

# Association Between Food Security and Women Empowerment Among Mothers Living in a Barrack in Ibadan

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## ABSTRACT

**Background:** Food insecurity and hunger are recurrent challenges that have significant impact on Nigeria's population. Women empowerment has been shown to reduce the severity of food insecurity.

**Objective:** This study assessed food security and women's empowerment among caregivers of children aged 6–59 months in Letmauck Barrack, Ibadan, Nigeria.

**Methodology:** A cross-sectional study involving 411 mother-child dyads was conducted using a multi-stage sampling procedure. Data was collected using a semi-structured KoboCollect encrypted questionnaire. Food insecurity was measured using the Food Insecurity Experience Scale (FIES). Questions on women empowerment (decision-making, economic participation, and asset ownership) were extracted from the Nigeria Demographic and Health Survey (NDHS). Data was analysed with SPSS version 25. Descriptive statistics were used to summarise variables, Associations between categorical variables were assessed using the Chi-square test, and predictors of FI were identified using binary logistic regression ( $p < 0.05$ ).

**Results:** The mean age of the mothers was  $29.76 \pm 9.15$  years. About 54% had completed secondary school, and 83.9% reported an average monthly income of less than 50,000 naira. For women empowerment indicators, about 50% independently made decisions regarding their income, while 40.7% made decisions on major household purchases jointly with their partner. The prevalence of food insecurity was 70.9% and was significantly associated with respondent's income ( $X^2 = 7.263$ ,  $p = 0.026$ ). Respondents who earned less than 50,000 naira (OR: 2.949; 95% CI: 0.898-9.689) were three times more likely to be food insecure.

**Conclusion:** The study revealed high prevalence of food insecurity. Enhancing women's decision-making autonomy and may help reduce food insecurity.

**Keywords:** Women Empowerment, Food Insecurity, Mothers, Barrack

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## INTRODUCTION

Food insecurity and hunger are recurrent challenges that have a significant impact on Nigeria's population (1). While a child's nutritional status is directly impacted by feeding practices and morbidity, broader factors include a mother's knowledge of childcare and household socioeconomic conditions (2-4).

Most societies in underdeveloped nations, like Nigeria, are patriarchal by nature, where men act as gatekeepers and exert authority over women within their social class, which is common within families and households (5). Women make very little input to household decisions in these environments. Men control the majority of financial resources; they have the power to determine where, when, and how their wives utilize health

care. According to the review of women's empowerment indicators for Nigeria, female individuals are disempowered and deprived. From the NDHS (2018) report, in terms of participation in household decision-making, 34% of married women were involved in all three key areas: decisions about their own healthcare, major household purchases, and visits to family or relatives, while 37% are not involved in any of these decisions. However, progress has been noted, as 72% of married women who earn income now report independently deciding how to use it, compared to 70% in 2013 (6).

The United Nations Food and Agriculture Organization (FAO) defines food security as a situation where people have economic, physical, and social access to safe and sufficient food to meet their dietary needs (7). The UN's 2030 Agenda for Sustainable Development emphasizes the prospect that women's empowerment is essential to the advancement of society. Notably, "achieving gender equality and empowering all women and girls" (8) is given top priority in the agenda's fifth objective, highlighting the critical role that women's empowerment plays in promoting sustainable development.

Empowerment has been defined as the process of reinforcing a person's or a group's ability to make decisions and turn those decisions into the actions and results that are desired. Activities that increase both individual and collective assets, as well as the effectiveness and equity of the institutional and organizational framework that regulates their use, are essential to this process (9). In this context, women's empowerment encompasses equal access to and control over household income and productive resources, fewer time constraints, and collaborative decision-making over labor and home expenses (10,11).

Research relates women's empowerment to individual and household outcomes like nutrition and health, especially in sub-Saharan Africa (SSA) (12-15). This is consistent with the evidence that women in SSA are the main caretakers and important gatekeepers in their households regarding food and nutrition (16,17). Empowering women in vital industries like agriculture has been linked to improved production, family food security, and income levels (18).

