 

# Child Poverty in Rural Nigeria

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**Abstract**

Children are the most susceptible to poverty and it often directly affects them through access to sanitation, education, health, water, food and shelter. Poverty among them is however usually assessed using indicators such as income and expenditure which often do not reveal the extent of deprivation among them. This study investigates the extent of poverty among under five children in rural Nigeria and its distribution across household wealth status. The study used the 2013 DHS data. The Alkire and Foster counting approach was used to generate poverty profiles among the children while descriptive statistics was used to assess their distribution. The results revealed a significant level of poverty among the children and poor children were found in all classes of household poverty. The North-west and North-east had highest proportion of non poor children from extremely poor and moderately poor households, respectively while the South-south had the highest proportion of extremely poor and moderately poor children from non poor households. The study recommended that specific policies targeting deprivations suffered by children should be used to address child poverty.

**Keywords**: Rural Households; Child poverty index; deprivation intensity; Alkire and Foster counting approach

## Introduction

With about 80 percent of humanity living on less than 10 US dollars per day (Shah, 2013) only very few households can afford the basic needs required to enjoy the minimum standards of living. With the prevalence of scarce resources, children are often the most deprived as they have no control over which and to what extent their basic needs are met. High levels of deprivations among children could lead to prevalence of diseases and subsequent death of infants and under five children.

Nigeria contributes significantly to the high poverty levels in Sub-Saharan Africa as 69% of its populace (about 163 million people) lives in poverty (NBS, 2012). While the high level of deprivations in the country could reduce the capacity of households to meet the specific needs of children, there are various other factors that could influence the child's access to essential needs especially in the rural areas of the country.

Knowledge about what constitutes child deprivations and its availability could influence the household's choice in terms of need acquisitions. Malnutrition for example though very high in Nigeria has been ascribed to poor nutritional knowledge among parents rather than poverty (Ogbebo, 2014). The division of Nigeria into a large rural sector and a small urban sector also influences the high inequality in the distribution of important social and economic resources. Rural areas are characterized by poor access to infrastructure such as health facilities, electricity, roads and low levels of education among others. As a result, even when households especially in rural areas have the capacity to purchase what the child needs, they might not be able to do so due to unavailability or difficulties associated with accessing it. Other factors such as religious beliefs, the use of traditional African medicine and denial of reality could affect the way rural dwellers utilize health services (Iyalomhe and Iyalomhe, 2012). Abdulraheem *et al*, 2012 explained that even when available rural people in Nigeria tend to under use primary health centers.

With the presence of such factors, household poverty measures might be inadequate in assessing child poverty especially in rural areas. Poverty often directly affects children through their access to shelter, food, water, sanitation, education, health and information as when a child is deprived of one or more of these essential services, their experience of poverty deepens. (United Nations International Children's Emergency Fund (UNICEF), 2011). Authors such as Delamonica (2014), Munjin (2012) and Roelin *et al*, 2011 have also explained that what culminates to poverty in children differs from that of adults. Independent child poverty assessments combined with other poverty measures are therefore essential for formulation of sound poverty interventions and subsequently achieving higher reductions in poverty.

**Problem statement**

Children experience poverty as an environment that is damaging to their mental, physical, emotional and spiritual development (UNICEF 2005). Poverty among children is usually assessed using indicators such as income and expenditure however, while such indicators could be good indicators of child poverty, they do not reveal the extent of deprivation among them. Extending child poverty assessments beyond traditional measures is important as child deaths come not only from preventable diseases and infections but also from other indicators of child poverty such as malnutrition, lack of safe drinking water, sanitation and poor shelter.

