



# IMPACT OF BOKO HARAM INSURGENCY ON THE NUTRITIONAL STATUS OF TWO COMMUNITIES IN GULANI LOCAL GOVERNMENT AREA, YOBE STATE NIGERIA

MAINA MUSAB AND AGOFURE OTOVWE

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## ABSTRACT

The Boko Haram insurgency has consistently posed a threat to the lives of residents in the North-East and national security in general. The insurgency has led to increased incidence of diseases, food insecurity, unemployment, violation of human rights, displacements and shelter problems among others. The study was designed to investigate the impact of boko haram insurgency on the nutritional status of two communities in Gulani Local Government Area, Yobe State, Nigeria. The study was a descriptive cross sectional study conducted among 391 respondents utilizing a simple random sampling technique. A questionnaire was administered to obtain information from respondents while anthropometric measurements of height and weight were carried out with the appropriate instruments. The analysed data was presented in descriptive of frequency, Tables and charts. Majority of the respondents were males 269(68.8%) and most 185(47.3%) were farmers. The mean height, weight and body mass index (BMI) were  $1.61\pm 0.87$ ,  $62.60\pm 14.93$  and  $22.39\pm 4.70$  respectively. The BMI classification shows that 50.5% of the respondents had normal weight, 25.4% had overweight and 19.2% were underweight. Similarly, majority of the respondents 227(70.8%) affirmed that the insurgency has affected the availability and quantity of staple foods, affected their ability of going to farms 169(61.0%) and led to increase in food prices 305(78.0%). Meanwhile, 142(36.3%) affirmed that they harvest 10-20 quantity (bags) of grains before the insurgency, which slightly decreased to 5-10 quantity (bags) of grains as affirmed by 135 (34.5%) of the respondents during the insurgency. The study shows the boko haram insurgency continues to pose serious challenges to farming activities, which has led to increased food prices as well as poor nutritional status of residents of the affected areas. Hence adequate measures must be put in place to mitigate the impact of the insurgency on residents of the affected areas.

**KEYWORDS:** Nutritional Status, Body Mass Index, Malnutrition, Body Weight, Farmers, Yobe State, Nigeria

## INTRODUCTION

An insurgency is a violent, armed rebellion against authority (for example, an authority recognized as such by the United Nations) when those taking part in the rebellion are not recognized as belligerents or lawful combatants (Oxford English Dictionary Second Edition, 1989).

Nigeria is Africa's most populous country and it is most diverse with over 400 ethno-linguistic groups. The country is affected by several conflicts based on overlapping ethnic, religious, political and regional divisions including over resources in the Niger Delta, Christian-Muslim divides in the middle of the country, and the rise of Islamist groups in the north, most importantly, Boko Haram. Boko Haram (Western education is a sin) was founded around 2002 in Maiduguri, the capital of Borno state. At least, at its inception, the main tenet among its followers was regime change in Nigeria as they believe democratic and secular rule is in contradiction to Sharia laws (Dunn, 2018).

Boko Haram insurgency in Nigeria, which began in 2009, continues to undermine food security conditions. Since the escalation of violence in 2012, poor households in northeastern Nigeria have experienced acute food insecurity related to this insurgency. Two years later, with their resilience severely weakened; they are resorting to typical coping strategies, including increased livestock sales and the sale of livelihood assets. Below-average household harvest stocks this year contributes to limited household food access. Typically, high market prices as households are more dependent on market purchase are met with below-average seasonal incomes (Vahyala *et al.*, 2016) According to Joint Humanitarian Action Plan (JHAO, 2015), Borno, Yobe and Adamawa are the three most affected states, with an estimated 9.1 million vulnerable, and over five million affected, through food insecurity due to livelihood disruption from missed harvest season and increased food prices. Boko Haram related insurgency has led to significant population displacements in the north eastern states of Adamawa, Borno and Yobe and kept many farmers away from their

**Maina Musab**, Department of Public and Community Health, Novena University, Ogume, Nigeria.

**Agofure Otovwe**, Department of Public and Community Health, Novena University, Ogume Nigeria.

usual livelihood activities (mainly agricultural activities). This has led to significantly below-average household production stocks for households in these areas (Vahyala *et al.*, 2016). The current trend portrays a very precarious situation as it could result in increased food insecurity and malnutrition especially among children. Previous studies have reported malnutrition as the underlying cause of death of children in Democratic Republic of Congo (Coghlan *et al.*, 2006) and Angola (Agadjanian and Prata, 2003). Besides, a study in North-East Nigeria showed children in the conflicts states of Borno, Yobe and Adamawa were 23% more at risk of childhood wasting than children in non-conflict states (Dunn, 2018).