The inclusion of women's empowerment in the United Nations Sustainable Development Goals demonstrates the widespread interest in enhancing women's empowerment. In our review of the

literature, several studies have examined the effect of women's empowerment on child nutrition outcomes in sub-Saharan Africa (12-15). More recently, the intersection between women's empowerment and food security has attracted scholarly attention in Nigeria (18-20), although research in this area remains relatively limited. Strengthening systems for monitoring women's empowerment is a key strategy for promoting progress in this domain.

Previous studies on food insecurity in Nigeria have reported consistently high prevalence, ranging from 30% to 81% (7,21-23). In Oyo State, Nigeria, food insecurity was reported to be more prevalent among 54% of the sampled households (24). There is a need for further research on the food insecurity status through the lens of women's empowerment, as women play a central role in household food production, allocation, and nutrition decisions. Research within the barracks is limited; this study could be one of the recent surveys in several years that discuss issues of women's empowerment in such a setting. Hence, this study aimed to assess the food insecurity levels and women's empowerment among Mothers Living in a Barrack, Ibadan.

## METHODS

This cross-sectional study was carried out among mothers with children within the ages of 6-59 months living inside the Letmauck Cantonment Army Barracks in Mokola, Ibadan, Oyo State, Nigeria. The study adopted a multi-stage sampling technique carried out in three distinct stages. First, the study location—Mokola Barracks—was purposively selected based on evidence from a previous unpublished study that reported poor complementary feeding practices in the area. Next, households with children aged 6 to 59 months were purposively selected. Finally, 411 participants were chosen through simple random sampling from the identified households. The sample size was calculated using Fisher's formula prevalence of child stunting in Nigeria (37%) (6).

## Data collection

A semi-structured, interviewer-administered questionnaire was developed and scripted using the KoboCollect application. This was used to elicit information on socio-demographic and economic characteristics, food security, and women's empowerment. Post-graduate students of the Department of Human Nutrition and Dietetics, University of Ibadan, were recruited to administer the questionnaire with the mothers.

### Assessment of food security status

The FAO Food Insecurity Experience Scale (FIES) was used to assess the food security status of the mothers. The FIES score is a continuous measure of the level of food insecurity experienced by individuals or households in the past 30 days. The food access dimension, which includes the behavioural and psychological reactions to food insecurity, is captured by the eight questions in the FIES questionnaire (see Table 1). Following (25), every question in Table 1 received a score of 1 when the respondent responded in the affirmative. The sum of the item scores was then calculated, which ranged from zero to eight (0-8). Mothers who did not answer affirmatively to any of the questions were scored 0 and deemed highly food secure. Households that scored between one and three (1-3) were classified as mildly food insecure (or food secure), and households with a score of four and six (4-6) were characterised as moderately food insecure. Households were classified as severely food insecure if they scored between seven and eight (7-8). For further analysis, FIES scores were dichotomized into food secure (0–3) and food insecure (4–8).

### Assessment of women's empowerment

Questions on women's empowerment were extracted from the NDHS. The DHS measures have been thoroughly researched and are widely accepted as addressing important domains of empowerment in the sub-Saharan Africa (SSA) context. The categorization of the women empowerment dimensions was: labour force participation, health decision-making power, household decision-making power, disagreement with justification to wife beating, gender norms for sex negotiation, family planning knowledge, women's knowledge level of survival, and ownership of assets. There were four possible responses for each of the variables: Respondent alone (i), husband or partner alone (ii), respondent and husband or partners (iii), and others (iv). Women's empowerment was not calculated as a composite index; rather, each dimension (decision-making, economic participation, and asset ownership) was analyzed descriptively and reported as the percentage of women responding to each item, consistent with the NDHS reporting format.

### Data analysis

Data were analyzed using the IBM Statistical Package for Social Sciences (SPSS) version 20. Sociodemographic data and related characteristics

were summarized using descriptive statistics such as mean, standard deviations, frequencies and percentages. The association between categorical variables was compared using the Chi-square test, while binary logistic regression was employed to identify predictors of food insecurity. All statistical analyses were carried out at a 0.05 level of significance.

### Ethical considerations

Ethical approval was obtained from the UI/UCH ethics review committee at the College of Medicine, University of Ibadan (ethical approval number: UI/EC/24/0692), and permission was obtained for the appropriate authorities within the barracks community. Verbal consent was sought from the mothers or caregivers to get their approval for the research.

