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Assessing the Household Food Insecurity Status and Coping Strategies in Abeokuta, Ogun State, Nigeria

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ABSTRACT

Background: High prevalence of food insecurity experienced by many households in developing countries predisposes them to adopting coping strategies (CSs), some of which may put them at risk of malnutrition. This study assessed the household food insecurity status and CSs in Abeokuta.

Methods: A cross-sectional study design was adopted. A total of 250 households were randomly selected in all communities in Odeda Local Government Area, Abeokuta. Interviewer-administered semi-structured questionnaire was used to collect socio-demographic data. Household food insecurity (HFI) status and coping strategy were assessed using HFI experience scale and CS index questionnaires. The CSs were categorised as food, financial as well as both food and financial compromise. Data were reported by frequencies and percentages. Chi-square was run to determine the association among variables at $P < 0.05$.

Results: The majority (84.4%) of respondents were food insecure, of whom 26.5%, 35.5%, and 22.4% were food insecure mildly, moderately, and severely, respectively. Moreover, 99.6% took loan, sold sheep and goat, ate once a day, ate rice without stew, sold hen and turkey, took food loan, and reduced food quality and quantity as CS. A significant association exists between CS categories and food insecurity status ($P < 0.001$). In addition, access to land ($P = 0.00$), farm ($P = 0.04$), paved-road ($P = 0.01$), information ($P = 0.04$), and market ($P = 0.01$) were significantly associated with HFI status.

Conclusion: The prevalence of food insecurity was high and most households adopted CS that reduced both food quality and quantity and could adversely affect their nutritional status and predisposed them to multiple forms of malnutrition.

Keywords: Food insecurity; Coping strategies; Food quality; Household resources and food compromise

Introduction

Food insecurity remains a public health problem in many developing countries. Despite several efforts made to increase the food availability and accessibility to meet the need of growing

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population worldwide, food insecurity is still very high in many developing countries, particularly Nigeria, owing to the rise of food prices, low income levels, and devaluation in the economy of many affected countries (Anugwa and Agwu, 2019, Okolo and Obidigbo, 2015, Titus and Adetokunbo, 2007). Several factors were associated with food insecurity, which include conflicts, natural disasters, urbanisation (reducing access to farm land), and increased population growth rate were associated with the increased food insecurity (Anugwa and Agwu, 2019, Ayantoye *et al.*, 2011). Certain antecedent factors have been revealed to contribute significantly to food insecurity (Farzana *et al.*, 2017), but many of households have no control over them.

Food insecurity experienced by many households makes them to devise strategies to cope with the prevailing situation in order to prevent the household from hunger, particularly the children in the household and mitigate against its effects of their nutritional status (Jones *et al.*, 2013). Studies revealed that households adopt either food, non-food CSs, or a combination of both such as meal skipping, reducing the quality or quantity of food served, adjusting food budgets, or even obtaining food loans among others (Ballard *et al.*, 2013, Farzana *et al.*, 2017, Gupta *et al.*, 2015). This results in reliance on cheaper, less healthy, and calorie dense foods. In order to quench hunger and increase the frequency of eating. This may put household members at higher risk of unhealthy eating habits and stress-induced metabolic responses, all of which can predispose them to obesity and its associated outcomes, increase the prevalence of malnutrition, particularly in children (Dinour *et al.*, 2007).

Although diverse studies assessed various household food insecurity status and the various coping strategy applied at the household and national levels. However, most studies conducted in this part of the country used household food insecurity assessing scale as a major tool for assessing food insecurity. However, the Food and Agriculture Organisation recommended use of

Food insecurity experience scale, which is a new tool based on the direct interview to measure people's ability to access foods as well as the severity of food insecurity. Previous findings focused on the prevalence food insecurity rather than the severity. However, a recent report on the state of food security and nutrition in the world (FAO *et al.*, 2019). emphasized the importance of assessing not only the prevalence of severe food insecurity status, but also the mild and moderate food insecurity status. This notes that the food insecurity is higher than hunger and those who fall under the mild and moderate food insecurity, if not taken care of, may develop severe food insecurity. As a result, the prevalence of severe food insecurity increases. Information is scarce on the severity of food insecurity status and CSs adopted by these households using the appropriate tool in this region. These data can be useful for the government and stakeholders to assess the existing and set new policy for the food insecurity programs, design programs related to the food security, and inform interventions that can address food insecurity among this population. Therefore, this study assessed the household food insecurity status and CSs in Abeokuta, Ogun State, Nigeria.

Materials and Methods

Study design and participants: A cross-sectional descriptive study was conducted among 250 households in 20 communities in Odeda local government area, Abeokuta using simple random sampling technique.

