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Research

Dietary consequences of the suspension of the National Home-Grown School Feeding Programme on Oyo State school food vendors

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Objective

This study assessed the dietary consequences of the suspension of the National Home-Grown School Feeding Programme (NHGSFP) among school food vendors in Oyo State.

Methods

This cross-sectional study involved 315 NHGSFP food vendors. Data were collected using a semi-structured questionnaire that evaluated socio-demographics, perceptions, household food security, and dietary diversity. Perception was assessed using a 5-point Likert scale with 11 items and categorised as beneficial (1-2), neutral (3), and non-beneficial (4-5). Food security status before and after the suspension was assessed using the 21-point Household Food Insecurity Access Scale, categorised as food secure (<7), mildly food-insecure (7-11), moderately food-insecure (12-16), and severely food-insecure (>16). Dietary diversity was assessed using the standard Minimum Dietary Diversity for Women (MDD-W). Data were analysed using descriptive statistics and binary logistic regression (α0.05).

Results

Age of vendors was 46.8±8.5 years, 62.9% had 6–10-year work experience, 36.8% had NHGSFP as primary income source, and over 90% expressed a positive perception of NHGSFP. Following the NHGSFP suspension, the proportion of households reporting severe household food insecurity increased from 7.3% to 70.2%. Vendors relying solely on NHGSFP income faced twice the risk of severe food insecurity (AOR: 2.16; 95% CI: 1.09–4.24) compared to diversified earners. Only 16.9% achieved MDD-W (≥5 food groups). Mildly food-insecure vendors had >10-fold higher odds of meeting MDD-W than severely food-insecure peers (AOR: 10.63; 95% CI: 4.94–22.89).

Conclusions

The National Home-Grown School Feeding suspension disrupted food vendors' livelihoods, impaired household food access, and compromised the nutritional quality of their diets. Urgent reinstatement is recommended to restore economic stability and improve food and nutrition security in this group.

INTRODUCTION

The role of nutrition in promoting health and learning outcomes among school-age children is well known, and many innovative programmes have been developed in line with this knowledge. In Nigeria, the National Home-Grown School Feeding Programme (NHGSFP) was piloted by the Federal Government in 2004 and re-inaugurated in 2016 to provide nutritious mid-day meals on every school day to 5.5 million public primary school pupils (grades 1-3) using locally sourced farm produce (Action Health Incorporated, 2024; Okolo-Obasi and Uduji, 2022). The programme started with a political agenda focused on improving school enrolment and enhancing the education of girls. It is also considered to be a nutrition-sensitive intervention to promote health and well-being. Evidence of the benefits of the programme includes increased school enrolment and attendance rates, reduced absenteeism, increased cognitive

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development, and improved food security at household levels (Taylor and Ogbogu, 2016; Falade et al., 2012; Solomon and Yusuf, 2022).

In addition to the broader benefits of the school feeding programme, the use of a home-grown model expands the programme's beneficiary base. Thus, besides the primary beneficiaries, who are school-age pupils, other community members, including smallholder farmers, food vendors, food suppliers, and the community at large, constitute secondary beneficiaries. The school food vendors in the local NHGSFPs are largely small-scale women entrepreneurs who purchase ingredients, prepare meals, and serve pupils according to state-approved menus (Thomas and Nwokocha, 2022; Atamewalen et al., 2024; Ayoola, 2014). These vendors receive fortnightly payments (based on a daily budget of ₦100 per child) to feed approximately 50 pupils each, providing them a critical source of income that enhances their economic stability and their own household food access (Maghra, 2024; Anyanwu, 2022; Okolo-Obasi & Uduji, 2022).

The NHGSFP faces implementation challenges, including operational inefficiencies, funding constraints, coordination failures, and difficulties meeting World Food Programme standards (Onah & Onah, 2021; Taylor & Ogbogu, 2016; Jacob and Musa, 2022). Since 2022, these challenges have resulted in the suspension of the programme. This suspension abruptly terminated the livelihoods of vendors reliant on NHGSFP income, exposing them to financial hardship and likely undermining their economic access to diverse, nutritious foods. Given established links between low-income vulnerability, food insecurity, and reliance on cheaper, less healthy diets (Eicher-Miller et al., 2023; French et al., 2019; Gundersen, 2013), the suspension poses significant risks to vendors' dietary well-being. However, there is a paucity of information on the dietary outcomes among affected school food vendors. This study was therefore designed to assess the dietary consequences of the suspension of the NHGSFP on the food security and dietary diversity of food vendors in Oyo State, Nigeria.