## RESULTS

### Respondents' background characteristics

The socio-demographic and socio-economic characteristics of the mothers in Letmauck Barrack Cantonment, Mokola, Ibadan are presented in Table 1. The results show that the majority of mothers were married (98.3%) and lived with their spouse (96.6%). About half (53.7%) had completed secondary school education, while 26.4% had tertiary education. In occupational status, the majority were self-employed, 37.8% unemployed, and only 20% were employed. The largest household size category among the mothers was 5 or more in a household (60.0%). The average monthly income and expense of 83.9% and 83.2% of the mothers were less than 50,000 naira, respectively. In contrast, a different pattern was observed for the family income and expense, 56.9% and 48.4% of the respondents, as 50,000 and 100,000 naira were reported as the average family income and expense, respectively.

### Food Insecurity Experience Scale

The affirmative responses to all items in the food experience scale questionnaire are presented in Table 2. While 75.2% of the mothers were worried that they would not have access to enough food, 72.1 % were unable to eat healthy and nutritious foods; 78.2% ate only a few kinds of food, and a few of them (17.6%) had to go a whole day without eating. In Figure 1, the food insecurity experience within the population revealed that 29.1 %, 37.2%, and 33.7% food secure, moderately food insecure, and severely food insecure, respectively.

**Table 1: Respondents' background characteristics**

Characteristics	Frequency (436)	Percentage (%)
<b>Mother's age (years)</b>		
15-24	49	11.8
25-34	237	57.2
35-44	116	28.0
45 and above	12	2.9
<b>Mean age 29.76 ± 9.15 years</b>		
<b>Marital status</b>		
Married	428	98.2
Divorced/widowed/separated	3	0.7
Single	5	1.1
<b>Educational attainment</b>		
No formal education	5	1.1
Primary school	17	3.9
Secondary school (JSS)	62	14.2
Secondary school (completed)	236	54.1
tertiary	115	26.4
<b>Occupation</b>		
Unemployed	165	37.8
Self-employed	184	42.2
Employed	87	20.0
<b>Household size (n=433)</b>		
1-4	173	40.0
5 and above	260	60.0
<b>Living arrangement</b>		
Alone	5	1.1
Relatives	5	1.1
Spouse	423	97.0
Others	1	0.2
Parents	2	0.5
<b>Average income per month</b>		
Less than 50,000	366	83.9
50,000-100,000	50	11.5
Greater than 100,000	20	4.6
<b>Average expense per month</b>		
Less than 50,000	362	83.2
50,000-100,000	61	14.0
Greater than 100,000	12	2.8
<b>Average household income per month (₦)</b>		
Less than 50,000	75	17.2
50,000-100,000	248	56.9
Greater than 100,000	113	25.9
<b>Average household expense per month (₦)</b>		
Less than 50,000	153	35.1
50,000-100,000	211	48.4
Greater than 100,000	72	16.5

Association between respondents' characteristics and food insecurity is as shown in Table 3 below. There was a significant association between food insecurity and household size ( $P=0.023$ ), there was slight difference in the food security level between households with 1-4 members (48.0%) and 5 and 8 members (51.2%), while among food insecure households, households with 5 and

members were more food insecure (63.4%). Respondents' income was also found to be associated with food insecurity level; respondents who earned less than ₦50,000 were more food secure (78.7%) and food insecure (86.1%) ( $X^2=7.263$ ,  $p=0.026$ ).

