson & Sterck, 2019). Policy measures should thus not only address market linkages but also include cash- or voucher-based support alongside in-kind food assistance. Furthermore, cultural dietary practices significantly influenced access to food aid. Refugees whose cultural or religious beliefs served as intractable principles in dietary choice were at a further disadvantage in terms of food access and support, suggesting that basic aid supplies might not always meet the needs of recipients (Soifoine, 2022). This points to the need for culturally sensitive programming and consideration of local food preferences within aid distribution (Tiedje, 2014). Theoretically, for the helped, and practically, culturally

normed assistance is culturally acceptable, being accepted and utilized, contributing to program implementation, targeting, and effectiveness in meeting the needs of refugees' social context.

Conclusion

The study concluded that refugees reported a positive impact of food aid in terms of nutritional improvement, socio-economic well-being, and psychological well-being, and a negative impact of dependency syndrome. The model results indicate that market access significantly improves refugee households' access to food aid, whereas refugee cultural dietary practices are significantly restricted in the selected camps. Therefore, non-governmental and international organizations should consider the importance of market access and cultural dietary practices when providing food assistance to refugees. This should ensure that the aid provided is effective and meets the specific needs of each refugee household in the long run.

From a political and practical perspective, these findings highlight the need to shift humanitarian policy from a purely relief-oriented approach to one that integrates development-oriented strategies. Policymakers should prioritize strengthening infrastructure for market access, supporting culturally sensitive food programs, and combining in-kind aid with cash or voucher systems to enhance choice and agency. Addressing dependency syndrome requires embedding livelihood support, vocational training, and income-generating activities, alongside food assistance. Future research should expand this analysis to other refugee-hosting regions to test the generalizability of these results, compare contextual differences, and refine theoretical models of food aid access. Such efforts would not only improve the effectiveness of humanitarian programming but also contribute to broader debates on refugee self-reliance, resilience, and integration.

Conflict of Interest

The authors declare that they have no conflict of interest.

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References

Abadi, N., Techane, A., Tesfay, G., Maxwell, D., & Vaitla, B. (2018). The impact of remittances on household food security: A micro perspective from Tigray, Ethiopia (No. 2018/40). WIDER Working Paper. https://doi.org/10.35188/UNU-WIDER/2018/482-7

Al-Kharabsheh, L., Al-Bazz, S., Koc, M., Garcia, J., Lane, G., Engler-Stringer, R., & Vatanparast, H. (2020). Household food insecurity and associated socio-

economic factors among recent Syrian refugees in two Canadian cities. Border Crossing, 10(2), 203-214. https://doi.org/10.33182/bc.v10i2.1161

Alkharouf, R., Shehadeh, A., Khazaleh, K., Al-Azzam, A., & Khalayleh, M. (2023). Assessing Refugee Preferences for SDG 2 (Zero Hunger) Solutions in Irbid Camp and Sakhra Region: Cultivated Roofs and Refrigerators as Food Banks Interventions. Sustainability, 15(15), 11948.

Alloush, M., Taylor, J. E., Gupta, A., Valdes, R. I. R., & Gonzalez-Estrada, E. (2017). Economic life in refugee camps. World Development, 95, 334-347. https://doi.org/10.1016/J.WORLDDEV.2017.02.030

Axel, D., Andreas, F., & Sarah, L. (2018). The Effects of Foreign Aid on Refugee Flows, GLO Discussion Paper, No. 195, Global Labor Organization (GLO), Maastricht.

Braithwaite, A., Ghosn, F., & Hameed, T. (2022). Under pressure: when refugees feel pressured to leave their host countries. Journal of Refugee Studies, 35(1), 595-614. https://doi.org/10.1093/jrs/feab102

CERF. (2016). Resident / Humanitarian Coordinator Report on the Use of CERF Funds Ethiopia Underfunded Emergencies Round I - 2016.

Clark, S. J., & Taylor, C. S. (2001). Reducing Hunger: Putting food aid into broader contexts. Development, 44(4), 57-60. https://doi.org/10.1057/PALGRAVE.DEVELOPMENT.1110293

Clemens, M., Huang, C., & Graham, J. (2018). The Economic and Fiscal Effects of Granting Refugees Formal Labor Market Access. CGD Working Paper 496. Washington, DC: Center for Global Development.