METHODS

STUDY DESIGN AND SETTING

The study utilized a descriptive cross-sectional design. It was conducted in Oyo State, one of the 36 states in Nigeria, located in the South-western region. Oyo State comprises 33 Local Government Areas (LGAs) and has an estimated population of over 8 million people. The state capital, Ibadan, is one of the largest cities in West Africa. Oyo state has over 3,000 public primary schools and more than 3,000 NHGSFP-registered food vendors serving about 191,655 beneficiaries across the State.

STUDY POPULATION AND SAMPLING TECHNIQUE

We sampled ten percent of the 3,000 NHGSFP-registered food vendors provided (300 vendors) across the 33 LGAs of Oyo State. To account for non-response, 15% of the 300 were added, giving a total sample size of 345 vendors. A minimum of 10 vendors were selected from each of the 33 LGAs using simple random sampling. Of these, 315 completed the study, giving a response rate of 91.3%. Non-response among some of the selected vendors was primarily due to registered phone numbers being unreachable repeatedly, to phone interviews not being completed, or to a refusal to grant a follow-up interview.

DATA COLLECTION

All vendors possessed personal registered phone numbers. Therefore, data were collected through structured phone interviews using a semi-structured interviewer-administered questionnaire that included socio-demographic characteristics, vendors' perceptions of NHGSFP, food security status (before and after the suspension), and dietary diversity. Vendors' perceptions were assessed using a 5-point Likert scale with 11 items and categorised as beneficial (1–2), neutral (3), and non-beneficial (4–5). Food security status before and after the suspension of NHGSFP was assessed using the 21-point Household Food Insecurity Access Scale (HFIAS) categorised as food secure (<7), mildly food insecure (7-11), moderately food insecure (12-16), and severely food insecure (>16). Dietary diversity was assessed using the United Nations Food and Agriculture Organisation's Minimum Dietary Diversity for Women (MDD-W), employing a food-group-based approach (FAO, 2021). A vendor was considered to have consumed a food group if they had eaten at least 15 grams of food items within the listed 10 food groups during the previous day and night. The ten food groups assessed were: (1) grains, white roots, and tubers; (2) pulses (beans, peas, and lentils); (3) nuts and seeds; (4) milk and milk products; (5) meat, poultry, and fish; (6) eggs; (7) dark green leafy vegetables; (8) other vitamin A-rich fruits and vegetables; (9) other fruits; and (10) other vegetables. MDD-W was calculated as the sum of the number of food groups consumed by the vendors over the previous 24 hours. A vendor with a score of 5 or more out of 10 across the 10 food groups was considered to have met the MDD-W and thus to have adequate dietary diversity.

DATA ANALYSIS AND MANAGEMENT

Data were analysed using Statistical Package for the Social Sciences version 21.0. Sociodemographic and economic characteristics, vendors' perceptions, food security status, and diet quality were analysed by descriptive statistics. Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. Food security was analysed by calculating the HFIAS scores of the vendors and categorising them into the levels of food security previously described.

Binary logistic regression was performed to examine associations between the dependent outcomes (MDD-W and Food Security status) and independent variables such as vendors' age, marital status, level of education, primary source of income, and years of experience. Adjusted odds ratios (AORs) and 95% confidence intervals were reported, with statistical significance set at $p < 0.05$. For binary logistic regression analysis, food security categories were re-categorised into two categories. The "food secure" and "mildly food insecure" categories were merged and coded as mildly food insecure. The "moderately" and "severely

food insecure" categories were merged and coded as severely food insecure.

ETHICAL APPROVAL

Participation in the study was entirely voluntary. Informed consent was obtained from all participants before data collection, and the purpose of the study was explained clearly. Anonymity and confidentiality were assured throughout the study, and respondents were informed of their right to withdraw at any stage without any consequence. Ethical approval for the study was obtained from the University College Hospital/University of Ibadan Ethics Committee (UI/UCH EC Registration Number NHREC 05/01/2008a, UI/EC/24/0842).

RESULTS

The socio-demographic characteristics of the sampled vendors are presented in Table 1. All were female, and 36.8% derived their primary income from the NHGSFP.