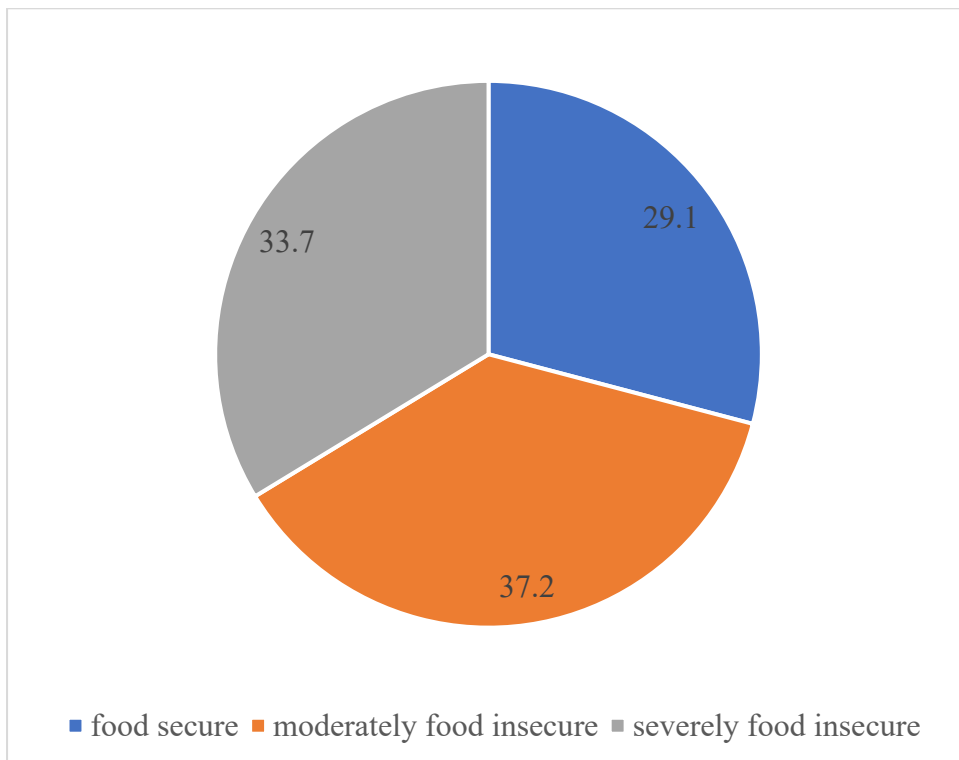
### Women's empowerment indicators among respondents

The responses of the mothers to the women's empowerment questions are presented in Table 4. Almost half (49.3%) of the mothers made decisions on their own income, and 5.4 % of them made decisions on their spouse's income. The majority

(82.1%) of the mothers reported that their spouse's income is more than theirs. Few (4.4% and 5.6% respectively) of the mothers have a house or land of their own. For all reasons given, the majority of the mothers (83.8% to 90.9%) believed that a man is not justified in beating his wife.

**Table 2: Food insecurity experience scale**

Question	Frequency (436)	Percentage (%)
Mothers worried about access to enough food to eat in the last 12 months	307	75.2
Mothers have been unable to eat healthy and nutritious food in the last 12 months	294	72.1
Mothers who ate only a few kinds of food in the last 12 months	319	78.2
Mothers had to skip a meal in the last 12 months	259	63.5
Mothers ate less than they thought they should in the last 12 months	293	71.8
Mothers' households ran out of food in the last 12 months	188	46.1
Mothers hungry but did not eat in the last 12 months	207	50.7
Mothers went without eating for a whole day in the last 12 months	72	17.6



**Figure 1: Food insecurity level of the mothers**

**Table 3: Association between respondents' characteristics and food insecurity**

Variable	Food Secure (N=127)	Food Insecure (N=309)	p-value
<b>Marital status</b>			0.187
Divorced/Widowed/Separated	0 (0.0)	3 (1.0)	
Married	126 (100.0)	301 (97.4)	
Single	0 (0.0)	5 (1.6)	
<b>Occupation</b>			0.367
Unemployed	50 (39.4)	115 (37.2)	
Self employed	57 (44.9)	127 (41.1)	
Employed	20 (15.7)	67 (21.7)	
<b>Education</b>			0.133
No formal education	2 (1.6)	3 (1.0)	
Primary school	2 (1.6)	15 (4.9)	
Secondary school (JSS)	70 (55.1)	166 (53.7)	
Secondary school (completed)	12 (9.4)	50 (16.2)	
Tertiary	41 (32.3)	74 (23.9)	
<b>Household size</b>			0.023*
1-4	61 (48.0)	112 (36.6)	
5-8	65 (51.2)	194 (63.4)	
10 and above	1 (0.8)	0 (0.0)	
<b>Respondent income</b>			0.026*
Less than 50,000	100 (78.7)	266 (86.1)	
50,000-100,000	16 (12.6)	34 (11.0)	
Greater than 100,000	11 (8.7)	9 (2.9)	
<b>Family income</b>			0.074
Less than 50,000	22 (17.3)	53 (17.2)	
50,000-100,000	63 (49.6)	185 (59.9)	
Greater than 100,000	42 (33.1)	71 (23.0)	
<b>Control over income</b>			0.692
Respondent and partner/jointly	35 (27.6)	83 (26.9)	
Someone else			
Respondent only	28 (22.0)	80 (25.9)	
	64 (50.4)	146 (47.2)	
<b>Participation in major household purchases</b>			0.482
Respondent and partner/jointly	54 (42.5)	124 (40.1)	
Someone else			
Respondent only	39 (30.7)	113 (36.6)	
	34 (26.8)	72 (23.3)	