Measurements: An interviewer-administered semi-structured questionnaire was used to collect the study information on the socio-demographic area. Household food insecurity status was assessed using food insecurity experience scale questionnaire (Ballard *et al.*, 2013), which consists of eighteen question categorized according to the level of food insecurity domains. These domains include uncertainty about food, inadequate food quality and quantity, each domain represents specific level of food insecurity that progresses from mild and moderate

to severe levels. The coping strategy adopted by households was assessed using the coping strategy index questionnaires that contained 12 experienced-based questions arranged orderly from the least severe to the most severe based on the mostly frequently practised behaviours in the last 30 days. The number of utilized CSs was calculated and the CSs were categorised as food compromization, financial compromization, as well as both food and financial compromization CSs.

Data analysis: Data were presented in frequencies and percentages. Chi-square was applied to determine the association between CSs category and household food insecurity status, as well as socio-demographic data and food insecurity status of households. Statistical significance was set at p -value < 0.05 . All statistical analysis was carried out using statistical package for social sciences version 20.

Ethical considerations: This study was approved by the Ethical Research Committee FUNAAB / NTD / COLFHEC / ERC / 023 / 12) of the Nutrition and Dietetics Department, College of Food Science and Human Ecology, Federal University of Agriculture, Abeokuta, Nigeria.

Results

Table 1 shows the socio-demographic and food insecurity status of the households. Majority (84.0%) of the household heads were male and about one-third fell within the age range of 39-59 years. About half (48.4%) of the households had total monthly income ranging from 50,000 to 99,000 naira monthly. In addition, most households had access to drinkable water, credit facilities, information and market while less than half of them had access to land, farm, and paved roads. More than three-quarter of the respondents were food insecure, while 26.4% were mildly food insecure, 35.6% were moderately food insecure, and 22.4% were severely food insecure. A significant association was found between the gender of household head ($P = 0.01$), age-range of household head ($P = 0.03$), household size ($P = 0.01$), occupation of household head ($P =$

0.001), income of the household head ($P < 0.001$), and household food insecurity status. Furthermore, household access to land ($P < 0.001$), access to farm ($P = 0.04$), access to paved road ($P = 0.01$), access to information ($P = 0.04$), and access to market ($P = 0.01$) had significant association with the household food insecurity status (**Table 1**).

Figure 1 illustrates the CSs utilized by households within the last thirty days. The most common CSs included the compromising food quantity, food quality, and finances. The majority of respondents took loan to buy food (99.6%), sold sheep and goat (100%), ate once a day (93.6%), ate rice without stew (94.4%), sold hen and turkey (99.6%), took food loan (88.4%), took money from savings (89.2%), and reduced food quantity (100%) within the last 10 days. More than half of them reduced food quality (63.2%), skipped meal for children (55.2%), ate twice a day (52.8%), and collected wild vegetables (59.6%) within the last ten days. About 20% of the households ate twice daily, 24.4% collected wild vegetables, 26.4% reduced food quality in the last 11-20 days while about 10.0% reduced their food quality, and more than a quarter of the respondents ate twice daily and skipped meal for children in the last 21-30 days.

Figure 2 shows the number of CSs adopted by households within the last 30 days. Almost two-thirds (62.6%) of the households adopted at least five CSs and more than one-quarter adopted three to four CSs in the last 30 days.

Figure 3 illustrates the household food insecurity status stratified by categories of the CSs. CSs were categorised as food compromization, financial as well as both food and financial compromization. Among the households who were food secured, food compromization (19.4%) and financial compromization (12.5%) were the most adopted prevalent CSs. Among the households who were mildly food insecure, food compromization (34.8%) as well as both food and financial compromization (13.9%) were most prevalent. Among the households who were moderately

food insecure financial compromization (43.8%) as well as both food and financial compromization (40.5%) were the most prevalent CSs adopted. Among the households who were severely food insecure, financial (37.5%) as well as both food and financial compromization

(36.7%) were more prevalent. Financial as well as both food and financial compromization increased with severity of the food insecurity. A significant association exists between the respondents' adopted CSs categories and food insecurity status ($P = 0.00$).