Durairaj, A. E., Gewa, C. A., Komwa, M. K., & Pawloski, L. (2019). "Our turn to eat": shifting gender norms and food security in the Wakiso district of Uganda. J. Hunger Environ. Nutr. 14, 416–443. https://doi.org/10.1080/19320248.2017.1403407

Ejiohuo, O., Onyeaka, H., Unegbu, K., Chikezie, O., Odeyemi, O., Lawal, A., & Odeyemi, O. (2024). Nourishing the Mind: How Food Security Influences Mental Wellbeing. Nutrients, 16. https://doi.org/10.3390/nu16040501

Elshahat, S., & Moffat, T. (2020). Dietary practices among Arabic-speaking immigrants and refugees in Western societies: A scoping review. Appetite, 154, 104753. https://doi.org/10.1016/j.appet.2020.104753

Eslami, H., Kabadayi, S., & Kozah, A. (2023). The role of market-based transformative service initiatives in service inclusion of refugees. Journal of Services Marketing. https://doi.org/10.1108/jsm-07-2022-0255

Forsen, Y., Guyatt, H., Kimetrica, L., Forsen, Y., Guyatt, H., Kimetrica, L. (2016). Refugee household vulnerability study: Kakuma refugee camp.

Georgiadou, E., Schmitt, G. M., & Erim, Y. (2020). Does the separation from marital partners of Syrian refugees with a residence permit in Germany have an impact on their quality of life?. Journal of Psychosomatic Research, 130, 109936. https://doi.org/10.1016/j.jpsychores.2020.109936

Ghazal, A. M., & Bozoğlu, M. (2022). Factors Influencing the Food Purchase Points of Syrian and Iraqi Refugees in Samsun Province, Turkey. KSU J. Agric Nat, 25(4), 872-881. https://doi.org/10.18016/ksutarimdoga.vi.883333

Gidron, Y., Carver, F., & Deng, E. (2021). More Local is Possible: Recommendations for enhancing local humanitarian leadership and refugee participation in the Gambella refugee response. https://doi.org/10.21201/2021.8267

Gingell, T., Murray, K., Correa-Velez, I., & Gallegos, D. (2022). Determinants of food security among people from refugee backgrounds resettled in high-income countries: A systematic review and thematic synthesis. PLoS One, 17(6), e0268830. https://doi.org/10.1371/journal.pone.0268830

Greene, W. H. (2003). Econometric analysis. 5th ed. New Jersey: Prentice-Hall.

Gujarati, D. N. (1995). Basic Econometrics. 4th ed. United States Military Academy, New York.

Guli, E. A., Barakagira, A., & Zombeire, R. (2023). Humanitarian food assistance and nutrition outcomes among refugees: A historical perspective. Journal of Scientific Research and Reports, 29(1), 26-37.

Hadley, C., & Sellen, D. (2006). Food security and child hunger among recently resettled Liberian refugees and asylum seekers: A pilot study. Journal of Immigrant and Minority Health, 8, 369-375. https://doi.org/10.1007/s10903-006-9007-9

Hadley, C., Patil, C. L., & Nahayo, D. (2010). Difficulty in the food environment and the experience of food insecurity among refugees resettled in the United States. Ecology of Food and Nutrition, 49(5), 390-407. https://doi.org/10.1080/03670244.2010.507440

Hanmer, L., Arango, D. J., Rubiano Matulevich, E. C., Santamaria Bonilla, J. A., & Viollaz, M. (2018). How does poverty differ among refugees? Taking a gender lens to the data on Syrian refugees in Jordan. World Bank Policy Research Working Paper, (8616). https://doi.org/10.1596/1813-9450-8616

Hoddinott, J. (2004). Examining the incentive effects of food aid on household behaviour in rural Ethiopia (No. 8). International Food Policy Research Institute (IFPRI).

Jemal, Y., & Haidar, J. (2014). Chronic Malnutrition and its Determinants among Refugee Children: Evidence from Refugee Camp of Ethiopia. East African Journal of Public Health.

