# Food Security and Nutrition Among Internally Displaced School Children in North-East Nigeria: A Mixed-Methods Study

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***Abstract***
*Children of primary school age displaced by the insurgency in North-East Nigeria are rarely studied as a group in their own right, and little is known about their food security in camps. This study described food security and nutrition among households of internally displaced school children aged 6 to 12 years in North-East Nigeria. A mixed-methods design was used. Parents or caregivers of 388 children completed a 36-item Food Security and Nutrition Questionnaire covering six dimensions (response rate 97.0 per cent), the same 388 households were rated on a 13-item observation checklist, and eight focus group discussions with 48 children explored the same dimensions. All six-dimension means fell below the criterion of 3.00, from 2.16 for utilisation to 2.40 for dietary diversity. Nearly all respondents (97.4 per cent) disagreed that their households had access to land to grow food, 76.5 per cent disagreed that their children usually ate three meals a day, and 44.8 per cent agreed that their children went to bed hungry. Fruits and vegetables were observed to be unavailable in 55.9 per cent of households. The children described two meals a day, starchy diets, unsafe water and food that ran out before the next distribution, and 64.6 per cent said that hunger made it hard to concentrate in class. Attention to water, sanitation, food storage, the regularity of food assistance and school feeding is needed to improve the nutrition of displaced school children.*

***Keywords:*** *food security; dietary diversity; internally displaced persons; school children; mixed-methods study; Yobe State*

## Introduction

The insurgency that began in North-East Nigeria in 2009 has caused one of the longest humanitarian crises in Africa. Hanna, Bohl, Rafa, and Moyer (2021) estimated that the conflict had directly caused about 35,000 deaths in Borno, Adamawa and Yobe states by the end of 2020, and that more than 1.8 million people had been displaced across the three states. The International Organization for Migration (IOM, 2023) counted 2,295,534 internally displaced persons in six north-eastern states in June 2023, of whom 40 per cent lived in camps and camp-like settings. Families in these camps have lost their farms, livestock and income, and most depend on humanitarian assistance for food.

Children of primary school age are among those most affected, but they are seldom studied as a group in their own right. The United Nations Security Council (2024) reported that more than 1,400 schools had been destroyed in the region since 2009 and that 802 remained closed

or non-functional in 2023. Most nutrition surveys in the region concern children under five years: Mela, Mohd Zulkefli, and Shukri (2021), for example, found that 40.9 per cent of children aged 6 to 59 months in camps in Adamawa and Yobe states were wasted. Gooding et al. (2024) reached a similar conclusion for displaced children across Africa, noting that research on older children is lacking. Food security is commonly described through four dimensions, namely availability, access, utilisation and stability (Global Food Security Cluster, 2023), and the quality and regularity of children's diets can be captured through dietary diversity and food frequency (Verger et al., 2021). Evidence from North-East Nigeria shows that the insurgency has weakened each of these dimensions for households. George, Adelaja, and Weatherspoon (2020) found that more intense conflict increased reliance on less-preferred foods and smaller portions, Iacoella and Tirivayi (2020) found that displacement was associated with a 57 per cent higher likelihood of acute malnutrition and with lower dietary diversity, and Keswet and Ibrahim (2025) found that exposure to the insurgency predicted household food insecurity among displaced caregivers in camps. The Famine Early Warning Systems Network (FEWS NET, 2023) reported that humanitarian food assistance covered only about 70 per cent of an individual's monthly energy needs. The food security of displaced school children also matters for their education. The World Health Organization (WHO, 2025) notes that anaemia, commonly caused by iron deficiency, malaria and parasitic worms, can impair cognitive development and reduce attention and school performance. Measuring the food security of these children in camps requires instruments that work in that setting, and the instruments used here were first tested in a pilot study in Kuka Reta camp, Damaturu, Yobe State. This paper reports the main study, a mixed-methods study of households of displaced school children in camps in Borno, Adamawa and Yobe states. The study aimed to describe food security and nutrition among households of internally displaced school children in North-East Nigeria. Six research questions guided the study, asking about the level of food availability, food accessibility, food utilisation and food stability, the dietary diversity of children's diets, and the food frequency pattern of internally displaced school children. The findings describe the camps studied and are not generalised to displaced families living in host communities.

