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Women empowerment in Cassava production and processing on household food security in Odeda Local Government area, Ogun State, Nigeria

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ABSTRACT

This study analyzed the effects of women empowerment in cassava production and processing on household food security in Odeda Local Government Area. Multi stage sampling technique was used to select 80 respondents. Data were obtained using a structured questionnaire to elicit information from respondents in the study area. Chi- square test and Pearson Product Moment Correlation (PPMC) for the analysis of data in the study respectively. Results revealed that the average age of the respondents was 37 years and 16.2% had no formal education. Also the respondents had to eat some food that really did not want to eat due to lack of resources to obtain other types of food, ($\bar{x}$=2.51), reported that there was no food to eat of any kind in their household due to lack of resources to get food ($\bar{x}$=2.65) and went to sleep at night hungry due to lack of food ($\bar{x}$=2.55). It is worthy to note that women received empowerment in the area of application of fertilizer ($\bar{x}$ = 2.85) and in the use of improved cassava stem ($\bar{x}$ = 2.83) which have high effect on cassava production. The test of relationship between socio-economic characteristics of the respondents and their household food security status revealed that there was significant relationship ($p < 0.05$) between marital status (χ^2= 41.48), educational level (χ^2= 15.48) of the respondents and farm size (r = -0.31). Women empowerment in cassava production and processing is crucial for improving household food security in the study area.

Keywords: Cassava production, Food security, Household food security, Nigeria, Women empowerment

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RÉSUMÉ

Cette étude a analysé l'effet de l'autonomisation des femmes dans la production et la transformation du Cette étude a examiné les effets de l'autonomisation des femmes dans la production et la transformation du manioc sur la sécurité alimentaire des ménages dans la zone du gouvernement local d'Odeda. Une technique d'échantillonnage en plusieurs étapes a été employée pour sélectionner 80 répondants. Les données ont été recueillies à l'aide d'un questionnaire structuré, et elles ont fait l'objet d'analyses statistiques à l'aide du test du khi-deux (χ^2) et de la corrélation produit-moment de Pearson (PPMC). Les résultats montrent que l'âge moyen des répondants est de 37 ans et que 16,2 % n'ont pas reçu d'éducation formelle. En raison d'un manque de ressources, certains ménages ont déclaré avoir dû consommer des aliments qu'ils ne désiraient pas vraiment ($\bar{x}$ = 2,51), se trouver dans l'impossibilité de se procurer de la nourriture pour la maisonnée ($\bar{x}$ = 2,65) ou encore aller se coucher le ventre vide ($\bar{x}$ = 2,55). Par ailleurs, il est notable que les femmes ont bénéficié d'un soutien particulièrement marqué pour l'application d'engrais ($\bar{x}$ = 2,85) et l'utilisation de tiges de manioc améliorées ($\bar{x}$ = 2,83), ce qui a un effet considérable sur la production de manioc. L'analyse statistique révèle une relation significative ($p < 0,05$) entre le statut matrimonial (χ^2 = 41,48), le niveau d'études (χ^2 = 15,48), la superficie de l'exploitation (r = -0,31) et l'état de la sécurité alimentaire des ménages. L'autonomisation des femmes, notamment dans la production et la transformation du manioc, se révèle donc cruciale pour renforcer la sécurité alimentaire dans la région étudiée.

Mots clés : Production de manioc, sécurité alimentaire, sécurité alimentaire des ménages, Nigeria, autonomisation des femmes.