In Nigeria, various government interventions such as the provision of health care facilities, water and health personnel were designed to improve the household's access to essential needs that would promote child wellbeing among others. However, authors such as Adeyemi *et al*, 2008 revealed that government expenditure on health compared to other sectors still remained very low in Nigeria while Oshewolo and Oniemola (2011) explained that public spending on health services often does not reach the poor who suffer from high rates of child mortality. Aliyu and Garba (2012) also found that there were severe deprivation increase in shelter, nutrition and health among under five children in Nigeria while Adeoti and Popoola (2012) found that Health and sanitation contributed most to child poverty. These findings indicate that children especially those in rural Nigeria still do not have adequate access to basic needs that constitute child poverty in Nigeria. However despite the high levels of its indicators, child poverty is rarely differentiated from poverty in general and its special dimensions are rarely recognized in poverty reduction interventions in Nigeria. Using the most recent DHS data, this study provides a recent assessment of the extent of child poverty in rural Nigeria and increases the understanding of the relationship between child poverty and household wealth across rural areas in the geopolitical zones of the country.

**Objectives of the study**

The main objective of the study is to assess the extent of child poverty in rural Nigeria. The specific objectives are to:

- assess the extent of deprivation of the indicators of child poverty among under five children
- analyze the extent of child poverty in rural Nigeria
- examine the distribution of child poverty across geopolitical zones and household wealth status in rural Nigeria

**Literature/Theoretical review**

**Health production function:** Just like the production function, the health production function represents the technological process that converts the use of inputs that affect health into health outputs. Outputs are usually some measure of health status such as child mortality or nutritional status while inputs could be access to healthcare, environment, education, lifestyle, genetic factors, and income among others.

**Health and other sources of household utility:** Households consume other things apart from health. The extent to which they consume health depends on how much they value health relative to other things such as assets, vacations and business. Investments made to improve health are often done at the expense of pursuing other objectives. Households are therefore assumed to make a choice that maximizes their perception of wellbeing since there is imperfect information.

The household h faces budget constraint such that C (consumption of other products) and price $P_i$ of health care choice equals the period specific income γ. Formally, the household maximizes

$$u_{ih} = w_1 c_h + w_2 H_{ih} \quad \text{.....(1)}$$

Where $u_{ih}$ = utility derived from household consumption of non health products ($w_1 c_h$) and utilization of health services ($w_2 H_{ih}$).

In the utilization of health services, the choice of households is often constrained by the health production technology specified as various inputs have different characteristics;

$$H_{ih} = A_i + \gamma_i x_{ih} \quad \text{.....(2)}$$

Where $H_{ih}$ = Health consumption, $A_i$ = intercept of different characteristics of inputs and $x_{ih}$ = vector of choice and other attributes where i = 1,2,3.

Therefore a household would choose an alternative if and only if $\widetilde{u_{ih}} > \widetilde{u_{jh}} \quad l \neq j$ . $\widetilde{u_{ih}}$ is the indirect utility for a specific input choice i and a household h which can be separated as $\widetilde{u_{ih}} = u_{ih} + \varepsilon_{ih}$, where $\varepsilon$ is the stochastic or random component reflecting all unobserved and unmeasured properties of households.

**Human Capital model**: Following Grossman's (1972; 2000) human capital model, parents maximize their intertemporal utility function, depending on their own consumption and the well being of their children subject to the health production function, income budget and time constraints. However, the output of the health production function depends on the choices made within the household. This implies that the relationship that determines the extent of health care utilization is behavioral in nature. The behavioral relationship tells us about the determinants of inputs used, how much of those inputs are used and the efficiency with which they are used.

From the fore, it can be inferred that the capacity of household inputs to improve child health and overall wellbeing is dependent on types of choices they make and is likely to vary across individuals, households and countries. Even though choices and behaviors that promote health outputs are mostly restricted by time and money, it is also likely to depend on factors such as appropriate use, availability or accessibility and cleanliness among other things.

Ngeutse Tegoum and Hevi (2009) used non monetary indicators to examine the extent of household and child poverty in Cameroon. Using information from the third multiple indicator survey, child poverty was assessed using 5 indicators which include nutrition, access to potable water, health, education and lodging while household multidimensional poverty was accessed using accessibility to water, hygiene, patrimony, lodging and level of education of household head. The MCA was used to construct the index while the hierarchical classification models were used to identify both poor and non poor households. The results revealed that contrary to the household, child poverty was more related to the child's health and less dependent on the comfort of the household or characteristics of the habitat to which the child belongs.