Kahsay, T., & Lemma, A. (2021). Local perception, effect and coping mechanism of food aid and determinants of dependency syndrome: The case of Raya Azebo Woreda, Southern Tigray, Ethiopia. , 10, 1-12. https://doi.org/10.5897/ISABB-JFAS2020.0129

Khuri, J., Wang, Y., Holden, K., Fly, A. D., Mbogori, T., Mueller, S., & Zhang, M. (2022). Dietary intake and nutritional status among refugees in host countries: a systematic review. Advances in Nutrition, 13(5), 1846-1865.

Kravets, P., Pasichnyk, V., & Prodaniuk, M. (2024). Mathematical Model of Logistic Regression for Binary Classification. Part 1. Regression Models of Data Generalization. Vìsnik Nacìonal'nogo unìversitetu "L'vìvs'ka polìtehnìka". Serìâ Ìnformacìjnì sistemi ta merežì. https://doi.org/10.23939/sisn2024.15.290

Kussanga, J. P., & Lunning, P. A. (2016). Key-risk factors on quality and safety of donated foods in the food aid supply chains: A theoretical framework.

Lee, S., & Lee, S. (2024). Rethinking food aid for immigrants and refugees: Insights from Syracuse. Development Policy Review. https://doi.org/10.1111/dpr.12807

Mabiso, A., Maystadt, J. F., Vandercasteelen, J., & Hirvonen, K. (2014). Refugees, food security, and resilience in host communities: Transitioning from humanitarian assistance to development in protracted refugee situations (Vol. 2). Intl Food Policy Res Inst.

MacPherson, C., & Sterck, O. (2019). Humanitarian vs. development aid for refugees: Evidence from a regression discontinuity design.

MacPherson, C., & Sterck, O. (2021). Empowering refugees through cash and agriculture: A regression discontinuity design. Journal of Development Economics, 149, 102614. https://doi.org/10.2139/ssrn.3484965

Maharaj, V., Tomita, A., Thela, L., Mhlongo, M., & Burns, J. K. (2017). Food insecurity and risk of depression among refugees and immigrants in South Africa. Journal of Immigrant and Minority Health, 19: 631-637. https://doi.org/10.1007/s10903-016-0370-x

Mallick, D., & Rafi, M. (2010). Are female-headed households more food insecure? Evidence from Bangladesh. World Development, 38(4): 593-605. https://doi.org/10.1016/J.WORLDDEV.2009.11.004

Mastrorillo, M., Scognamillo, A., Ginet, C., Pietrelli, R., d'Errico, M., & Ignaciu, A. (2022). Enhancing refugees' self-reliance in Uganda.

McElrone, M., Colby, S. E., Moret, L., Kavanagh, K., Spence, M., Fouts, H. N., & Payne, M. (2019). Barriers and facilitators to food security among adult Burundian and Congolese refugee females resettled in the US. Ecology of food and nutrition, 58(3), 247-264. https://doi.org/10.1080/03670244.2019.1598981

Measham, T., Guzder, J., Rousseau, C., Pacione, L., Blais-McPherson, M., & Nadeau, L. (2014). Refugee children and their families: Supporting psychological well-being and positive adaptation following migration. Current problems in pediatric and adolescent health care, 44(7), 208-215. https://doi.org/10.1016/j.cppeds.2014.03.005

Moffat, T., Mohammed, C., & Newbold, K. B. (2017). Cultural dimensions of food insecurity among immigrants and refugees. Human Organization, 76(1): 15-27.

Morris, M. D., Popper, S. T., Rodwell, T. C., Brodine, S. K., & Brouwer, K. C. (2009). Healthcare barriers of refugee's post-resettlement. Journal of Community Health, 34: 529-538. https://doi.org/10.1007/s10900-009-9175-3

Mueller, S. (2020). Multinomial Regression. Handbook of Regression Analysis With Applications in R. https://doi.org/10.1002/9781119392491.ch9

Muraoka, R., Jin, S., & Jayne, T. S. (2018). Land access, land rental, and food security: Evidence from Kenya. Land Use Policy, 70: 611-622. https://doi.org/10.1016/J.LANDUSEPOL.2017.10.045