INTRODUCTION

In developing countries rural women contribute to 65-70% of the labour in agriculture (World Bank 2009). They play a vital role in agriculture; income generating activities and increase household food security (Abiona *et al.,* 2011). Women empowerment emerges as the central research subject within the field of gender and development because empowerment brings power (political, economic and social) for women, such power reinforces women's economic and social development and building capacity for self-determination (World Bank 2005). Moses (1991) defines women empowerment as giving women the right to determine choice in life and to influence the direction of change through the ability to gain control over crucial material and non-material resources Osirim (2001). Nigeria is the world's largest producer of cassava. Therefore, cassava being an important arable crop commonly cultivated by the majority of women farmers can be fully exploited in addressing the issue of empowerment in its production and processing on household food security among women farmers in Nigeria. Cassava is the most important staple food grown and consumed in the Western Region of Nigeria especially Odeda LGA in Ogun State and it plays a major role in enhancing household food security. Cassava roots are processed by a variety of methods into different products and used in diverse ways (IITA, 2003; Fakoya *et al.;* 2010). Olagunju *et al*. (2012) opined that Nigeria is the world's largest producer of cassava with over 70% of the population depending on the crop for subsistence and income. Cassava is an important source of food, income and employment for rural households particularly women as they make essential contributions to the agricultural and rural economies in all developing countries. Their roles vary considerably between and within regions and changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Rural women often manage

complex households and pursue multiple household strategies (Safiya, 2011; Gebru, 2019). Olawoye (1993) opined that food security existed when all people at all times had physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for a healthy life. Despite the critical role of women in cassava production and processing, they continue to face significant challenges that limit their ability to improve their livelihoods, accessing resources and opportunities related to cassava production and processing (Adebayo and Adeogun 2012) and contribute to household food security due to some factors militating against women in participation in agriculture production, some of which are socio-cultural and economic in nature. Hence this study sought to analyses the effect of women empowerment in cassava production and processing on households' food security. The objectives of the study were to: 1) describe the socio-economic characteristics of cassava women farmers and processors in the study area 2) determine the household food security status of women cassava farmers and processors 3) determne food security status of the respondents 4) identify the constraints to women empowerment in cassava production and processing.

METHODOLOGY

Description of the study area. Odeda local government area is located in the Ogun State, Nigeria (Akinola *et al.*, 2017). The area is populated mainly by the Yoruba ethnic group and has an area of 1,560 km² and a population of 109,449 at the 2006 census and located at coordinates 7°13′00″N and 3°31′00″E (Oladipo and Olomola, 2020). Agriculture is the primary economic activity, with over 70% of residents involved in farming (Oladipo and Olomola, 2020). Crops such as cocoa, cassava and plantain are grown and livestock rearing also contributes to the local economy.

Sampling Procedure and Sample Size. The study population consisted of women involved in the production and processing of cassava. The study used a multistage sampling approach to choose women involved in the production and processing of cassava from the study area. From each of the selected communities, eight respondents were purposively sampled from each of the 10 political wards, resulting in a total of eighty (80) respondents for the study.

Data collection and analysis. This study employed primary data collected via a structured questionnaire. Data were collected from women involved in the production and processing of cassava.

Validity of Instrument. This was done through content validity to ensure if the instrument for data collection sufficiently covered all relevant aspects of women empowerment (decision-making, control over income/resources, mobility, etc.) as it relates to their participation in cassava-related activities.

The reliability of the instrument was carried out by usng test retest method. this was done wth an interval of two weeks in Abeokuta South Local Governement Area of Ogun State. This assesse stability of the responses over time. Descriptive statistics such as frequency distribution tables, mean and standard deviation were used to describe "women empowerment in cassava production and processing" while inferential statistics such as Chi-square test and Spearman correlation were used to test hypotheses. Household food securty was measured by usng Food security access scale.

Factors that influence the intensity of cassava production among farmers and processors were measured as 'Yes or No'. Effect of empowering cassava women farmers and processors on their income, and productivity was measured as High effect, Low Effect and No Effect. Constraints to women empowerment in cassava production and processing was measures as Least Severe, Moderately Severe and Most Severe.