Plavgo *et al*, 2013 assessed the trend of multidimensional child deprivation in Ethiopia using the 200, 2005 and 2011 DHS data. Using the MODA methodology to define the thresholds, six dimensions which include nutrition, health, water, sanitation, housing and information were used to determine the extent of deprivation among children below the age of five. The Alkire and Foster (2007) poverty measure was adopted to identify the multi-dimensionally deprived children and their deprivation intensity. Comparing the child deprivation headcount ratio with household poverty index showed that for children living in rural areas, the relative wealth of their households did not determine their level of deprivation.

Landiyanto (2013) assessed the extent of multidimensional poverty in Papua using a multiple cluster surevey (MICS) data. Using the Alkire and MPI method, the study adopted the Bristol approach in defining the indicators of child poverty. The findings revealed that most of children were deprived in almost all the dimensions however the assessment of the distribution of child poverty indicators across the household wealth index revealed that there were some children in the middle, fourth and richest quintile that were not recognized as poor based on the asset index that were actually deprived in some of the child poverty indicators.

## Materials and Method

### Data

In analyzing the extent of child poverty, the study used secondary data from the 2013 Demographic and Health Survey (DHS) for Nigeria. The data is adequate to answer the key research questions of this proposed research as it contains data collection options that can be tailored to fit specific monitoring and evaluation needs. The survey was designed to provide up-to-date information on background characteristics of the respondents across the country. The target groups were women and men aged between 15-49 years and children aged between 0-5 years in randomly selected households across Nigeria. In addition to presenting national estimates, the report provides estimates of key indicators for both the rural and urban areas in Nigeria, the six geo-political zones, the 36 states and the Federal Capital Territory (FCT). The data is rich in information on demographic, nutrition and health information such as fertility levels, marriage, fertility preference, awareness and use of family planning methods, child feeding practices, anthropometric measures such as weight and height and nutritional status of women and children, adult and childhood mortality, awareness and attitudes regarding HIV/AIDS, female genital mutilation, and domestic violence. A total of 21,131 children were sampled in the 2013 DHS data for under five children however due to incomplete information only 18,207 under five children were sampled in this study.

### Methodology

Child poverty thresholds were defined using the thresholds for less severe deprivation in children defined in the UNICEF's global study on child poverty and disparities[1]. Five indicators of child poverty which include health, nutrition, access to sanitation, access to drinking water and quality of shelter were used to assess child poverty. Tables, frequency distributions, percentages and analysis of variance (ANOVA) were also used in analyzing the

[1] See appendix 1 for child poverty thresholds

distribution of poverty indicators across the classes of child poverty and the distribution of child poverty across classes of household poverty.

**The Alkire and Foster (2007) Multidimensional Poverty Indices** were used to look at the incidence of poverty among the under five children in rural Nigeria. This approach requires a child to be poor if he/she is deprived in at least k indicators where: 0 < k ≤ n (n is the number of indicators). According to Battison *et al*, 2009 the dimension adjusted FGT measures or Ma family measures is given as:

$$M_{\alpha}(X;Z) = \frac{1}{nd}\sum_{i=1}^{n}\sum_{j=1}^{d} w_j(g_{ij}(k))^{\alpha} \qquad with\ \alpha \geq 0 \ldots\ldots\ldots (3)$$

Where $g_{ij}$ = censored poverty gap of child I in dimension j, $w_j$ = Weight assigned to dimension j, such that $\sum_{j=1}^{d} w_j = 1$ and α = parameter of dimension-specific poverty aversion.