Nisbet, C., Lestrat, K. E., & Vatanparast, H. (2022). Food security interventions among refugees around the globe: A scoping review. Nutrients, 14: 522. https://doi.org/10.3390/nu14030522

Peterman, J. N., Silka, L., Bermudez, O. I., Wilde, P. E., & Rogers, B. L. (2011). Acculturation, education, nutrition education, and household composition are related to dietary practices among Cambodian refugee women in Lowell, MA. Journal of the American Dietetic Association, 111(9): 1369-1374. https://doi.org/10.1016/j.jada.2011.06.005

Philip, D., Baransi, G., Shahar, D., & Troen, A. (2018). Food-Aid Quality Correlates Positively With Diet Quality of Food Pantry Users in the Leket Israel Food Bank Collaborative. Frontiers in Nutrition, 5. https://doi.org/10.3389/fnut.2018.00123

Pieterse, S., & Ismail, S. (2003). Nutritional risk factors for older refugees. Disasters, 27(1): 16-36. https://doi.org/10.1111/1467-7717.00217

Rammohan, A., & Pritchard, B. (2014). The role of landholding as a determinant of food and nutrition insecurity in rural Myanmar. World Development, 64: 597-608. https://doi.org/10.1016/J.WORLDDEV.2014.06.029

Riggs, E., Yelland, J., Duell-Piening, P., & Brown, S. J. (2016). Improving health literacy in refugee populations. Medical Journal of Australia, 204(1): 9-10. https://doi.org/10.5694/MJA15.01112

Rolandsen, Ø. H. (2015). Another civil war in South Sudan: The failure of guerrilla government? Journal of Eastern African Studies, 9(1): 163-174. https://doi.org/10.1080/17531055.2014.993210

Save the Children. (2004). Targeting food aid in emergencies.

Snedeker, W. (2019). Refuge: Rethinking Refugee Policy in a Changing World. American Journal of Islam and Society, 36(1): 68-71. https://doi.org/10.35632/AJISS.V36I1.685

Soifoine, S. (2022). "Even If You Have Food in Your House, It Will Not Taste Sweet": Central African Refugees' Experiences of Cultural Food Insecurity and Other Overlapping Insecurities in Tampa, Florida.

Stark, L. (2021). Refugee aid should be about achieving self-reliance: how we're measuring it.

Taylor, E. J. (2016). Research: Refugees can Bolster Region's Economy.

Taylor, J. E, Filipski, M. J., Alloush, M., Gupta, A., Rojas Valdes, R. I., & Gonzalez-Estrada, E. (2016). Economic impact of refugees. Proceedings of the National Academy of Sciences, 113(27), 7449-7453. https://doi.org/10.1073/pnas.1604566113

Tiedje, K., Wieland, M. L., Meiers, S. J., Mohamed, A. A., Formea, C. M., Ridgeway, J. L., & Sia, I. G. (2014). A focus group study of healthy eating knowledge, practices, and barriers among adult and adolescent immigrants and refugees in the United States. International Journal of Behavioral Nutrition and Physical Activity, 11, 1-16.

Tranchant, P. J., Gelli, A., Bliznashka, L., Diallo, S. A., Sacko, M., Assima, A., Siegel, H. E., Aurino, E., & Masset, E. (2019). The impact of food assistance on food insecure populations during conflict: Evidence from a quasi-experiment in Mali.

UNHCR, UNICEF, WFP, WHO. (2002). Food and Nutrition Needs in Emergencies.
UNHCR. (2019). Gambella Regional State Ethiopia 2019 Pledge Progress Report.
UNHCR. (2022). Camp Profile, Gambella: Tierkidi Refugees Camp.

UNICEF. (2023). The Socioeconomic Impact of the Russia-Ukraine Crisis on Vulnerable Families and Children in Egypt: Mitigating Food Security and Nutrition Concerns.

USAID. (2022). International Food Assistance Report Fiscal Year 2022 Report to Congress.

Yachouh, R. (2018). A qualitative investigation of the mental health needs of Syrian refugees and immigrants. University of Toronto (Canada).

Yamane, T. (1967). Statistics: An introductory analysis, 2nd edn. New York, Harper & Row.