RESULTS and DISCUSSION

Table 1 shows that largest group (47.5%) falls within the age range of 31-45, majority (61.2%) of the respondents were married, single (21.2%) and widowed (17.5%). The educational level of the respondents from the study area revealed that the majority (35.0%) had secondary education, tertiary education (16.2%), primary education (32.5%) and

no formal education (16.2%). This study also revealed that the majority (82.5%) of the respondents were Christians while 17.5% were Muslims. The study further revealed that 73.8% of the respondents had a family size of 6-10. In addition, most (61.2%) of the responders were farmers, 11.2% were traders (11.2%), artisans (2.5%) and processors (25.0%). Also, the respondents had been in cassava production and processing for an average of eight years.

Household Food Security Status. The results in Table 2 shows that 13.8% of households did not disclose their production and processing. In terms of weekly food expenditure, majority of households (38.8%) spent between 5000-10000 Naira per week, 31.2% spent between 11000-15000 Naira per week while 16.2% of households spent above 15000 per week.

The results in Table 2 also show that 33.8% of the respondents ate four times or more per day and half (50%) ate 2-3 times per day. This means that most (66.2%) of the respondents were considered to have acceptable food security, according to HFIAS. Households that reported having 0-1 meal a day over the past four weeks have severe hunger or food insecurity according to the "HFIAS" (Coates *et al.*, 2007). Indicator guide for the HIFIAS provides the definition that eating 0-1 times per day constitutes severe food insecurity according to that measurement scale. Based on the definitions provided in the HFIAS indicator guide, eating 2-3 times or 4 times per day corresponds to mild or moderate food insecurity, which is considered acceptable food security (Coates *et al.*, 2007).

Table 2 showed specifically the average food security status of the respondents. In the past four weeks, the respondent's household were worried of not having enough food ($\bar{x}$=2.36), ate limited variety of food due to lack of resources ($\bar{x}$= 2.35), were not able to eat the kinds of food preferred due to lack of resources ($\bar{x}$=2.21), had to eat some food that really did not want to eat due to lack of resources to obtain other types of food, ($\bar{x}$=2.51), had to eat smaller meals because there was not enough food ($\bar{x}$=2.43), had to eat fewer in the day because there was not enough food ($\bar{x}$=2.39), reported that there was no food to eat of any kind in their household due to lack of resources to get food ($\bar{x}$=2.65) and went to sleep at night hungry due to lack of food ($\bar{x}$=2.55). According to the authors of the Household Food Insecurity Access Scale (HFIAS), households that experience one or more of these symptoms of food insecurity are at risk of adverse health and well-being outcomes, such as malnutrition, poor health, and reduced cognitive development (Coates *et al.*, 2003).

Effects of empowering cassava women farmers and processors. Table 3 reported the results of effects of empowerment on the respondents in the study area. It is worthy to note that women received empowerment in the area of application of fertilizer ($\bar{x}$= 2.85). This results indicated that knowing the right method of apply fertilizer will enhance farm products and minimize loss of crop. This results is in agreement with the assertion of Akpa *et al.*, 2016 asserted that the use of fertilizers can improve the productivity and income of cassava farmers. Also, the results also revealed that most of the women had been empowered in the area of improved cassava stem ($\bar{x}$ = 2.83). This result is consistent with the findings of (Akpa *et al.*, 2016) who found that the use of improved cassava stem can lead to increased productivity and increase the income of the farmers. In addition, they were empowered in the area of recommended spacing for cassava planting ($\bar{x}$ = 2.66). This result implies that, having the right knowledge of spacing will reduce wastage of inputs and time. This result is supported by the findings of (Oke *et al.*, 2013) who found that proper spacing can improve the productivity of cassava farms. It is very important to note that, empowerment has a great effects on the socio-economic well-being of the respondents in the study area. This also agrees with Adato *et al.*, (2018) and Onyango *et al.*, (2018) who opined that empowerment programs can improve food security, access to clean water, shelter, income, and overall well-being for households in developing communities.