The Boko Haram insurgency activities have affected farming and Agricultural activities generally, nevertheless, it is important to assess evidently how it has affected the nutritional status and farming activities of residents of two communities worst hit by the insurgency in Gulani Local Government Area of Yobe State.

### Objectives of the study

The objectives of the study are to determine the:

1. nutritional status of the study respondents
2. consequences of insurgency on the availability of staple food
3. impact of insurgency on daily consumption of food
4. impact of insurgency on farming activities
5. impact of insurgency on food prices
6. type of staple food consumed during the insurgency
7. possible means of survival during the insurgency

## METHODS

### Study Design

The study utilized descriptive cross-sectional design, to determine the impact of Boko Haram insurgency on the nutritional status on residents of two communities in Gulani Local Government Area, of Yobe State.

### Study Area

The study areas are Bara and Bularafa communities of Gulani Local Government Area, Yobe State. Bara town is the headquarters of Gulani local Government Area and is located in the southern part of Gulani Local Government Area and is about 116 kilometers (KM) from Damaturu the state capital of Yobe State. Bularafa town is approximately 100 kilometers (KM) away from Damaturu the state capital.

### Study Population

Population of the study consists of adults 18 years and above residing in Bara and Bularafa communities.

### Sample Size Determination

The required sample size was determined using single population proportion formula  $n = z^2 p(1-p)/d^2$ , considering  $P = \text{value } 57\%$  [from likelihood of acute malnutrition in conflict areas in Northern Nigeria; Lacoella and Tirivayi,

2020], confidence level 95% and within 5% precision. Accordingly, the minimum sample size (n) was found to be 377.

### Sampling Technique

Out of twenty one (21) communities in Gulani Local Government Area, two (2) communities were randomly selected. The selected communities were Bara and Bularafa. Thus, respondents were randomly selected from the two selected communities.

### Instrument for Data Collection

A validated questionnaire with relevant characteristics backgrounds was used for the collection of data. The questionnaire consists of eight (8) sections (A-H). Section A obtained information on demographic information of the respondents, section B Measurements of nutritional status, section C consequences of insurgency on availability of staple food, section D impact of insurgency on daily consumptions of food, section E how insurgency affected farming activities, section F the cost of food prices during the insurgency, section G the types of staple foods eaten during the insurgency and section H the possible means of survival during the insurgency. Weighing scale (made in china) and meter ruler (PKP Bardejov S.R.O- slovakia) were used to obtain the weight (in kilograms) and height (in meters) of the respondents respectively.

### Data Analysis

Responses from the questionnaires were entered into the computer and data generated were analyzed using Statistical Package for Social Sciences (SPSS) version 20.0 manufactured by IBM incorporated. Descriptive statistics was used to analyze the data which was presented in Tables and charts. Chi-square test was used to determine the association among variables of interest with level of significance set at  $P < 0.05$ .

### Measurements of nutritional status

The height and weight obtained were used to calculate the Body Mass Index of the respondents using the formula  $BMI = \text{Weight (kg)}/\text{Height (m}^2\text{)}$ . Body-mass index categories were defined using the WHO cut off points in units of  $\text{kg}/\text{m}^2$ , underweight =  $< 18.5 \text{ kg}/\text{m}^2$ , normal weight =  $18.5 \text{ kg}/\text{m}^2 - < 25 \text{ kg}/\text{m}^2$ , overweight =  $25 \text{ kg}/\text{m}^2 - < 30 \text{ kg}/\text{m}^2$ , obesity class 1 =  $30.00-34.99 \text{ kg}/\text{m}^2$ , obesity class 11 =  $35.00-39.99 \text{ kg}/\text{m}^2$  and obesity class 111 =  $40.00 \text{ kg}/\text{m}^2$  and above.