Table 1. Socio-demographic characteristics and food insecurity status of households

Variables	Food secure	Food Inseure			Total	P-value ^b
		Mild	Moderate	Severe		
Gender of household head						
Male	36 (14.4) ^a	62 (24.8)	71 (28.4)	41 (16.4)	210 (84.0)	0.01
Female	3 (1.2)	4 (1.6)	18 (7.2)	15 (6.0)	40 (16.0)	
Age-range of household head (years)						
20-29	6 (2.4)	16 (6.4)	34 (13.6)	15 (6.0)	71 (28.4)	0.03
30-39	19 (7.6)	24 (9.6)	29 (11.6)	12 (4.8)	84 (33.6)	
40-49	7 (2.8)	19 (7.6)	15 (6.0)	22 (8.8)	63 (25.2)	
50-59	3 (1.2)	2 (0.8)	6 (2.4)	4 (1.6)	15 (6.0)	
60-69	3 (1.2)	2 (0.8)	1 (0.4)	3 (1.2)	9 (3.6)	
70-79	1 (0.4)	3 (1.2)	4 (1.6)	0 (0.0)	6 (3.2)	
Household size						
0-5	31 (12.4)	52 (20.8)	48 (19.2)	43 (17.2)	174 (69.6)	0.01
5-10	8 (3.2)	14 (5.6)	41 (17.1)	13 (5.2)	76 (30.4)	
Occupation of household head						
Civil servant	16 (6.4)	17 (6.8)	15 (6.0)	4 (1.6)	52 (20.8)	< 0.001
Farmer	2 (0.8)	6 (2.4)	6 (2.4)	2 (0.8)	16 (6.4)	
Private sector	3 (1.2)	9 (3.6)	14 (5.6)	8 (3.2)	34 (13.6)	
Employed	2 (0.8)	1 (0.4)	4 (1.6)	2 (0.8)	9 (3.6)	
Artisan	3 (1.2)	22 (8.8)	29 (11.6)	27 (10.8)	81 (32.4)	
Trader	8 (3.2)	8 (3.2)	17 (6.8)	11 (4.4)	44 (17.6)	
Student	0 (0.0)	0 (0.0)	3 (1.2)	2 (0.8)	5 (2.0)	
Retiree	5 (2.0)	3 (1.2)	1 (0.4)	0 (0.0)	9 (3.6)	
Monthly household income (Naira)						
0-49,000	9 (3.6)	20 (8.0)	27 (10.8)	23 (9.2)	79 (31.6)	< 0.001
50,000-99,000	15 (6.0)	31 (12.4)	50 (20.0)	25 (10.0)	121 (48.4)	
100,000-149,000	9 (3.6)	14 (5.6)	12 (4.8)	8 (3.2)	43 (17.2)	
150,000-200,000	4 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)	4 (1.6)	
>200,000	2 (0.8)	1 (0.4)	0 (0.0)	0 (0.0)	3 (1.2)	
Access to land						
Yes	33 (13.2)	32 (12.8)	27 (10.8)	19 (7.6)	111 (44.4)	< 0.001
No	6 (2.4)	34 (13.6)	62 (24.8)	37 (14.8)	139 (55.6)	
Access to farm						
Yes	22 (8.8)	27 (10.8)	49 (19.6)	19 (7.6)	117 (46.8)	0.04
No	17 (6.8)	39 (15.6)	40 (16.0)	37 (14.8)	133 (53.2)	
Access to drinkable water						
Yes	37 (14.8)	65 (26.0)	86 (34.4)	51 (20.4)	239 (95.6)	0.23
No	2 (0.8)	1 (0.4)	3 (1.2)	5 (2.0)	11 (4.4)	
Access to paved road						
Yes	27 (10.8)	28 (11.2)	32 (12.8)	23 (9.2)	110 (44.0)	0.01
No	12 (4.8)	38 (15.2)	57 (22.8)	33 (13.2)	140 (56.0)	
Access to credit facilities						
Yes	29 (11.6)	37 (14.8)	39 (15.6)	33 (13.2)	138 (55.2)	0.06
No	10 (4.0)	29 (11.6)	49 (19.6)	24 (9.6)	111 (44.8)	

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Access to information						
Yes	39 (15.6)	60 (24.0)	85 (34.0)	56 (22.4)	240 (96.0)	0.04
No	0 (0.0)	6 (2.4)	4 (1.6)	0 (0.0)	10 (4.0)	
Access to market						
Yes	39 (15.6)	54 (21.6)	77 (30.8)	53 (21.2)	233 (89.2)	0.01
No	0 (0.0)	12 (4.8)	12 (4.8)	3 (1.2)	27 (10.8)	
Access to free medical care						
Yes	21 (8.4)	32 (12.8)	30 (12.0)	24 (9.6)	107 (42.8)	0.12
No	18 (7.2)	34 (13.6)	59 (23.6)	32 (12.8)	143 (57.2)	
Total	39 (15.6)	66 (26.4)	89 (35.6)	56 (22.4)	250 (100)	