Constraints faced by women in accessing empowerment programs. Table 4 presents the constraints faced by women in accessing empowerment programs in the study area. The major constraints identified were; gender-based discrimination ($\bar{\mathbf{x}}$ = 2.57), social and cultural barrier

($\bar{x}$ = 2.56), limited access to education ($\bar{x}$ = 2.49), limited resources ($\bar{x}$ = 2.45), limited capacity to take empowerment programme ($\bar{x}$ = 2.31), limited access to land for farming ($\bar{x}$ = 2.29), lack of awareness ($\bar{x}$ = 2.28), lack of commitment by the farmers ($\bar{x}$ = 2.22), high cost of transportation system ($\bar{x}$ = 2.15) and limited access to technology ($\bar{x}$ = 2.07).

Generally, these results imply that inadequate or lack of any resources could lead to inability of the women to connect with markets, access information, and engage in financial transactions, all of which are critical for empowerment. This finding is consistent with previous studies that have shown that women in rural areas, face significant barriers in accessing technology, such as computers, smartphones, and the internet (Olayinka *et al.,* 2018). Also, the issue of transportation is a general problem in Nigeria, which is a treat to everyone in the country. However, awareness is important and adoption of any empowerment programme. Any shortfall from proper awareness of any innovation will lead to lack of motivation from the side of the farmers.

Table 1. Socio economic characteristics of the respondents in the study area

Socio-Economic Characteristics	Frequency (f)	Percentage (%)	Mean (x)
Age			
15-30	21	26.2	
31-45	38	47.5	34 years
46-60	21	26.2	
Marital Status			
Single	17	21.2	
Married	49	61.2	
Widowed	14	17.5	
Educational Level			
No Formal education	13	16.2	
Primary Education	26	32.5	
Secondary Education	28	35.0	
Tertiary Education	13	16.2	
Religion			
Christianity	66	82.5	
Islam	14	17.5	
Family size			
1-5	19	23.8	
6-10	59	73.8	
above 11	2	2.5	
Major Occupation			
Farming	49	61.2	
Artisan	2	2.5	
Trading	9	11.2	
Processing	20	25.0	
Year of experience			
1-10	29	36.2	
11-20	26	32.5	8 years
21-30	20	25.0	
31-40	5	6.2	

Source: Field Survey, 2023

Table 2. Household food security status (n=80)

Household food security status	Often f (%)	Sometimes f (%)	Rarely f (%)	Mean ($\bar{x}$)
In the past four weeks, do you worry that your household would not have enough food?	10(12.5)	31(38.3)	39(48.8)	2.36
In the past four weeks, do you or any household member have to eat a limited variety of food due to lack of resources?	8(10)	36(45)	36(45)	2.35
In the past four weeks, were you or any household member not able to eat the kinds of food you preferred because of a lack of resources?	8(10)	47(58.8)	25(31.2)	2.21
In the past four weeks, do you or any household member have to eat some food that you really did not want to eat because of lack of resources to obtain other types of food?	6(7.5)	27(33.8)	47(58.8)	2.51
In the past four weeks, do you or any household member have to eat smaller meals because there wasn't enough food?	10(12.5)	26(32.5)	44(55.0)	2.43
In the past four weeks, do you or any household member have to eat fewer in the day because there was not enough food?	11(13.8)	27(33.8)	42(52.5)	2.39
In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	4(5.0)	20(25.0)	56(70.0)	2.65
In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	4(5.0)	28(35.0)	48(60.0)	2.55

Source: Field Survey, 2023
Key: F= frequency % = percentage $\bar{x}$ = mean

Table 3. Effects of empowerment program on cassava production (n=80)

Empowerment program	No Effect f (%)	Low Effect f (%)	High Effect f (%)	Mean ($\bar{x}$)	Rank
Application of fertilizers	2(2.5)	8(10.0)	70(87.5)	2.85	1st
Improved cuttings	2(2.5)	10(12.5)	68(85.0)	2.83	2nd
Recommended spacing	2(2.5)	23(28.8)	55(68.8)	2.66	3rd
Application of herbicides	4(5.0)	21(26.2)	55(68.8)	2.64	4th
Post-Harvest Handling	6(7.5)	17(21.2)	57(71.2)	2.64	4th