### Ethical Consideration

Ethical clearance was obtained from the Department of Public and Community Health, Novena University. Verbal consent was also obtained from the community leaders in the community.

## RESULTS

### Socio-demographic characteristics of the respondents

According to the table 1 below, more of the respondents 139(35.6%) were between ages 20-30 years old, while most of the respondents were males 219(75.3%) and 170(43.4%) of the respondents had a minimum of secondary school education.

Table 1: Demographic information of the respondents

| VARIABLES                     | FREQUENCY | PERCENTAGE |
|-------------------------------|-----------|------------|
| <b>Age (Years)</b>            |           |            |
| 20-30                         | 139       | 35.6       |
| 31-40                         | 97        | 24.8       |
| 41-50                         | 74        | 18.9       |
| 51-60                         | 47        | 12.0       |
| >60                           | 34        | 8.7        |
| <b>Gender</b>                 |           |            |
| Male                          | 269       | 68.8       |
| Female                        | 122       | 31.2       |
| <b>Educational background</b> |           |            |
| Primary                       | 60        | 15.3       |
| Secondary                     | 170       | 43.4       |
| Tertiary                      | 48        | 12.2       |
| None                          | 38        | 9.7        |
| Qur'anic Studies              | 75        | 19.4       |
| <b>Occupation</b>             |           |            |
| Farming                       | 185       | 47.3       |
| Civil servant                 | 77        | 19.6       |
| Student                       | 83        | 21.2       |
| Housewife                     | 34        | 8.6        |
| Health worker                 | 12        | 3.3        |
| <b>Marital Status</b>         |           |            |
| Single                        | 152       | 38.8       |
| Married                       | 210       | 53.7       |
| Widow                         | 13        | 3.3        |
| Divorced                      | 12        | 3.0        |
| Separated                     | 4         | 1.2        |
| <b>Ethnic group</b>           |           |            |
| Maaka                         | 46        | 11.7       |
| Hausa                         | 69        | 17.6       |
| Babur                         | 155       | 39.6       |
| Fulani                        | 53        | 13.5       |
| Kanuri                        | 57        | 14.5       |
| Karekare                      | 11        | 3.1        |

**Measurement of nutritional status**

Table 2 below, presented the average mean height of the respondents as 1.61 meters, while the average mean weight of the respondents was 62.60kg and average mean body mass index (BMI) was 22.39.

Table 2: Measurement of nutritional status of the respondents

| VARIABLES | MEAN    | S.D       | MINIMUM | MAXIMUM |
|-----------|---------|-----------|---------|---------|
| Height    | 1.6121  | ±0.86613  | 1.00    | 16.00   |
| Weight    | 62.6034 | ±14.92959 | 30.00   | 160.00  |
| BMI       | 22.3911 | ±4.70184  | 10.90   | 42.10   |

Figure 1 below, shows about half of the respondents 50.5% were normal weights, 25.4% were over weights, 19.2% were underweight, 3.4% were classified as obesity class 1, 1% classified as obesity class 2 and 0.3% classified as obesity class 3 respectively.