Table 1: Socio-demographic characteristics of the respondents

Variable	Frequency (n=315)	Percentage (%)
Age		
25-39 years	57	18.1
40-54years	202	64.1
55-69years	56	17.8
Mean age: 46.82±8.5		
Gender		
Female	315	100
Level of education		
Primary Education and lower	89	28.3
Secondary Education and higher	226	71.7
Marital status		
Married	297	94.3
Single	18	5.7
Main source of income		
NHGSFP	116	36.8
Other food vending	63	20.0
Farming	27	8.6
Other	109	34.6
Years of experience		
1-5 years	117	37.1
6-10 years	198	62.9
Mean: 5.65±1.48 years		

The variables related to vendors' perceptions of the suspension of the National Home-Grown School Feeding Programme are presented in Table 2.

Table 2. Perceptions of school feeding vendors regarding the National Home-Grown School Feeding Programme suspension

	Beneficial		Neutral		Non-beneficial	
Variable (n=315)	**N**	**%**	**N**	**%**	**N**	**%**
General opinion about the National Home-Grown School Feeding Programme (NHGSFP)	309	98.1	1	0.3	5	1.6
Overall experience with the NHGSFP as a school food vendor	298	94.6	3	1.0	14	4.4
Contribution of the NHGSFP to vendors' income	304	96.5	2	0.6	9	2.9
Impact of the NHGSFP suspension on vendors' livelihood	27	8.6	8	2.5	280	88.9
Impact of the NHGSFP suspension on vendors' income	17	5.5	13	4.1	285	90.4
Impact of NHGSFP suspension on school children's access to food	11	3.5	2	0.6	302	95.9
Perception on the reinstatement of the NHGSFP.	310	98.4	0	0.0	5	1.6
Perceived Impact of NHGSFP reinstatement on vendors' livelihood	296	93.9	7	2.2	12	3.9
Perceived Impact of NHGSFP reinstatement on vendors' income	308	97.7	2	0.6	5	1.6
Vendors' opinions on government support to affected vendors.	306	97.7	4	0.6	4	1.7
Overall opinion on the reinstatement of the NHGSFP	293	93.1	17	5.4	5	1.5

About 96.5% reported that NHGSFP was a major part of their income, while 88.9% and 90.4% of the vendors felt the suspension of the programme was detrimental to their businesses and income, respectively. Most of the vendors (93.1%) expressed strong support for the programme's reinstatement as shown in Table 2.

The food security status of the vendors is presented in Figure 1, and all variables included are presented in Table 3. The suspension of the programme resulted in a substantial shift of vendors from moderate to severe food insecurity.

Table 3: Food security status before and after the suspension of the National Home-Grown School Feeding programme

	Before the Suspension		After the Suspension	
Variable (n=315)	**Frequency (n)**	**Percentage (%)**	**Frequency (n)**	**Percentage (%)**
Worry about Food				
Never	21	6.7	20	6.3
Rarely	64	20.3	33	10.5
Sometimes	222	70.5	40	12.7
Often	8	2.5	222	70.5
Unable to eat preferred foods				
No	283	89.8	58	18.4
Yes	32	10.2	257	81.6
Eat just a few kinds of foods				
Never	21	6.7	16	5.1
Rarely	67	21.3	42	13.3

Table 3. Continue

	Before the Suspension		After the Suspension	
Variable (n=315)	**Frequency (n)**	**Percentage (%)**	**Frequency (n)**	**Percentage (%)**
Sometimes	218	69.2	35	11.1
Often	9	2.9	222	70.5
Eat unwanted food				
Rarely	77	24.4	56	17.8
Sometimes	235	74.6	35	11.1
Often	3	1.0	224	71.1
Eat a smaller meal				
No	285	90.5	54	17.1
Yes	30	9.5	261	82.9
Eat fewer meals in a day				
No	281	89.2	54	17.1
Yes	34	10.8	261	82.9
No food of any kind in the household				
Never	27	8.6	21	6.7
Rarely	67	21.3	38	12.1
Sometimes	215	68.3	37	11.7
Often	6	1.9	219	69.5
Could not eat healthy and nutritious food				
Never	13	4.1	18	5.7
Rarely	62	19.7	42	13.3
Sometimes	227	72.1	43	13.7
Often	13	4.1	212	67.3
Go a whole day and night without eating				
No	315	100	314	99.7
Yes	0	0.0	1	0.3