Weights (W) attached to each of the indicators are based on their level of importance. The weighting system affects not only the aggregation but also the identification. When each dimension is assigned equal importance i.e. given equal weights, then $w_j = 1$ for all indicators j = 1…….n. The identification cut off ranges from k =1 (union approach) to k = n (intersection appraoch). However, when different dimensions are assigned different weights in order of importance, $k = \frac{1}{d}$, where $\sum_{j=1}^{d} w_j = 1$ and $w_j$is the non-negative weight assigned to dimension d, then 0< k ≤ min ( $w_1\ w_2 \ldots\ldots\ldots w_d$) where ( $w_1\ w_2 \ldots\ldots\ldots w_d$) is a d-dimensional column vector of weights W. Having defined W, we generate an N- dimensional counting vector $c^t = G^t(0)W$ and an N dimensional identification (column) vector I (K), such that a typical element, $\rho_i(k)$ is defined by: $\rho_i(k) - [\![(c1 \geq k)$ The identification vector elements take two values: 0 and 1. The entry $\rho_i(k) = 1$ if and only if individual i is multidimensionally poor, according to deprivation cut-offs z, weights W and poverty cut-off k; and otherwise $\rho_i(k) = 0$. Measures generated include:

- The head count (H0) i.e. the percentage of the population who are poor is given as

$$H0 = \frac{q_k}{n} \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where $q_k = \sum_{t-1}^{n}\rho_i(k) - \sum [\![(c1 \geq k)$ …… (5)

- Number of deprivations suffered by each household (A) which is given as

$$A = \frac{1}{q_k d}\sum c_i\rho_i(k) \ldots\ldots\ldots\ldots (6)$$

- M0, the adjusted head count is the product of the intensity of poverty i.e. number of deprivations suffered by each household (A) and the headcount (H0) gives the adjusted headcount.

$$M0 = HA = \frac{1}{d}\sum_{t=1}^{n} c_i\rho_i(k) \ldots\ldots\ldots\ldots (7)$$