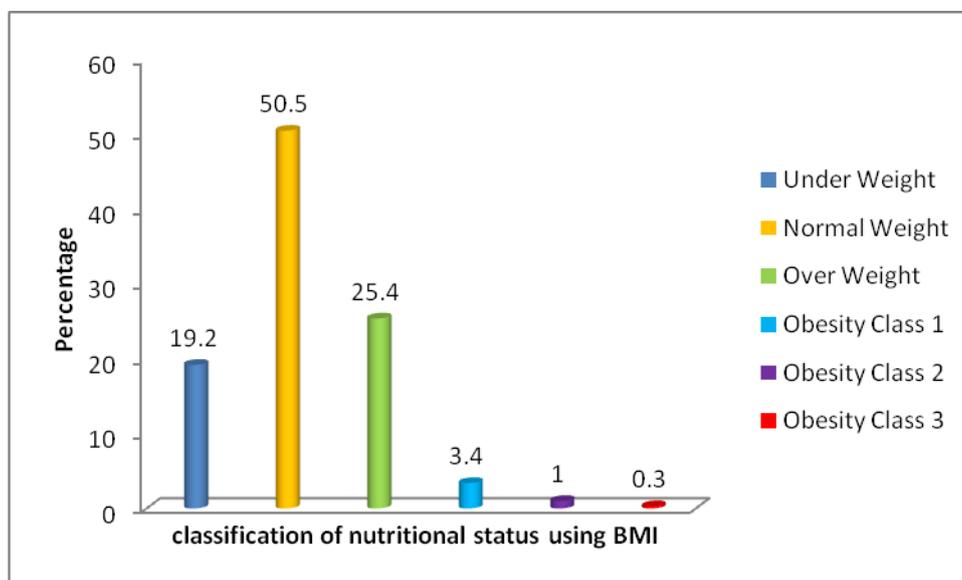


Figure 1: Classification of Nutritional Status using BMI

**The consequences of insurgency on availability of staple foods**

From Table 3, the type of staple foods available before the insurgency comprises of maize 138(35.4%) and Guinea Corn 115(29.4%). Similarly, majority of the respondents 277(70.8%) affirmed that the insurgency has affected the availability and quantity of staple foods, with more than half of the respondents 169(61.0%) affirming that the insurgency has affected their ability to go to farms.

Table 3: The consequences of insurgency on availability of staple foods

| VARIABLES  | FREQUENCY | PERCENTAGE |
|--|-----------|------------|
| <b>Type of staple foods available before the insurgency</b>                          |           |            |
| Rice   | 80        | 20.4       |
| Beans  | 58        | 14.8       |
| Guinea corn  | 115       | 29.4       |
| Maize  | 138       | 35.4       |
| <b>Staple Foods Currently Available</b>  |           |            |
| Rice   | 54        | 13.8       |
| Beans  | 41        | 10.4       |
| Guinea corn  | 151       | 38.6       |
| Maize  | 145       | 37.2       |
| <b>Has the insurgency affected the availability and quantity of the staple foods</b> |           |            |
| Yes  | 277       | 70.8       |
| No   | 114       | 29.2       |
| <b>If yes, how has it affected it</b>  |           |            |
| In ability to go to farms  | 169       | 61.0       |
| Poor harvest   | 74        | 26.7       |
| Lack of food importation   | 34        | 12.3       |

**The impact of insurgency on daily consumption of food**

In Table 4, about 144(36.8%) of the respondents ate twice daily before the insurgency which increased after the insurgency to 181(46.2%), while 169(43.2%) of the respondents go to farm thrice a week before the insurgency, but the number however reduced to 65(16.6%) of the respondents. In addition, 142(36.3%) of the respondents affirmed to harvest between 10-20 bags of grain before the insurgency, which has reduced currently as affirmed by 57(14.5%) of the respondents.

Table 4: The impact of insurgency on daily consumptions of food among the respondents