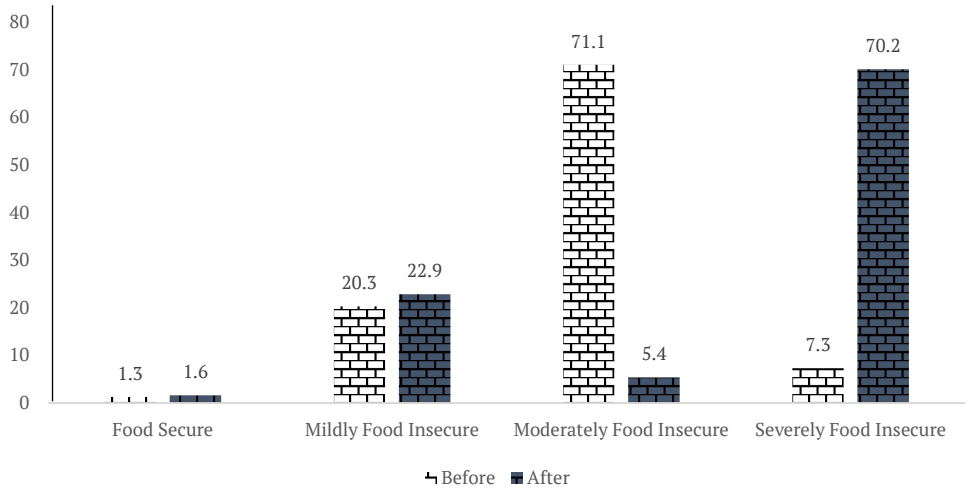

Figure 1: Food security status before and after the NHGSFP Suspension (n=315)

Food consumption patterns and dietary diversity among the school food vendors are shown in Figures 2 and 3. The most frequently consumed food group consisted of grains, white roots, and tubers, and pulses, while other fruits and vegetables, meat, poultry, and fish, eggs, nuts and seeds, and other Vitamin-A-rich fruits and vegetables were limited in their diets (Figure 2). The mean dietary diversity score was 3.15±1.17, meaning that the women consumed an average of three food groups in the previous 24 hours. Only 16.9% achieved the MDD-W (Figure 3).

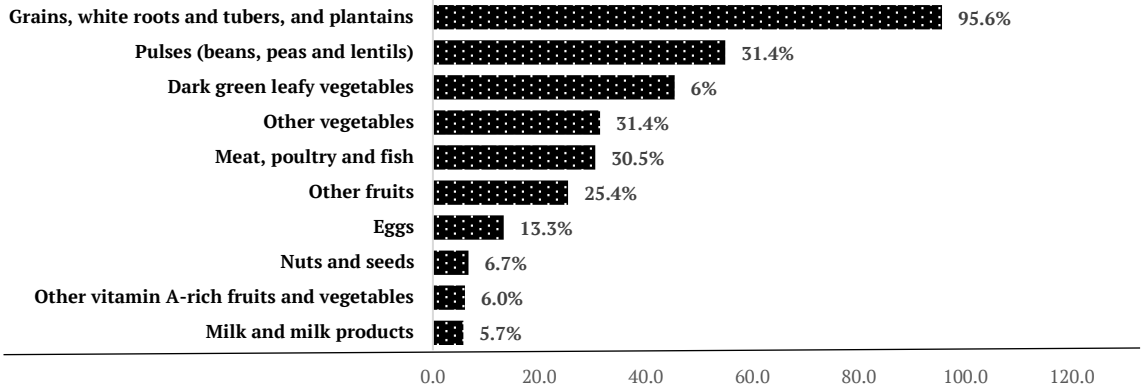

Figure 2: Percentage of school food vendors consuming each food group (n=315)