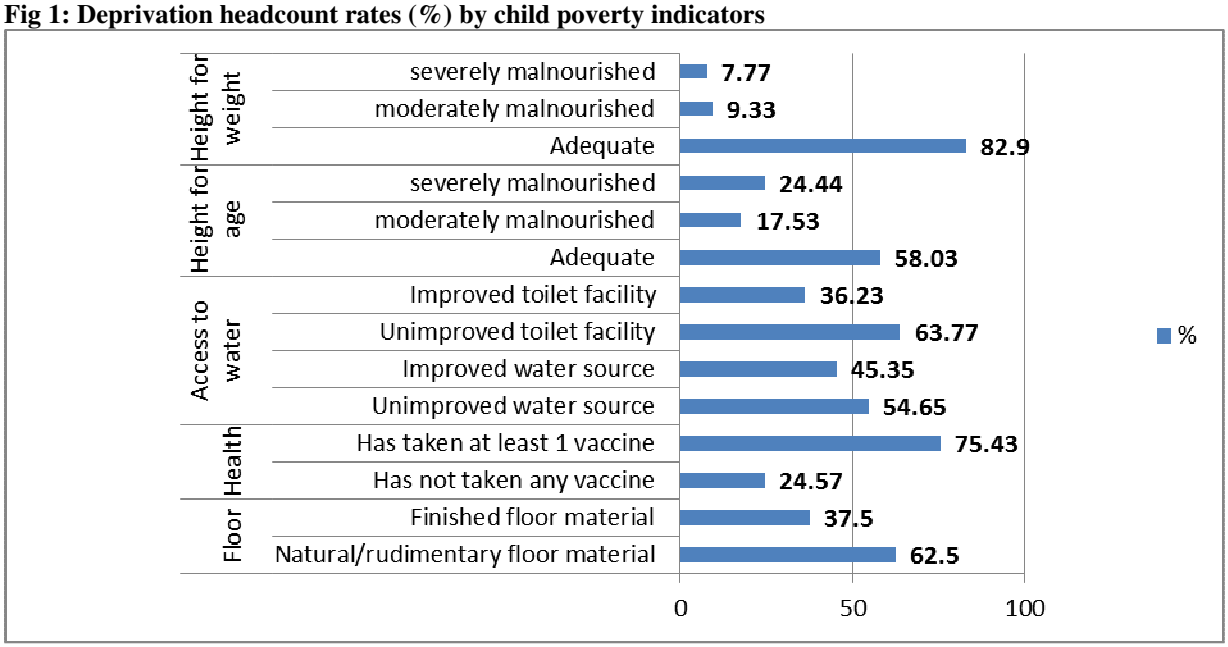
**Results and discussion**

**Single deprivation analysis**

The extent of deprivation among rural U5 children for each of the child poverty indicators was analysed in figure 1.

**Fig 1: Deprivation headcount rates (%) by child poverty indicators**




Source: DHS 2013

Figure 1 shows that majority of the children lived in households that used unimproved water sources (54.65%), unimproved toilet facilities (63.77%) and had natural/rudimentary floor material (62.50%). About 75.43% of the children had taken at least 1 vaccine however the dropout rates were high with DPT having the highest dropout rate of 72.89%[1]. About 24.44% and 7.77% of the children were severely malnourished in terms of height for age and height for weight, respectively.

**Child Multidimensional poverty and deprivation intensity**

The extent of poverty among under five children was revealed using the deprivation head count ($H_0$), average deprivation intensity (A) and the adjusted headcount ratio ($M_0$).

Table 2: Multidimensional poverty estimates

| Cut – off (k) | Adjusted headcount (M0 = HA) | Headcount (H) | Number of deprivations (A) | Average deprivation |
|---|---|---|---|---|
| **1** | 0.487 | 0.947 | 0.514 | 2.570 |
| **2** | 0.448 | 0.752 | 0.596 | 2.980 |
| **3** | 0.332 | 0.460 | 0.722 | 3.610 |
| **4** | 0.185 | 0.217 | 0.853 | 4.270 |
| **5** | 0.060 | 0.060 | 1.000 | 5.000 |

Source: DHS 2013

The number of poor children ($H_0$) decreased with an increase in the cut-off (k). When the cut off was set at 1, 94.7% of the children were deprived in 1 or more of any of the five poverty dimensions and on the average they were deprived in 2.570 dimensions. The percentage of children deprived decreased to 75.2%, 46.0%, 21.7% and 6.0% as the cut off (k) was raised to 2, 3, 4 and 5 respectively while the average deprivation suffered by them increased. The adjusted headcount ratio ($M_0$) revealed that 48.7% of the children were poor multidimensionally when k was set at 1. However, this reduced to 44.8%, 33.2%, 18.5% and 6.0% when the k was equal to 2, 3, 4 and 5 respectively.

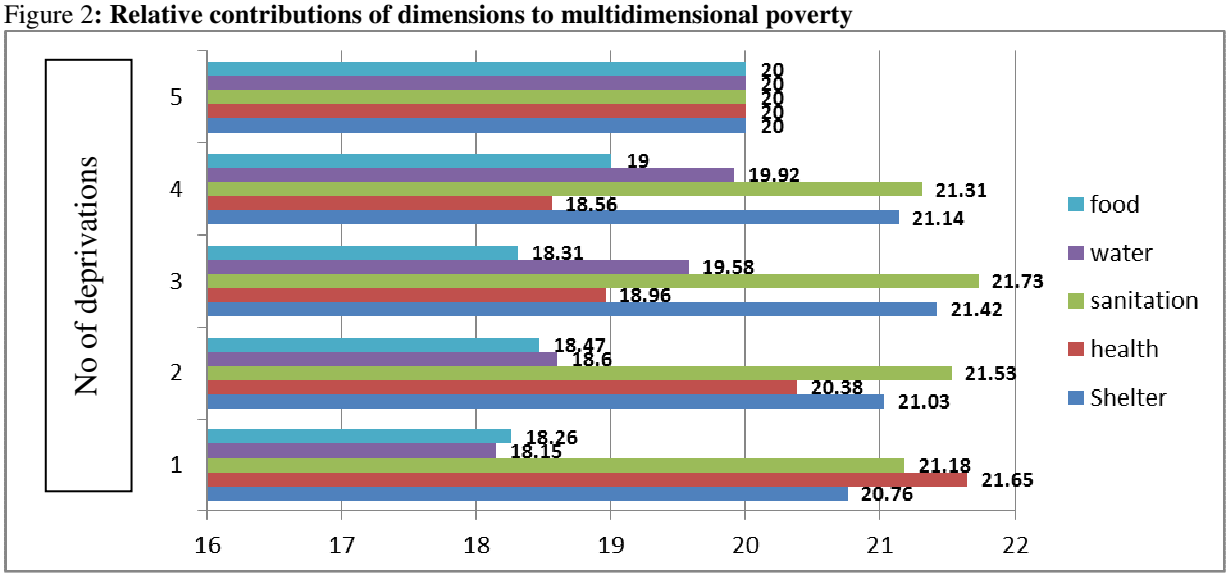
**Percentage contribution of each dimension to multidimensional poverty among children deprived in one to six dimensions**