| VARIABLES  | FREQUENCY | PERCENTAGE |
|--|-----------|------------|
| <b>How many times did you eat daily before the insurgency</b>                              |           |            |
| Once   | 42        | 10.7       |
| Twice  | 144       | 36.8       |
| Thrice   | 146       | 37.3       |
| Above three times  | 59        | 15.2       |
| <b>How many times do you currently eat daily</b>   |           |            |
| Once   | 110       | 28.1       |
| Twice  | 181       | 46.2       |
| Thrice   | 76        | 19.4       |
| Above three times  | 24        | 6.3        |
| <b>How many times a week do you go to farm before the insurgency</b>                       |           |            |
| Once   | 31        | 7.9        |
| Twice  | 115       | 29.4       |
| Thrice   | 169       | 43.2       |
| Above three times  | 76        | 19.5       |
| <b>How many times a week do you currently go to farm</b>                                   |           |            |
| Once   | 98        | 25.0       |
| Twice  | 164       | 41.9       |
| Thrice   | 65        | 16.6       |
| Above three times  | 64        | 16.5       |
| <b>What is the duration of harvest before the insurgency</b>                               |           |            |
| Weekly   | 48        | 12.2       |
| Monthly  | 208       | 53.1       |
| Bi-monthly   | 39        | 9.9        |
| Annually   | 96        | 24.8       |
| <b>What is the duration of harvest currently</b>   |           |            |
| Weekly   | 46        | 11.7       |
| Monthly  | 164       | 41.9       |
| Bi-monthly   | 79        | 20.2       |
| Annually   | 102       | 26.2       |
| <b>What are the quantity (bags) of grains do you usually harvest before the insurgency</b> |           |            |
| 1-5  | 32        | 8.1        |
| 5-10   | 91        | 23.2       |
| 10-20  | 142       | 36.3       |
| 20-30  | 76        | 19.4       |
| 30-40  | 50        | 13.0       |
| <b>What is the quantity (bags) of grains you currently harvest</b>                         |           |            |
| 1-5  | 111       | 28.3       |
| 5-10   | 135       | 34.5       |
| 10-20  | 57        | 14.5       |
| 20-30  | 35        | 8.9        |
| 30-40  | 53        | 13.8       |

#### The cost of food prices during the insurgency

In table 5 below, majority of the respondents 305(78.0%) affirmed that the insurgency has resulted in increased food prices, out of which 248(81.3%) blame the observed increase in food prices on unavailability of food.

Table 5: The cost of food prices during the insurgency

| VARIABLES   | FREQUENCY | PERCENTAGE |
|---|-----------|------------|
| <b>Has the insurgency resulted in increase of food prices</b> |           |            |
| Yes   | 305       | 78.0       |
| No  | 86        | 22.0       |
| <b>If yes, how has it resulted in increase in food prices</b> |           |            |
| Unavailability of foods                                       | 248       | 81.3       |
| Poor harvest  | 57        | 18.7       |

#### The types of staple foods eaten during the insurgency

From table 6 below, majority of the respondents 306(78.2%) affirmed that there were changes on the types of staple foods they eat because of the insurgency, out of which 150(22.3%) affirmed that they eat both rice and beans. The types of food highlighted by the respondents that they ate during the insurgency were Shrubs 148(37.8%), Moringa 78(19.9%) and Garri 165(42.3%).

Table 6: The types of staple foods eaten during the insurgency

| VARIABLES  | FREQUENCY | PERCENTAGE |
|--|-----------|------------|
| <b>Are there change(s) on the type of staple foods you eat because of the insurgency</b> |           |            |
| Yes  | 306       | 78.2       |
| No   | 85        | 21.8       |
| <b>If yes, what type of staple foods did you eat before the insurgency</b>               |           |            |
| Rice and beans   | 73        | 23.8       |
| Tuwo   | 83        | 27.1       |
| Both A and B   | 150       | 49.1       |
| <b>What type of staple foods you eat during the insurgency</b>                           |           |            |
| Shrubs   | 148       | 37.8       |
| Moringa  | 78        | 19.9       |
| Gari   | 165       | 42.3       |

#### Possible means of survival during the insurgency

Table 7 below, shows that 143(36.6%) of the respondents affirmed hawking is their main source of livelihood during the insurgency, while 249(63.6%) confirm receiving palliatives from government and/or non-governmental organizations, out of which 150(60.3%) affirm to receiving food as palliatives during the insurgency.

Table 7: Possible means of survival during the insurgency

| VARIABLES   | FREQUENCY | PERCENTAGE |
|---|-----------|------------|
| <b>What are your sources of livelihood during the insurgency</b>                                    |           |            |
| Trading   | 141       | 36.0       |
| Hawking   | 143       | 36.6       |
| Okada   | 107       | 27.4       |
| <b>Do you receive any kind of palliatives from government and/or non-governmental organizations</b> |           |            |
| Yes   | 249       | 63.6       |
| No  | 142       | 36.4       |
| <b>If yes, in what form</b>   |           |            |
| Money   | 99        | 39.7       |
| Food distribution   | 150       | 60.3       |

## DISCUSSION

The nutritional status of the respondents showed an average BMI of  $22.39 \pm 4.70$  which translated to about 50% of the sampled respondents being normal weight. However, almost one-fifth of the sampled respondents were classified as under nutrition. This showed the likely impact of the insurgency on the nutritional status of the respondents. The finding of the study was higher than that of a previous study in southern Nigeria which had a mean BMI of  $23.02 \pm 4.42$  and a 12.5% under nutrition. Also, 64.5% of the study respondents in the study in southern Nigeria had a normal weight which was higher than the current study (Agofure, 2016).