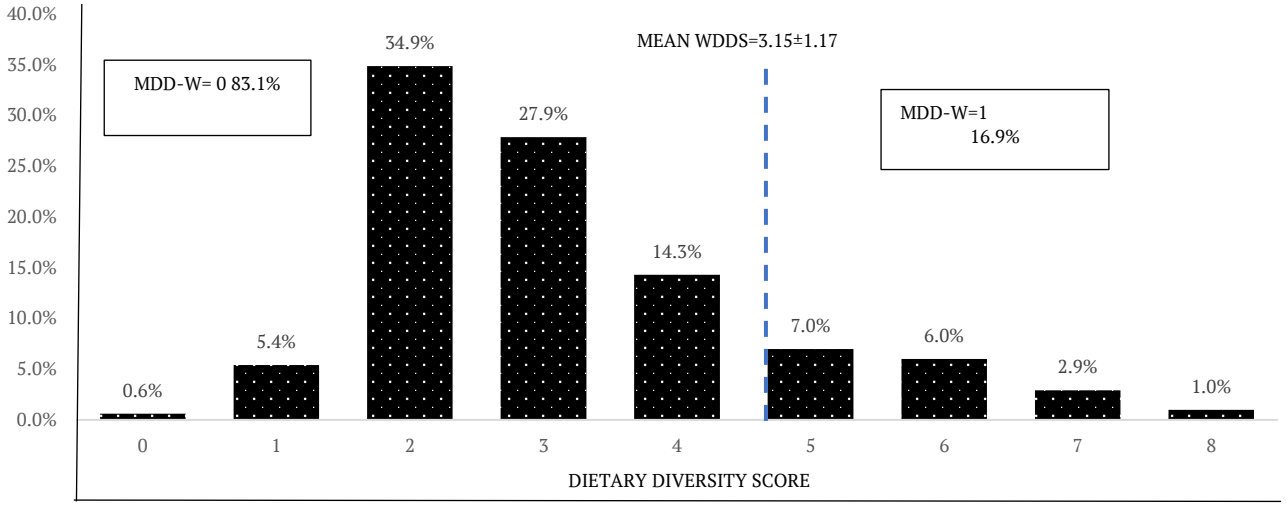

Figure 3: Dietary Diversity among School Food Vendors

Factors that contributed to meeting the MDD-W and food security status among the selected NHGSFP vendors in Oyo state are presented in Table 4. Food security status was a key determinant of their MDD-W, and the vendors' primary source of income was the main determinant of their food security. Respondents who reported being mildly food insecure had over ten times higher likelihood of meeting the MDD-W compared to those who reported being severely food insecure (AOR: 10.63; 95% CI: 4.94–22.89; p < 0.001). Additionally, respondents whose primary source of income was working as an NHGSFP vendor were more than twice as likely to be severely food insecure than those with other businesses (AOR: 2.16; 95% CI: 1.09–4.24; p = 0.026). Vendors in the younger age bracket (25-39 years) were also more likely to meet the minimum dietary diversity threshold.

Table 4: Association between the minimum dietary diversity score and the food security status of vendors after the National Home-Grown School Feeding Programme Suspension

	MDD_W			Food Security Status		
Variable (n=315)	AOR	95% CI	*P* value	AOR	95% CI	*P* value
Age						
25-39 years	1.28	0.48-3.39	0.626	1.82	0.62-5.32	0.272
40-54 years	0.96	0.42-2.21	0.923	1.89	0.81-4.43	0.141
55-70 years	1	1	1	1	1	1
Level of education						
Primary Education and lower	0.51	0.21-1.21	0.125	2.02	0.85-4.82	0.113
Secondary Education and higher	1	1	1	1	1	1
Marital status						
Married	0.60	0.16-2.23	0.448	0.66	0.14-3.05	0.593
Single	1	1	1	1	1	1
Main source of income						
NHGSFP	0.64	0.33-1.25	0.189	2.16	1.09-4.24	0.026
Other businesses	1	1	1	1	1	1
Years of experience						
1-5 years	1.23	0.62-2.42	0.551	0.598	0.30-1.21	0.152
6-10 years	1	1	1	1	1	1
Food security status						
Mildly Food Insecure	10.63	4.94-22.89	<0.001			
Severely Food Insecure	1	1	1			