**Table 4: Women's empowerment indicators among respondents**

Variable	Frequency (N=408)	Percentage (%)
<b>Decision on the respondent's income</b>		
Someone else	1	0.2
Respondent	201	49.3
Respondent and husband/partner jointly	109	26.7
Respondent husband/partner	97	23.8
<b>Decision on spouse's income</b>		
Respondent	22	5.4
Respondent and husband/partner jointly	170	41.7
Respondent husband/partner	216	52.9

Table 4 contd.

Variable	Frequency (N=408)	Percentage (%)
<b>Respondent's perception on measure of the spouse's income to hers</b>		
About the same	7	1.7
More	335	82.1
Less	65	15.9
Don't know	1	0.2
<b>House ownership</b>		
Alone only	18	4.4
Both alone and jointly	22	5.4
Jointly only	116	28.4
No	252	61.8
<b>Land ownership</b>		
Alone only	23	5.6
Both alone and jointly	22	5.4
Jointly only	84	20.6
No	279	68.4
<b>Decisions about major household purchases</b>		
Someone else	3	0.7
Respondent	99	24.3
Respondent and husband/partner jointly	166	40.7
Respondent husband/partner	140	34.3
<b>Respondent's health care decision</b>		
Someone else	1	0.2
Respondent	168	41.2
Respondent and husband/partner jointly	142	34.8
Respondent husband/partner	97	23.8
<b>Decision about visits to the respondent's family or relatives</b>		
Someone else	1	0.2
Respondent	56	13.7
Respondent and husband/partner jointly	198	48.5
Respondent husband/partner	153	37.5
<b>Practicing contraception</b>		
Yes	116	28.4
No	292	71.6
<b>Perceived justification for use of condom</b>		
Yes	312	76.5
No	55	13.5
Don't know	41	10
<b>Perceived justification to refuse sex</b>		
Yes	207	50.7
No	157	38.5
Don't know	44	10.8
<b>Wife goes out without permission</b>		
Yes	18	4.4
No	362	88.7
Don't know	28	6.9
<b>Wife neglects the children</b>		
Yes	36	8.8
No	342	83.8
Don't know	28	6.9

Table 4 contd.

Variable	Frequency (N=408)	Percentage (%)
<b>Wife argues with spouse</b>		
Yes	32	7.8
No	349	85.5
Don't know	27	6.6
<b>Wife refuses to have sex</b>		
Yes	20	4.9
No	359	88
Don't know	29	7.1
<b>Wife burns food</b>		
Yes	10	2.5
No	371	90.9
Don't know	10	2.5

### Predictors of food Insecurity

The predictors of food insecurity are shown in Table 5 below. Respondents who earned less than 50,000 naira (OR:2.949; 95% CI: 0.898-9.689) and between 50,000 naira and 100,000 naira (OR: 2.974; 95% CI: 0.853-10.366) were 2.9 times more likely to be food insecure, respectively. Household size with 5 or more members was more

likely to be food insecure (OR: 1.660; 95% CI: 1.058-2.604,  $p<0.028$ ). Households with an average income of less than 50,000 naira were 1.4 times more likely to be food insecure (OR:1.353; 95% CI: 0.637-2.873); households with an income between 50,000 naira and 100,000 naira were 1.7 times more likely to be food insecure (OR: 1.674; 95% CI: 0.929-3.015)