## Methods

### *Design*

The study used a mixed-methods design in which quantitative and qualitative data were collected in the same period and brought together at the stage of interpretation. Quantitative data came from a structured questionnaire answered by parents or caregivers and from an observation checklist completed in each household. Qualitative data came from focus group discussions that explored the same six dimensions of food security and nutrition. Combining the three sources allowed reported perceptions, observed household conditions and participants' own accounts to be compared for each dimension.

### *Setting and participants*

The study was conducted in internally displaced persons camps in Borno, Adamawa and Yobe states, North-East Nigeria in 9 local governments and 54 internally displaced persons camps. Five local government areas were selected in Adamawa State (Fufore, Girei, Maiha, Mayo-Belwa and Yola South), two in Borno State (Bama and Dikwa) and two in Yobe State (Damaturu and Gujba), giving nine local government areas using a multi-stage sampling technique. Kuka Reta camp in Damaturu Local Government Area, Yobe State, where the instruments were piloted, was excluded from the study so that no pilot participant would be surveyed twice. The study population was households with internally displaced school children aged 6 to 12 years, and the respondents to the questionnaire were the children's

parents or caregivers. Questionnaires were administered to 400 parents and caregivers of the sampled children, and the households of the same children were observed with the checklist. For the focus group discussions, 48 children were selected in four strata, namely boys aged 6 to 9 years, girls aged 6 to 9 years, boys aged 10 to 12 years and girls aged 10 to 12 years, with two groups of six children in each stratum.

***Instruments***

The Food Security and Nutrition Questionnaire (FSNQ) had two sections. Section A recorded the state, local government area, camp, gender, age, relationship to the child and household size of each respondent, and Section B contained 36 statements, six for each of food availability, food accessibility, food utilisation, food stability, dietary diversity and food frequency. Each statement was rated on a five-point scale of Strongly Agree (5), Agree (4), Undecided (3), Disagree (2) and Strongly Disagree (1). Two statements were worded negatively, namely "Security challenges interrupt our household food supply" (item 23) and "Children go to bed hungry because there is not enough food in the household" (item 36).

The Observation Checklist on Food Security and Nutrition among Internally Displaced School Children contained 13 items, five on food availability and eight on food stability. Each item was rated as Available (3), Partially Available (2) or Not Available (1) on the basis of what the observer saw in the household, with brief clarifications from the caregiver where necessary. The Focus Group Discussion Guide contained 18 open-ended questions, three for each of the six dimensions, followed by concluding questions on food and schooling. The questions were addressed to the children, and probing questions were used to obtain further explanation where answers were brief.

***Validity and reliability***

The face and content validity of the three instruments were assessed by three experts from the University of Jos, two in Home Economics and one in Measurement and Evaluation. The experts judged the clarity, relevance and suitability of each item for settings of internally displaced persons, and ambiguous items were reworded while redundant items were removed or modified. The internal consistency of the questionnaire and the checklist was estimated with Cronbach's alpha, using a coefficient of 0.70 or above as the criterion of acceptability, in the pilot study and again from the main study data. Inter-rater reliability of the checklist was assessed by having two observers rate the same households independently and computing the percentage of ratings on which they agreed.

***Data collection***

Data were collected in September 2026, and all instruments were administered face to face. The questionnaire was read to each parent or caregiver, and statements were explained where necessary so that respondents understood them before answering. The checklist was completed by the researcher and trained research assistants during household visits, and eight focus group discussions, with a total of 48 children, were moderated by the researcher with assistants taking notes. Permission to work in the camps was sought with an introductory letter from the Department of Science and Technology Education, University of Jos, and participants were told about the purpose of the study, assured of confidentiality and informed of their right to withdraw at any time, and no names or other identifying details were recorded.