^a: N (%); ^b: Chi square test

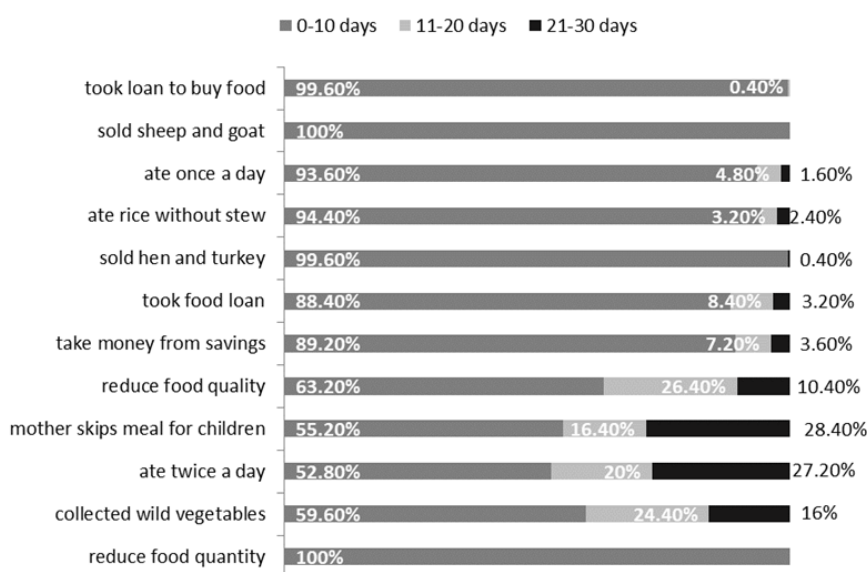


Figure 1. Coping strategies utilized by households by number of days within the last 30 days (multiple responses)

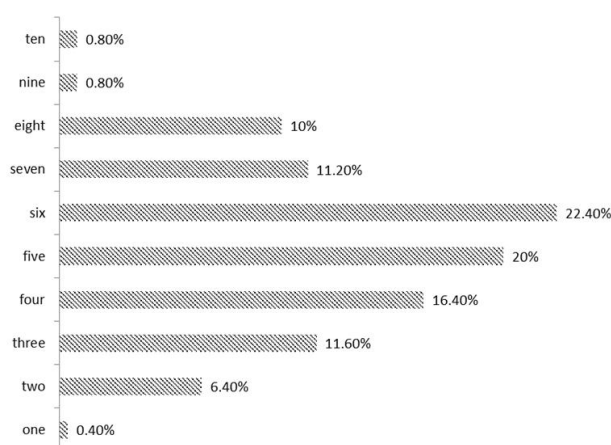


Figure 2. Number of coping strategies adopted by households within the last 30 days

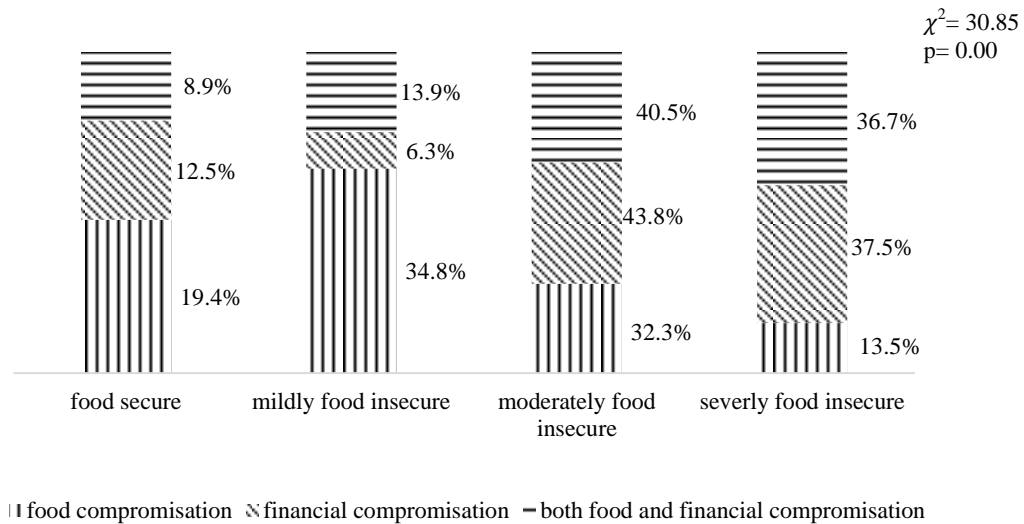


Figure 3. Household food insecurity status stratified by categories of coping strategies