DISCUSSION

This study provides empirical evidence on the multifaceted adverse consequences of suspending the NHGSFP on the socioeconomic status and nutritional well-being of school food vendors in Oyo State, Nigeria. Our findings demonstrate that the suspension precipitated significant adverse outcomes that extend beyond the immediate loss of a school meal intervention for children, severely disrupting livelihoods, worsening household food insecurity, and compromising dietary diversity among vendors. Following the NHGSFP suspension, many vendors reported substantial negative impacts on their income and diet and expressed strong support for the programme's reinstatement. This finding portrays the converse of evidence from Adamawa and Benue states, where the programme demonstrably enhanced vendor business growth, income stability, and professional skills development (Maghra, 2024; Akiika et al., 2024). The suspension likely diminished the crucial contribution to household income, exacerbating gender-specific economic vulnerabilities. The disruption extends beyond vendors; robust evidence indicates that the NHGSFP had stimulated demand for local agricultural produce, enhanced farm productivity, improved school attendance, reduced pupil hunger, and invigorated local economies (Agu et al., 2023; Dairo et al., 2021; Maghra, 2024; Okolo-Obasi & Uduji, 2022). This underscores the programme's role as a vital catalyst for economic development, education, and food security within beneficiary communities.

A decline in household food security among vendors was observed following the suspension. Prior to suspension, severe food insecurity affected only a minority of vendors. Following suspension, nearly 70% experienced severe food insecurity, a prevalence exceeding that reported in Brazil following COVID-19-related school feeding disruptions (Rodrigues et al., 2021). This aligns with World Food Programme projections on income loss and heightened vulnerability resulting from such interruptions (WFP, 2020). Crucially, dependence on the NHGSFP as the primary income source emerged as a key determinant of vulnerability: vendors reliant solely on NHGSFP income faced a risk of severe food insecurity more than twice that of vendors with diversified income streams. The loss of purchasing power directly constrained their ability to procure a varied and adequate diet.

After the programme was suspended, only one in five vendors met the MDD-W, a rate substantially lower than those in Northern Nigeria and Abia State (Oyedotun & Craig, 2024; Okorie et al., 2024). Grains, white roots, tubers, and pulses overwhelmingly dominated diets. At the same time, nutrient-dense foods such as milk products, meat, poultry, fish, eggs, nuts, seeds, and fruits/vegetables were severely limited. This pattern mirrors dietary limitations reported among women in South-Eastern Nigeria (Onyeji & Sanusi, 2022) and Niger State (Cisse-Egbuonye et al., 2017), largely attributable to constrained budgets forcing reliance on cheaper, energy-dense staples. Such dietary patterns, while providing calories and some plant-based protein, provide insufficient micronutrients, predisposing individuals to micronutrient deficiencies, particularly iron, zinc, vitamin A, and vitamin B12 (Islam et al., 2023; Singh, 2017; Yilmaz & Yilmaz, 2025). These deficiencies elevate risks of anaemia, compromised immune function, chronic fatigue, reduced productivity, and poor long-term health outcomes (Kiani, 2022).

Key demographic and socioeconomic factors influenced dietary diversity outcomes. Vendors aged 25-39 years were more likely to achieve MDD-W than those over 39 years. This contrasts with findings from Northern Nigeria (Oyedotun and Craig, 2024) and may reflect greater receptiveness to nutrition information or willingness to adopt diverse dietary practices among younger cohorts in this context. Crucially, economic reliance on the NHGSFP was a significant negative predictor: vendors dependent solely on the programme had significantly lower odds of meeting MDD-W than those with alternative income sources. Furthermore, food security status was a paramount determinant: vendors experiencing mild food insecurity demonstrated an order-of-magnitude greater likelihood (over 10 times higher) of achieving adequate dietary diversity than those experiencing severe food insecurity.

The suspension likely impaired vendors' capacity as caregivers, particularly in providing adequate food for their own children, some of whom previously accessed meals through the NHGSFP. The documented decline in household food security heightens the risk of malnutrition for both vendors and their dependents. Furthermore, evidence suggests the NHGSFP positively impacted household food security among smallholder farmers supplying the programme (Barnabás et al. 2023), indicating that the suspension's negative repercussions permeate interconnected local food systems.

A limitation of this study is the potential for recall bias, as participants were asked to recall their food security status before programme suspension. Their responses may not fully reflect their actual status during that period. In addition, some vendors may have responded in the hope of securing future programme benefits, which could have influenced the accuracy of their responses.

CONCLUSION

This study identifies socioeconomic and nutritional consequences of the suspension of the National Home-Grown School Feeding Programme (NHGSFP) among the food vendors. Livelihoods were disrupted, household food security deteriorated, and dietary diversity was compromised.