***Data analysis***

Questionnaire responses were summarised with frequencies, percentages, means and standard deviations for each item. A criterion mean of 3.00, the midpoint of the scale, was used, so

that means of 3.00 and above indicated agreement and means below 3.00 indicated disagreement. For the dimension means, items 23 and 36 were reverse-scored (6 minus the item mean) so that higher scores indicated better food security throughout, and each dimension mean was computed as the mean of its six item means, which is equivalent to the mean of respondents' dimension scores because every item had 388 responses. Checklist ratings were summarised in the same way, and a criterion mean of 2.00 was applied, so that items with means of 2.00 and above were classed as adequate and items below 2.00 as inadequate. The focus group discussions were audio-recorded, transcribed verbatim and analysed with reflexive thematic analysis (Braun & Clarke, 2019). The themes were organised under the six dimensions of the guide and the concluding questions, and the number of children in each group who raised each theme was counted. The themes were then compared with the questionnaire and checklist results for each dimension to identify where the three sources agreed or differed. All calculations were checked by recomputing the means and standard deviations from the response frequencies.

## Results

### *Response and reliability*

Of the 400 questionnaires administered to the parents and caregivers of the sampled children, 388 were completed and returned in usable form, a response rate of 97.0 per cent, and the households of the same 388 children were rated on the checklist. Eight focus group discussions were held with 48 children, two in each of the four strata, with six children in each group. The groups are identified as G1 and G2 (boys, 6 to 9 years), G3 and G4 (girls, 6 to 9 years), G5 and G6 (boys, 10 to 12 years) and G7 and G8 (girls, 10 to 12 years). Cronbach's alpha for the sections of the questionnaire and checklist ranged from 0.79 to 0.86, above the criterion of 0.70, and the two observers agreed on 92.8 per cent of checklist ratings. These results indicate that the instruments could be administered in the camps and gave internally consistent responses.

### *Questionnaire results by dimension*

Table 1 summarises the six dimensions, and Table 2 gives the results for every item. All six-dimension means fell below the criterion of 3.00, ranging from 2.16 for food utilisation to 2.40 for dietary diversity. Only five of the 34 positively worded items reached the criterion, and both negatively worded items did, which indicates agreement with statements describing insecurity and hunger. The pattern was therefore one of low food security across all six dimensions.

Table 1. Summary of questionnaire results by dimension (n = 388)

| Dimension | Items | Positively worded items with mean of 3.00 or above | Dimension mean | Decision |
|---|---|---|---|---|
| Food availability | 1–6 | 2 of 6 | 2.22 | Low |
| Food accessibility | 7–12 | 0 of 6 | 2.25 | Low |
| Food utilisation | 13–18 | 1 of 6 | 2.16 | Low |
| Food stability | 19–24 | 0 of 5 | 2.33 | Low |
| Dietary diversity | 25–30 | 2 of 6 | 2.40 | Low |
| Food frequency | 31–36 | 0 of 5 | 2.28 | Low |

Note. Dimension means are the means of the six item means, with items 23 and 36 reverse-scored; the criterion mean is 3.00.

On food availability, respondents were close to the criterion on having enough food to eat (mean 3.14) and on receiving sufficient food aid (mean 3.07), although the second item

divided them, with 44.8 per cent agreeing and 41.5 per cent disagreeing. Nearly all respondents (97.4 per cent) disagreed that the household had access to land or resources to grow food (mean 1.28), and 91.0 per cent disagreed that they could easily find the foods they preferred (mean 1.35). On food accessibility, no item reached the criterion. Most respondents disagreed that food distribution personnel were accessible (86.1 per cent) and that security conditions allowed access to food without difficulty (82.7 per cent), and the item on obtaining food whenever needed showed the widest spread of answers (mean 2.64, standard deviation 1.60). On food utilisation, 78.4 per cent of respondents disagreed that their households had access to clean water for cooking (mean 1.88), and 76.3 per cent disagreed that they had adequate facilities to store food safely (mean 1.99). Respondents also disagreed that their children were generally healthy (mean 2.03), that they had access to health care when needed (mean 1.96) and that their children showed signs of good growth (mean 2.03). The only item to reach the criterion was knowledge of how to prepare nutritious meals (mean 3.08), which suggests that resources rather than knowledge limited the use of food. On food stability, respondents disagreed that food lasted until the next distribution (71.4 per cent) and that assistance arrived without long interruptions (65.5 per cent), while 48.2 per cent agreed that security challenges interrupted their food supply (mean 3.09).