Discussion

This study provided information on the severity of food insecurity in the study area. Four out of five households were food insecure; more than a quarter of the households were mildly food insecure and one-third of the households were moderately food insecure, while almost one-quarter were severely food insecure. Findings from previous studies conducted among the rural farmers' households in Osun, Oyo states, and North Central Nigeria revealed high prevalence of food insecurity (Adeniyi and Ojo, 2013, Amao and Ayantoye, 2017, Rebecca and Ige, 2013). Food insecurity was associated with the risk of various forms of malnutrition, particularly among the under-five children within the households (FAO, 2017, FAO *et al.*, 2019). This suggests that the households with high prevalence of food insecurity in this study may be at risk regarding various forms of malnutrition that may predispose them to many diet-related chronic diseases in later life.

In this study, more than 10 percent of the household heads were female with the majority of family size less than five. This agrees with the reports of other studies (Ballard *et al.*, 2013, Oraro *et al.*, 2018), revealing that about a quarter of the sub-Saharan African households were headed by females. Furthermore, only one-third of the household heads had an education level of higher

than secondary school, most of them were artisans, and almost half of them earned between fifty to hundred thousand naira per month. Previous findings from studies conducted in Kenya, Ethiopia, Ghana, Kano, and Oyo States, Nigeria show that the low level of education, low income, unemployment, and large family size contributed to the prevalence of food insecurity in many households (Adepoju and Adejare, 2013, Agbadi *et al.*, 2017, Anugwa and Agwu, 2019, Mutisya *et al.*, 2016, Saaka *et al.*, 2017, Tamiru *et al.*, 2016). In addition, most households had access to drinkable water, credit facilities, information, market, and electricity while less than half of them had access to land, farm, credit facility, free drinkable water, and paved roads. Poor access to the credit facility, land, and farm were reported as the factors associated with food insecurity (Adepoju and Adejare, 2013, Anugwa and Agwu, 2019). In this study, significant association was observed between the gender of household head, age-range of household head, household size, occupation of household head, income of the household head, and household food insecurity status. Furthermore, the household access to land, farm, paved road, information, and market had significant association with the household food insecurity status.

Interestingly both households who were food secure and those who were food insecure were reported to adopt multiple CSs. CSs used by majority included taking loan to buy food, loaning food, selling sheep, goat, hen, and turkey, eating once a day, eating rice without stew, taking money from savings, and reducing food quantity. Previous studies revealed similar findings (Chagomoka *et al.*, 2016, Lai, 2007, Rebecca and Ige, 2013, Tsegaye *et al.*, 2018) However, about half of the studies reduced food quality, skipped meal for children, ate twice a day, and collected wild vegetables within the last ten days. About a quarter of the households ate twice daily, collected wild vegetables, and reduced food quality in the last 11-20 days while about a quarter of the households ate twice daily and had mothers skipped a meal for children within the last 21 – 30 days. Farzana *et al* revealed that the number of days of CSs utilized by respondents increased with the duration of food insecurity experienced (Farzana *et al.*, 2017). This indicates high level of food insecurity among the respondents. Adopting coping strategy was reported to reduce vulnerability of the poor households and strengthen their livelihood (Hadley and Crooks, 2012).

Most of the households adopted at least five CSs and the categories of CSs utilised by households were categorized under financial, food comptonization, as well as both financial and food comptonization CSs. This finding revealed an increase in the use of financial as well as both food and financial CSs among the households with severity of food insecurity. Furthermore, a significant association was observed between food insecurity status and categories of CSs utilized by the households.

As strengths and limitations, this study provided useful information on the prevalence of food insecurity severity and CSs pattern adopted by households. This information is important for developing policies on the food security programs and can inform the researchers to conduct interventions to reduce the food insecurity prevalence in the study location. However, this study did not explore the causes

of food insecurity among food insecure households.

Conclusion

This study revealed high prevalence of food insecurity as well as high prevalence of moderate, mild, and severe food insecurity. Most respondents adopted at least five CSs in the last thirty days. In addition, the financial and a combination of food and financial compromization were the most prevalent CSs among households which increased with the severity of food insecurity. Furthermore, access to land, farm, paved road, information, and market had a significant association with the household food insecurity status.

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The authors acknowledge the respondents' cooperation in the study.

Authors' Contribution

Akinbule OO designed the research, analyzed the data, and wrote the paper. Okekhian KL assisted in the data collection procedure. Omidiran AT was responsible for reviewing the study. All authors read and approved the final manuscript.

Conflict of interest

There is not any conflict of interest.

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