Source: Field Survey, 2023 Key: F= frequency % = percentage $\bar{x}$ = mean

Table 4. Constraints faced by women in accessing empowerment programs (n=80)

Constraints to women empowerment	Most Severe f (%)	Moderately Severe f (%)	Least Severe f (%)	Mean ($\bar{x}$)	Rank
Limited access to technology	15(18.8)	44(55.0)	21(26.2)	2.07	10st
Cost of transportation from farm settlement	17(21.2)	34(42.5)	29(36.2)	2.15	9nd
Lack of commitment by the farmers	16(20.0)	30(37.5)	34(42.5)	2.22	8rd
Limited awareness	13(16.2)	32(40.0)	35(43.8)	2.28	7th
Limited access to land needed for farming	16(20.0)	25(31.2)	39(48.8)	2.29	6th
Limited capacity to take advantage of empowerment programs	11(13.8)	33(41.2)	36(45.0)	2.31	5th
Limited resources	10(12.5)	24(30.0)	46(57.5)	2.45	4th
Limited access to education	9(11.2)	23(28.8)	48(60.0)	2.49	3rd
Social and cultural barriers	8(10.0)	19 (23.8)	53(66.2)	2.56	2nd
Gender-based discrimination	10(12.5)	14(17.5)	56(70.0)	2.57	1th

Source: Field Survey, 2023 Key: F= frequency % = percentage $\bar{x}$ = mean

Relationship between socio-economic characteristics of the respondents and their Household Food Security Status

Table 5 and 6 show the results of the relationship between socio-economic characteristics of the respondents and their household food security status. The results reveal significant relationship ($p < 0.05$) between marital status (χ^2= 41.48), educational level (χ^2= 15.48), and farm size (r = -0.31). This result is an indication that education plays a significant role in the lives of women in the study area. This result is in line with the assertion of Abiona *et al.,* (2024) who observed that the role of education cannot be neglected as it enhances or facilitate empowerment and development of a life officer in any agricultural organization.

Table 5. Test of the Relationship between socio-economic characteristics of the respondents and their Household Food Security Status

Socio-economic characteristics	Chi-square	df	p- value	Decision
Marital status	41.48	4	0.03	Significant
Religion	22.38	2	0.05	Not Significant
Education	15.48	6	0.02	Significant

Source: Field Survey, 2023

Table 6. Test of the Relationship between socio-economic characteristics of the respondents and their Household Food Security Status (n=80)

Socio economic characteristics	r- value	P value	Decision
Age	-0.17	0.13	Not Significant
Family size	-0.14	0.23	Not Significant
Farm Size	-0.31*	0.02	Significant
Year of experience	-0.07	0.52	Not Significant

Source: Field Survey, 2023

CONCLUSION and RECOMMENDATIONS

The study revealed that women empowerment in cassava production and processing is crucial for improving household food security in Odeda Local Government Area of Ogun State, Nigeria. The study concluded that worry about food and limited varieties of food were major ways by which women are insecure in terms of food in the study area. Also, women received adequate empowerment in the area of application of fertilizer and improved cutting. The study also concluded that, gender-based discrimination, social and cultural barriers and limited access to education were the major constraints identified by the women. The study further concluded that, there was significant relationship between marital status, education and farm size of the respondents.

Based on the conclusion of this study, the following recommendations are made:

1. The government should provide equal opportunity for women in accessing the empowerment program.
2. Proper education should be given to the women farmers and processors in order to enhance the use of technology.
3. Formation of farmer's group to enhance affordable resources for women farmers and processors to improve their skills and knowledge in cassava production and processing.

DECLARATION OF CONFLICT OF INTEREST

The authors declare No Conflict of Interest in this paper

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