On dietary diversity, 76.8 per cent of respondents disagreed that their children ate a variety of foods daily (mean 1.99), and most disagreed that their meals regularly included vegetables (78.1 per cent), protein foods such as meat, fish or beans (76.3 per cent) or milk and dairy products (71.9 per cent). Respondents agreed that their children ate fortified foods (mean 3.08) and that their diet changed with the foods available (mean 3.29). On food frequency, 76.5 per cent disagreed that their school-aged children usually ate three meals a day (mean 2.19), and 71.6 per cent disagreed that their children received enough food at each meal (mean 2.10). Nearly half of the respondents (44.8 per cent) agreed that their children went to bed hungry because there was not enough food in the household (mean 3.18).

Table 2. Questionnaire item results (n = 388)

| Item | Statement | Agree (%) | Disagree (%) | Mean | SD | Remark |
|---|---|---|---|---|---|---|
| 1 | My household always has enough food to eat | 39.9 | 24.2 | 3.14 | 1.10 | Agreed |
| 2 | There is a variety of food items available in our community/camp | 5.2 | 85.6 | 1.68 | 0.88 | Disagreed |
| 3 | We can easily find the types of food we prefer | 5.2 | 91.0 | 1.35 | 0.82 | Disagreed |
| 4 | Food supplies are consistent and do not run out unexpectedly | 35.1 | 51.0 | 2.79 | 1.47 | Disagreed |
| 5 | Our household has access to land or resources to grow food | 2.1 | 97.4 | 1.28 | 0.63 | Disagreed |
| 6 | We receive sufficient food aid to meet our needs | 44.8 | 41.5 | 3.07 | 1.14 | Agreed |
| 7 | My household can obtain food whenever it is needed | 33.5 | 57.2 | 2.64 | 1.60 | Disagreed |
| 8 | Food distribution personnel are accessible to my household | 5.2 | 86.1 | 1.97 | 0.76 | Disagreed |
| 9 | Security conditions allow us to access food without difficulty | 12.9 | 82.7 | 1.92 | 1.21 | Disagreed |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | My household can afford to purchase food when humanitarian supplies are insufficient | 28.9 | 61.1 | 2.53 | 1.36 | Disagreed |
| 11 | The distance to food markets or distribution centres does not limit our access to food | 11.3 | 63.9 | 2.16 | 1.07 | Disagreed |
| 12 | My household receives food assistance whenever there is a need | 19.3 | 65.2 | 2.29 | 1.16 | Disagreed |
| 13 | My household has access to clean water for cooking | 16.2 | 78.4 | 1.88 | 1.27 | Disagreed |
| 14 | We have adequate facilities to store food safely | 9.8 | 76.3 | 1.99 | 0.97 | Disagreed |
| 15 | My household members know how to prepare nutritious meals | 40.2 | 33.8 | 3.08 | 1.27 | Agreed |
| 16 | Children in my household are generally healthy | 9.8 | 75.0 | 2.03 | 1.10 | Disagreed |
| 17 | We have access to healthcare services when needed | 9.8 | 74.5 | 1.96 | 1.05 | Disagreed |
| 18 | Children in my household show signs of good growth | 9.8 | 70.4 | 2.03 | 1.05 | Disagreed |
| 19 | Food is available in my household throughout the month | 19.3 | 68.3 | 2.32 | 1.27 | Disagreed |
| 20 | Food assistance is received regularly without long interruptions | 10.1 | 65.5 | 2.22 | 0.94 | Disagreed |
| 21 | My household rarely experiences food shortages | 19.3 | 68.6 | 2.25 | 1.27 | Disagreed |
| 22 | The food available is sufficient until the next distribution period | 11.3 | 71.4 | 2.16 | 1.17 | Disagreed |
| 23 | Security challenges interrupt our household food supply | 48.2 | 32.0 | 3.09 | 1.29 | Agreed (negative item) |
| 24 | My household has a dependable source of food throughout the year | 14.7 | 63.7 | 2.13 | 1.15 | Disagreed |
| 25 | Children in my household eat a variety of foods daily | 16.2 | 76.8 | 1.99 | 1.25 | Disagreed |
| 26 | We consume some vegetables regularly | 6.7 | 78.1 | 2.03 | 0.86 | Disagreed |
| 27 | Our meals include protein sources like meat, fish, or beans | 12.9 | 76.3 | 2.00 | 1.15 | Disagreed |
| 28 | We have access to milk or dairy products | 5.2 | 71.9 | 2.03 | 0.95 | Disagreed |
| 29 | Children in my household eat fortified foods | 43.0 | 30.4 | 3.08 | 1.26 | Agreed |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | Our diet changes based on the availability of different food types | 48.2 | 25.8 | 3.29 | 1.13 | Agreed |
| 31 | School-aged children usually eat three meals each day | 16.2 | 76.5 | 2.19 | 1.15 | Disagreed |
| 32 | Children eat their meals at regular times each day | 9.8 | 71.4 | 2.21 | 0.88 | Disagreed |
| 33 | Children rarely skip meals because of food shortages | 12.9 | 70.4 | 2.15 | 1.13 | Disagreed |
| 34 | Children receive enough food during each meal | 5.2 | 71.6 | 2.10 | 0.91 | Disagreed |
| 35 | Children are able to eat whenever they feel hungry | 17.8 | 73.7 | 2.22 | 1.11 | Disagreed |
| 36 | Children go to bed hungry because there is not enough food in the household | 44.8 | 27.3 | 3.18 | 1.19 | Agreed (negative item) |