Reinstatement of the NHGSFP is therefore an urgent policy priority, essential for restoring critical income streams and business viability for vendors, improving household food security, and mitigating nutritional vulnerability, revitalizing local agricultural markets and broader community economic activity.

AUTHOR CONTRIBUTIONS

OA, OM and OF conceptualized the study. OM and JM drafted, edited the manuscript and designed the study tables and figures. OA, SE and UD reviewed and edited the manuscript. OF facilitated access to the study population. All authors have read and approved the final version of the paper and its submission and gave consent for publication.

CONFLICT OF INTEREST
The authors declare that they have no conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN SCIENTIFIC WRITING
Nothing to disclose.

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REFERENCES

Action Health Incorporated. 2024. "National home-grown school feeding programme". **Full text here**

Agu, C. I., Ossai, E. N., Ogah, O. E., Agu, I. C., Akamike, I., Ugwu, G. O., Edwin, N., Blessing, L. E., & Azuogu, B. N. 2023. "An appraisal of the implementation of the national school feeding programme and its effect on enrolment and attendance in public primary schools in Southeast, Nigeria: perception of heads of schools". *ProQuest*, 9(37), 1–10. https://doi.org/10.1186/s40795-023-00695-z

Akiika, M., Tarnongo, H.W., Kuhe, J.T. and Gaavson, T. 2024. "National home-grown school feeding programme and socio-economic development in gwer east local government area, Benue State, Nigeria. *International Journal of Research and Innovation in Social Science*, 8(6), 672–683. https://doi.org/10.47772/ijriss.2024.806052.

Anyanwu, S. 2022. "National school feeding programme now n100 per plate". *Federal Ministry of Information and National Orientation*. **Full text here**

Atamewalen, D., Erhabor, I., Danhassan, M., Adeyeye, O., Isiyaku, S., & Wenndt, A. 2024. "Leveraging human-centred design to strengthen support for vulnerable children in nigeria's national home-grown school feeding programme". **Full text here**

Ayoola, R. 2014. "Impact evaluation of school feeding programme in Osun State primary schools". Doctoral dissertation, Institute of Education, University of Ibadan. Ui.edu.ng. **Full text here**

Barnabás, B., Agyemang, S.A., Zhllima, E., and Bavorova, M. 2023. "Impact of home-grown school feeding program on smallholders' farmer household food security in northeastern Nigeria". *Foods*, 12(12), 2408. https://doi.org/10.20944/preprints202305.2111.v1

Cisse-Egbuonye, N., Ishdorj, A., McKyer, E.L.J., and Mkuu, R. 2017. "Examining nutritional adequacy and dietary diversity among women in Niger". *Maternal and Child Health Journal*, 21(6), 1408–1416. https://doi.org/10.1007/s10995-016-2248-x

Dairo, G., Oluwakemi, Tolulope, and Ogunrinade, F. 2021. "School Feeding Programme and Pupils' Enrolment in Osun Central Senatorial District, Osun State Public Primary Schools". *Unizik Journal of Educational Research and Policy Studies,* 5, 110–126. https://www.unijerps.org/index.php/unijerps/article/view/94

Eicher-Miller, H.A., Graves, L., McGowan, B., Mayfield, B.J., Connolly, B.A., Stevens, W. and Abbott, A. 2023. "A scoping review of household factors contributing to dietary quality and food security in low-income households with school-age children in the United States. *Advances in Nutrition*, 14(4), 914–945. https://doi.org/10.1016/j.advnut.2023.05.006

Falade, O.S., Otemuyiwa, I., Oluwasola, O., Oladipo, W. and Adewusi, S.A. 2012. "School feeding programme in nigeria: the nutritional status of pupils in a public primary school in Ile-Ife, Osun State", Nigeria. *Food and Nutrition Sciences,* 03(05), 596–605. https://doi.org/10.4236/fns.2012.35082.