According to the respondents there was decrease in the availability of rice and beans due to the insurgency which are carbohydrate and proteinous food good for the body. In addition, majority affirmed that the insurgency had affected the availability and quantity of staple foods in the communities. The major reason highlighted by the respondents for this abnormally was inability of farmers to go to their farms. Boko haram insurgency has affected agricultural activities in the three worst hit states of Yobe, Adamawa, and Borno states. Farmers are usually afraid to go to their farms for fear of being attacked. This has led to food shortages in these states (Amalu, 2015; Gylych *et al.*, 2018).

The unavailability of food according to the respondents has also affected the number of times they eat daily. According to the respondents the daily pattern of food consumption showed before the insurgency the respondents ate more twice, thrice and above three times. However, currently because of the insurgency the daily food consumption pattern showed the respondents ate once and twice. Consequently, once and twice increased during the insurgency when compared with before the insurgency while thrice and above three times decreased considerably indicating possible shortages of food. Furthermore, as shown by the results of the study farming activities, duration of harvesting and quantity of bags of grains harvested before and during the insurgency have all being affected. These have been highlighted by similar reports and studies (Amalu, 2015; Famine Early Warning Systems Network, 2015).

Decreased farming activities and shortages of food available would probably result in increased food prices as demands is higher than supply. This was corroborated by majority of the respondents who affirmed that the insurgency has resulted in increased food prices. Apart from shortages of food as affirmed by the respondents, there were variations on consumption of daily food as affirmed by majority of the respondents. The respondents were consuming more of rice, beans and tuwo before the insurgency, their nutrition however changed to cheaper carbohydrate such as garri and plants based nutrients such as shrubs and moringa.

Due to the insurgency, most of the respondents had to depend on daily income jobs such as trading, hawking and okada riding (commercial cyclist) for survival. This finding was different from a study conducted by Food and Agriculture Organization (FAO) which showed the possible means of survival during the insurgency in North-East Nigeria were whole sales and retail, selling of productive assets, working for food and borrowing money (FAO, 2015). Further, the respondents affirmed that they have received some palliatives from government and non-governmental organizations.

Various organizations like UNICEF, World Food Programme, USAID, UKAID, World Bank among others have been involved in food distribution, provision of medical services to people in internally displaced camps in North-Eastern Nigeria. This was corroborated by almost two-third of the respondents who affirmed that they received palliatives from governmental and non-governmental organizations in form of food distribution.

## CONCLUSION

The study provides an overview on the nutritional status of residents of Bara and Bularafa communities and critically analyzed the impact of the boko haram insurgency on their nutritional status. The study established that the continued boko haram insurgency on the study areas continues to pose serious challenges to farming activities, availability of staple foods; daily consumption of food and cost of food prices. Hence households who solemnly depend on their farm produce as their main source of food and income would find it difficult to cope with the existing situation.

Undoubtedly, the impact of boko haram insurgency is limiting the future prospects of residents of Bara and Bularafa communities, Yobe state and the country at large because without peace and security there would be no economic growth and sustainable developments.

## RECOMMENDATIONS

Based on the findings of this research work, the following recommendations were made;

- Evidence-based interventions and policy on agricultural produce should be prioritized to alleviate damages on farming activities caused by boko haram insurgency.
- Government and non-governmental organizations (NGOs) should intensify efforts towards providing relief materials such as distribution of food and non-food items etc.
- More research is necessary on this topic, to draw a clear picture and more definitive solutions on the impact of boko haram insurgency on nutritional status in new directions.

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