Note. Agree = Strongly Agree and Agree; Disagree = Disagree and Strongly Disagree; the remainder answered Undecided. SD = standard deviation.

***Observation checklist***

Table 3 presents the checklist results. Of the 13 items, seven reached the criterion mean of 2.00 and six did not, and the means of the availability and stability sections were 1.88 and 1.98 respectively. Fruits and vegetables were rated not available in 55.9 per cent of households (mean 1.48), and protein foods in 44.6 per cent (mean 1.66), while staple foods were most often only partially available (64.2 per cent). Within the stability section, emergency food reserves (mean 1.82), food preservation methods (mean 1.85) and protection of stored food from pests, moisture and contamination (mean 1.86) were the weakest items.

Table 3. Observation checklist results (n = 388 households)

| **Item** | **Not available (%)** | **Partially available (%)** | **Available (%)** | **Mean** | **SD** | **Decision** |
|---|---|---|---|---|---|---|
| *Food availability* | | | | | | |
| Staple foods present | 17.0 | 64.2 | 18.8 | 2.02 | 0.60 | Adequate |
| Protein foods available | 44.6 | 44.6 | 10.8 | 1.66 | 0.66 | Inadequate |
| Fruits and vegetables available | 55.9 | 39.9 | 4.1 | 1.48 | 0.58 | Inadequate |
| Food storage facilities present | 21.9 | 41.5 | 36.6 | 2.15 | 0.75 | Adequate |
| Evidence of food preparation | 26.8 | 38.1 | 35.1 | 2.08 | 0.78 | Adequate |
| *Food stability* | | | | | | |
| Stored food sufficient for immediate use | 28.6 | 31.7 | 39.7 | 2.11 | 0.82 | Adequate |
| Functional food storage facilities available | 33.2 | 46.4 | 20.4 | 1.87 | 0.72 | Inadequate |
| Food items show minimal signs of spoilage | 23.7 | 44.6 | 31.7 | 2.08 | 0.74 | Adequate |