Food and Agriculture Organization of the United Nations (FAO). 2021. Minimum Dietary Diversity for Women: An Updated Guide for Measurement. Rome: FAO. https://doi.org/10.4060/cb3434en

French, S.A., Tangney, C.C., Crane, M.M., Wang, Y., and Appelhans, B.M. 2019. "Nutrition quality of food purchases varies by household income: The SHoPPER study". *BMC Public Health,* 19(1). https://doi.org/10.1186/s12889-019-6546-2

Gundersen, C. 2013. "Food insecurity is an ongoing national concern. *Advances in Nutrition*, 4(1), 36–41. https://doi.org/10.3945/an.112.003244

Islam, Md. H., Nayan, Md. M., Jubayer, A., & Amin, Md. R. 2023. "A review of the dietary diversity and micronutrient adequacy among the women of reproductive age in low- and middle-income countries". *Food Science & Nutrition,* 12(3), 1367–1379. https://doi.org/10.1002/fsn3.3855

Jacob, O.N. and Musa, A. 2022. "Pindus Journal of Culture, Literature, and ELT National Home Grown School Feeding Programme (NHGSFP) in Nigeria. Achievement, problems of Implementation and way forward". **Full text here**

Kiani, A. K. 2022. "Main nutritional deficiencies". *Journal of Preventive Medicine and Hygiene*, 63(2 Suppl 3), E93–E101. https://doi.org/10.15167/2421-4248/jpmh2022.63.2S3.2752

Maghra, HG. 2024. "Impact of home-grown school feeding programme on agricultural productivity of farmers and economic status of food vendors in Adamawa State. Conference report. **Full text here**

Okolo-Obasi, N. E., and Uduji, J. I. 2022. "The impact of national home-grown school feeding programme (nhgsfp) on rural communities in Nigeria". *Journal of Economic and Administrative Sciences*. https://doi.org/10.1108/jeas-10-2021-0211.

Okorie, I., Ekeh, A.C. and Ugo, C.H. 2024. "A cross-sectional study on minimum dietary diversity and anthropometric status of women of reproductive age (15–49 years) in Ikwuano Local Government Area, Abia State, Nigeria". *World Nutrition,* 15(4), 78–99. https://doi.org/10.26596/wn.202415478-99.

Oyedotun, O., and Craig, L. 2024. "Dietary diversity among women of reproductive age in Northern Nigeria and associated factors: An analysis". Thesis. *ResearchGate.* https://doi.org/10.13140/RG.2.2.33952.80646

Onah, R.C. and Onah, F.E. 2021. "Implementation of the National Home-Grown School Feeding Programme (NHGSFP) in Nigeria: Examining the Issues, Impediments, and the Way Forward". *Journal of Public Administration and Governance*, 11(3), 100–117. **Full text here**

Onyeji, G.N. and Sanusi, R.A. 2022. "Nutrient adequacy of diets of women of childbearing age in south-east Nigeria". *Progress in Nutrition*, 24(4), e2022085–e2022085. https://doi.org/10.23751/pn.v24i4.12428

Rodrigues, É.C., Mendonça, R. de D., Camargo, P.P., Menezes, M.C. de, Carvalho, N.C. de and Meireles, A.L. 2021. "Home food insecurity during the suspension of classes in Brazilian public schools due to the COVID-19 pandemic". *Nutrition*, 111448. https://doi.org/10.1016/j.nut.2021.111448

Singh, N. 2017. "Pulses: an overview". *Journal of Food Science and Technology*, 54(4), 853–857. https://doi.org/10.1007/s13197-017-2537-4

Solomon, B.A. and Yusuf, K.R. 2022. "Impact of school home grown feeding programme on pupils' enrolment and performance in FCT Abuja, primary schools". *International Journal of Development and Management Review,* 17(1), 30–45. https://doi.org/10.4314/ijdmr.v17i1.3

Taylor, A.D. and Ogbogu, C.O. 2016. "The effects of school feeding programme on enrolment and performance of public elementary school pupils in Osun State, Nigeria. *World Journal of Education,* 6(3). https://doi.org/10.5430/wje.v6n3p39

Thomas, K.A. and Nwokocha, J.C. 2022. "Food vendors and school management compliance to home grown school feeding programme implementation module in Osun State, Nigeria". *Journal of Agricultural Extension*, 26(1), 64–76. https://doi.org/10.4314/jae.v26i2.9s

World Food Programme 2020. "State of School Feeding Worldwide". **Full text here**

Yilmaz, H., & Yilmaz, A. 2025. "Hidden hunger in the age of abundance: the nutritional pitfalls of modern staple crops. *Food Science and Nutrition*. 13(2), e4610, https://doi.org/10.1002/fsn3.4610