Table 5: Logistic regression model for the predictors of food insecurity

Variable	OR (95% CI)	P Value
<b>Respondent income</b>		
Less than 50,000 naira	2.949 (0.898-9.689)	0.075
50,000-100,000 naira	2.974 (0.853-10.366)	0.087
Greater than 101,000 naira	Ref	
<b>Average family income</b>		
Less than 50,000 naira	1.353 (0.637-2.873)	0.431
50,000-100,000 naira	1.674 (0.929-3.015)	0.086
Greater than 101,000 naira	Ref	
<b>Household size</b>		
1-4	Ref	
5 and above	1.660 (1.058-2.604)	<b>0.028*</b>
<b>Level of education</b>		
Primary school or lower	2.250 (0.676-7.494)	0.186
Secondary	1.124 (0.684-1.848)	0.645
Tertiary	Ref	
<b>Occupation</b>		
Unemployed	0.609 (0.325-1.142)	0.122
Self-employed	0.649 (0.348-1.208)	1.173
Employed	Ref	
<b>Decision about major household purchases</b>		
respondent and partner/jointly		
someone else	1.066 (0.566-2.008)	0.844
respondent only	1.356 (0.712-2.584)	0.354
	Ref	
<b>Control over cash earning</b>		
respondent and partner/jointly	1.037 (0.591-1.819)	0.900
someone else	1.050 (0.559-1.971)	0.879
respondent only	Ref	

Significant at  $P<0.05$



## DISCUSSION

In this study, the food insecurity levels and women empowerment among Mothers Living in a Barrack, Ibadan. A high level of food insecurity was observed in this study. This finding is consistent with reports among rice-farming households in Northern Nigeria (19). Similarly, previous studies have documented a substantial prevalence of food insecurity among rural farming households in Osun and Oyo States, as well as in North Central Nigeria (26–28). The high prevalence observed in the present study may be partly attributable to the large proportion of caregivers reporting monthly earnings below ₦100,000. Furthermore, caregivers' occupational income level was significantly associated with food insecurity, aligning with earlier evidence demonstrating significant relationships between education, income, and household food security (23,30,31). However, food insecurity was significantly associated with household size and marital status. Similar works (32), found a significant association between household and food security.

The implication of the high level of food insecurity reported in this study may mean that such households may be susceptible to hunger and the accompanying health issues because limited economic access to food would result in poor nutrition, which can be either chronic or transient. Insufficient resources to purchase enough food for an individual or household lead to insufficient nutrition, poor calorie intake, and poor nutrition (29).

Participation in intra-household decision-making can be regarded as an intrinsically significant aspect of empowerment since it can directly influence how resources are distributed within the household (33). Benchmarked against the NDHS 2018 report (6), our findings revealed that a lower percentage of the mothers who participated in this study made decisions on their own income. This result implies that economic participation in income-generating activities is insufficient for empowerment unless it is accompanied by control over financial resources.

Our results indicated low participation of women in household decision-making, consistent with previous studies (34,35). This low participation may be attributable to the high proportion of caregivers who were unemployed, which could limit their financial autonomy and, consequently, their involvement in household decision-making activities. Having a voice in intra-household decision-making is a fundamental in having a

meaningful dimension of empowerment. It is valuable in its own right and directly influences how resources are allocated within the household (36). The level of involvement of women in household decision-making suggests room for improvement, which has been found to have individual and household outcomes like nutrition and health (12-15). There is a strong link between women's participation in financial management and household food security (37).

In this study, some indicators of women's empowerment were associated with food insecurity; we found no significant association among the overall variables of women's empowerment with food insecurity. There were slight association between the decision on respondents' income, major household purchase, and food insecurity. This study found that women with financial decision-making authority were marginally more food secure. Similarly, evidence from South Africa demonstrates a strong association between women's participation in household financial management and improved household food security (38). Women's empowerment is typically linked to improving home nutrition, since women often care more than men for nutritional quality (38-40).

In conclusion, women's empowerment has recently been the subject of numerous discussions worldwide because of its close link to gender-based issues. In this study, a high level of food insecurity was recorded among the sampled population, and it was found to be associated with household size and marital status. While the mothers showed promising decisions on their income, they exercised little decision on household major purchases and healthcare utilization. More factors influencing women's decision-making, especially regarding physical and economic access to food, should be explored. Policies that encourage collaboration in financial decisions and empower women to independently manage their own income may enhance household food security. Additionally, targeting larger households for support and education on resource management could mitigate the higher risk of food insecurity observed in these groups.

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