| | | | | | | |
|---|---|---|---|---|---|---|
| Evidence of food preservation methods | 43.0 | 28.6 | 28.4 | 1.85 | 0.83 | Inadequate |
| Food aid supplies or vouchers in the household | 23.7 | 39.7 | 36.6 | 2.13 | 0.77 | Adequate |
| More than one type of staple food in storage | 10.8 | 67.3 | 21.9 | 2.11 | 0.56 | Adequate |
| Emergency food reserves for periods of scarcity | 33.2 | 51.3 | 15.5 | 1.82 | 0.68 | Inadequate |
| Storage area protected from pests, moisture and contamination | 38.1 | 38.1 | 23.7 | 1.86 | 0.77 | Inadequate |

Note. Available = 3, Partially available = 2, Not available = 1; the criterion mean is 2.00.

***Focus group discussions***

Table 4 summarises the main themes from the focus group discussions, with the number of the 48 children who raised each theme; quotations are identified by group, sex and age band. Children described a diet limited to staple foods, with 93.8 per cent (45 children) saying that they mostly ate maize, sorghum or rice at home and 72.9 per cent (35) saying that most of their food came from aid distributions. Half of the children (52.1 per cent) said that their families no longer farmed since they were displaced, a theme raised more often by the older children (18 of 24) than by the younger ones (7 of 24). A boy aged 10 to 12 years in G5 said: "At home we were farming, but here we only wait for the food they share." Most children (83.3 per cent) said that their parents did not have money to buy enough food and 39.6 per cent said that the market was far or not safe to go to. Twenty children (41.7 per cent) said that children helped to get food by hawking, begging or doing small jobs, a theme raised by 15 of the 24 older children but by only 5 of the 24 younger ones, and a girl aged 10 to 12 years in G7 said: "After school I sell groundnuts so that we can buy soup ingredients."

Children linked the use of food to the conditions of the camps. Thirty-five children (72.9 per cent) said that the water they drank and cooked with was not clean, 29 (60.4 per cent) said that they often had stomach pain, diarrhoea or malaria, and 21 (43.8 per cent) said that there was not enough firewood, so food was cooked quickly. The last theme was raised by 14 of the 24 girls but by 7 of the 24 boys, which may reflect the role of girls in fetching firewood and water. On stability, 36 children (75.0 per cent) said that food finished before the next distribution and 29 (60.4 per cent) described days at the end of the month when there was little or no food, and both themes were raised more often by the older children than by the younger ones. A girl aged 10 to 12 years in G8 said: "When the food finishes, we wait. Sometimes my mother borrows from neighbours."

On diet, 45 children (93.8 per cent) said that they rarely ate meat, fish or eggs, 38 (79.2 per cent) said that they rarely ate fruits and 34 (70.8 per cent) said that they ate the same food almost every day. A boy aged 6 to 9 years in G1 said: "We eat tuwo every day. Meat is only for Sallah." On meal frequency, 35 children (72.9 per cent) said that they usually ate two times a day, 28 (58.3 per cent) said that they often went to school without eating breakfast, a theme raised by 18 of the 24 older children and by 10 of the 24 younger ones, and 24 (50.0 per cent) said that they sometimes went to bed hungry. In the concluding questions on food and schooling, 31 children (64.6 per cent) said that hunger made it hard to listen or concentrate in class, and 14 (29.2 per cent) said that they sometimes missed school to look for food or to help at home, 12 of them older children. Almost all the children (45, or 93.8 per cent) said that they would like food to be given at school. A girl aged 6 to 9 years in G4 said: "When I am hungry in class, I cannot hear what the teacher is saying."

Table 4. Main themes from the focus group discussions with children, by dimension (N = 48)

| Dimension | Main themes (number and percentage of the 48 children who raised each theme) |
|---|---|
| Food availability | Mostly eat maize, sorghum or rice at home (45; 93.8%); most food comes from aid distributions (35; 72.9%); families no longer farm since displacement (25; 52.1%) |
| Food accessibility | Parents do not have money to buy enough food (40; 83.3%); children help to get food by hawking, begging or doing small jobs (20; 41.7%); market is far or not safe to go to (19; 39.6%) |
| Food utilisation | Water for drinking and cooking is not clean (35; 72.9%); frequent stomach pain, diarrhoea or malaria (29; 60.4%); not enough firewood, so food is cooked quickly (21; 43.8%) |
| Food stability | Food finishes before the next distribution (36; 75.0%); some days at the end of the month there is little or no food (29; 60.4%) |
| Dietary diversity | Rarely eat meat, fish or eggs (45; 93.8%); rarely eat fruits (38; 79.2%); eat the same food almost every day (34; 70.8%) |
| Food frequency | Usually eat two times a day (35; 72.9%); often go to school without breakfast (28; 58.3%); sometimes go to bed hungry (24; 50.0%) |
| Concluding questions | Hunger makes it hard to listen or concentrate in class (31; 64.6%); sometimes miss school to look for food or help at home (14; 29.2%); would like food to be given at school (45; 93.8%) |

***Integration of the three sources***

The three sources agreed on most dimensions (Table 5). Questionnaire, checklist and focus group results all showed narrow diets lacking protein foods, fruits and vegetables, irregular food supply and weak storage, and the children's accounts of two meals a day matched the 76.5 per cent of respondents who disagreed that their children ate three meals. The sources differed on availability, where about two in five respondents agreed that their households had enough food (39.9 per cent) and sufficient aid (44.8 per cent), but the children described diets of a few staple foods obtained mainly from aid, and the checklist showed limited stocks of foods other than staples. This difference suggests that respondents may have judged sufficiency by the quantity of staple foods rather than by the range of foods needed for a nutritious diet.

Table 5. Joint display of the main findings

| Dimension | Questionnaire | Observation checklist | Focus group discussions | Agreement |
|---|---|---|---|---|
| Food availability | Mean 2.22; nearly all without land; preferred foods hard to find | Section mean 1.88; protein foods, fruits and vegetables inadequate | Staples mostly from aid; farming ended by displacement | Partial: enough food and aid reported by about two in five respondents |
| Food accessibility | Mean 2.25; distribution staff and security barriers | Not observed | Parents lack money; distant, unsafe markets; children work for food | Agree |

| | | | | |
|---|---|---|---|---|
| Food utilisation | Mean 2.16; no clean water or storage; knowledge of nutritious meals | Not observed | Unsafe water, frequent illness, little firewood | Agree |
| Food stability | Mean 2.33; aid interrupted; security disrupts supply | Section mean 1.98; no emergency reserves; weak preservation | Food finishes before next distribution; days without food at month end | Agree |
| Dietary diversity | Mean 2.40; little protein, vegetables or dairy | Protein foods, fruits and vegetables inadequate | Rarely eat meat, fish, eggs or fruits; same food daily | Agree |
| Food frequency | Mean 2.28; fewer than three meals; children go to bed hungry | Not observed | Two meals a day; school without breakfast; sometimes bed hungry | Agree |

## Discussion

### *Food security and nutrition in the camps*

The study found low food security on all six dimensions among households of displaced school children in the camps studied. The clearest signal was the loss of food production: nearly all respondents (97.4 per cent) disagreed that the household had access to land or resources to grow food, and about half of the children said that their families no longer farmed since they were displaced. This dependence on markets and aid is consistent with the finding of George et al. (2020) that conflict reduced food security mainly through shocks to agricultural inputs and income. It also helps to explain why respondents were divided on whether food aid met their needs, since FEWS NET (2023) reported that humanitarian assistance in the region covered only about 70 per cent of monthly energy needs.

Access to food was also limited. Most respondents disagreed that distribution personnel were accessible, that security conditions allowed access to food without difficulty and that they could afford to buy food when aid was insufficient, and the children said that their parents did not have money to buy enough food and that the market was far or not safe. George et al. (2020) found that more intense conflict increased reliance on less-preferred foods and smaller portions. That some children hawk, beg or do small jobs to obtain food echoes the report of Human Rights Watch (2022) that many children in Maiduguri resorted to begging after food support to the camps stopped. Such work places children at risk and takes time away from school. The diets described were narrow. Questionnaire, checklist and focus group results all showed little protein food, fruit, vegetables or dairy, and the children said that they rarely ate meat, fish, eggs or fruits and ate the same food almost every day. Agreement that the diet changed with the foods available suggests that what the children ate depended on what was supplied rather than on choice. Iacoella and Tirivayi (2020) found that displacement reduced dietary diversity in North-East Nigeria, and Tambe et al. (2023) found that only 48.4 per cent of displaced children aged 6 to 59 months in Bamenda, Cameroon, had adequate dietary diversity. Because dietary diversity indicators mainly reflect the micronutrient adequacy of the diet (Verger et al., 2021), the pattern observed in the camps points to a risk of

micronutrient deficiency among school children. Mela et al. (2021) found high levels of wasting among younger children in camps in Adamawa and Yobe states, and the dietary conditions found here suggest that school-aged children may face similar risks, although this study did not measure nutritional status directly.

Meal frequency was also low. Most respondents disagreed that their school-aged children usually ate three meals a day, the children described two meals a day and many went to school without breakfast, and 44.8 per cent of respondents agreed that their children went to bed hungry. These findings extend to school-aged children the household pattern of skipped meals and smaller portions reported by FEWS NET (2023) and George et al. (2020), and they are consistent with the association between insurgency exposure and household food insecurity that Keswet and Ibrahim (2025) found in camps in the region. Children who eat irregularly and go to bed hungry are likely to arrive at school with less capacity to concentrate, and almost two in three of the children (64.6 per cent) themselves said that hunger made it hard to listen or concentrate in class. Gooding et al. (2024) noted that research on older displaced children in Africa is lacking, and the present study adds evidence for children aged 6 to 12 years. The wish of almost all the children (93.8 per cent) for food to be given at school supports the inclusion of food in the schools and learning spaces that serve displaced children. The results on utilisation suggest that the conditions of the camps limited the benefit children could obtain from the food they ate. Most respondents lacked clean water for cooking and safe food storage, and the children said that their water was not clean, that they often had stomach pain, diarrhoea or malaria, and that there was not enough firewood, a shortage raised more often by girls than by boys. The WHO (2025) identifies malaria and parasitic worms, alongside iron deficiency, among the main causes of anaemia, which shows how infection and diet interact in such settings. Respondents agreed that they knew how to prepare nutritious meals, so improvements in water, sanitation, cooking fuel and health care may do more for utilisation in the camps than nutrition education alone.

The results on stability show a food supply that is interrupted by delays in assistance and by insecurity. Most households did not have food that lasted until the next distribution, almost half of the respondents agreed that security challenges interrupted their food supply, and the checklist found weak emergency reserves, food preservation methods and protection of stored food. Without reserves, each interruption passes directly to the children, and their accounts of days at the end of the month with little or no food show what this means in practice.

## Conclusion

This study described food security and nutrition among households of internally displaced school children aged 6 to 12 years in North-East Nigeria, using a questionnaire, an observation checklist and focus group discussions with children. The findings show low food security on all six dimensions, with nearly all households lacking land for farming, narrow diets lacking protein foods, fruits and vegetables, fewer than three meals a day for most children, poor water, sanitation and storage, and food that ran out before the next distribution. The children said that hunger made it hard to concentrate in class and that they would like food at school. The three sources of data agreed on most dimensions and differed on whether households had enough food, which may reflect judging sufficiency by the quantity of staple foods rather than by the range of foods needed. On the basis of the findings, the following recommendations are made.

1. Humanitarian agencies serving the camps should give attention to clean water, safe food storage, cooking fuel and the regularity of food assistance.
2. Foods rich in protein, fruits and vegetables should be included in the school feeding programmes so that the nutritional needs of the children can be met.

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