The contributions of various child poverty indicators to overall child poverty levels were dependent on the number of deprivations considered.

[1] See appendix 2 for dropout rates of the different types of vaccines

Figure 2**: Relative contributions of dimensions to multidimensional poverty**




Source: DHS 2013

Health had the highest contribution (21.65%) to child poverty when the deprivation considered was only one (k = 1) however the contribution of health to child poverty seemed to decrease as the number of deprivations increased as shown in figure 2. Sanitation (21.53%, 21.73%) and shelter (21.03%, 21.42%) had the highest contributions to the total adjusted deprivation headcount ratio when two and three deprivations were considered, respectively.

**Decomposition of child poverty indices in rural areas**

To examine the distribution of child poverty in the rural areas, the adjusted headcount (M0) and headcount indices (H0) were decomposed by region, household characteristics and child age.

The Northern zones generally had higher contributions to the overall child poverty when compared to rural areas in the Southern zones. South-east had the lowest contribution ($H_0$ = 0.031 and $M_0$ = 0.024) of poor under five children while North-East had the highest ($H_0$ = 0.410 and $M_0$ = 0.426). Male headed households ($H_0$ = 0.925 and $M_0$ = 0.931) contributed more to child poverty when compared to female headed households. This could be associated with the prevalence of male headed households especially in rural areas of Nigeria as reported by authors such as Oni and Yusuff (2007), while extremely asset poor households[1] had the highest contribution to child poverty ($H_0$ = 0.383 and $M_0$ = 0.405). Children aged between 0 and 11 months ($H_0$ = 0.222 and $M_0$ =0.226), with household heads occupied in agriculture ($H_0$ = 0.510 and $M_0$ = 0.525) and with mothers who were not educated ($H_0$ = 0.654 and $M_0$ = 0.692) had the highest contribution to overall child poverty while contrary to expectation, mothers who were working contributed more ($H_0$ = 0.656 and $M_0$ = 0.641) to child poverty compared to those who were not.

**The child poverty line**

To assess the distribution of child poverty, the children were separated into 3 classes using the headcount ratio (as in Bastos, 2008). The headcount ratio when k = 2 (0.752) was used to separate the children into poor and non

[1] The MCA was used to generate an asset index which was separated into 3 percentiles to give the classes of household asset poverty: Non asset poor, moderately asset poor and extremely asset poor. Following Plavgo *et al*, 2013, the assets used for the asset index excluded assets (sanitation, water and shelter) used in the child poverty index so as to prevent the correlation between the asset index and child poverty index from being partially endogenous and self explanatory. See appendix 2 for the composition of the asset index. More information on the asset index is available in Rufai A.M. (2016): Household assets, under 5 mortality and poverty among rural households in Nigeria. Ph.D thesis, University of Ibadan.

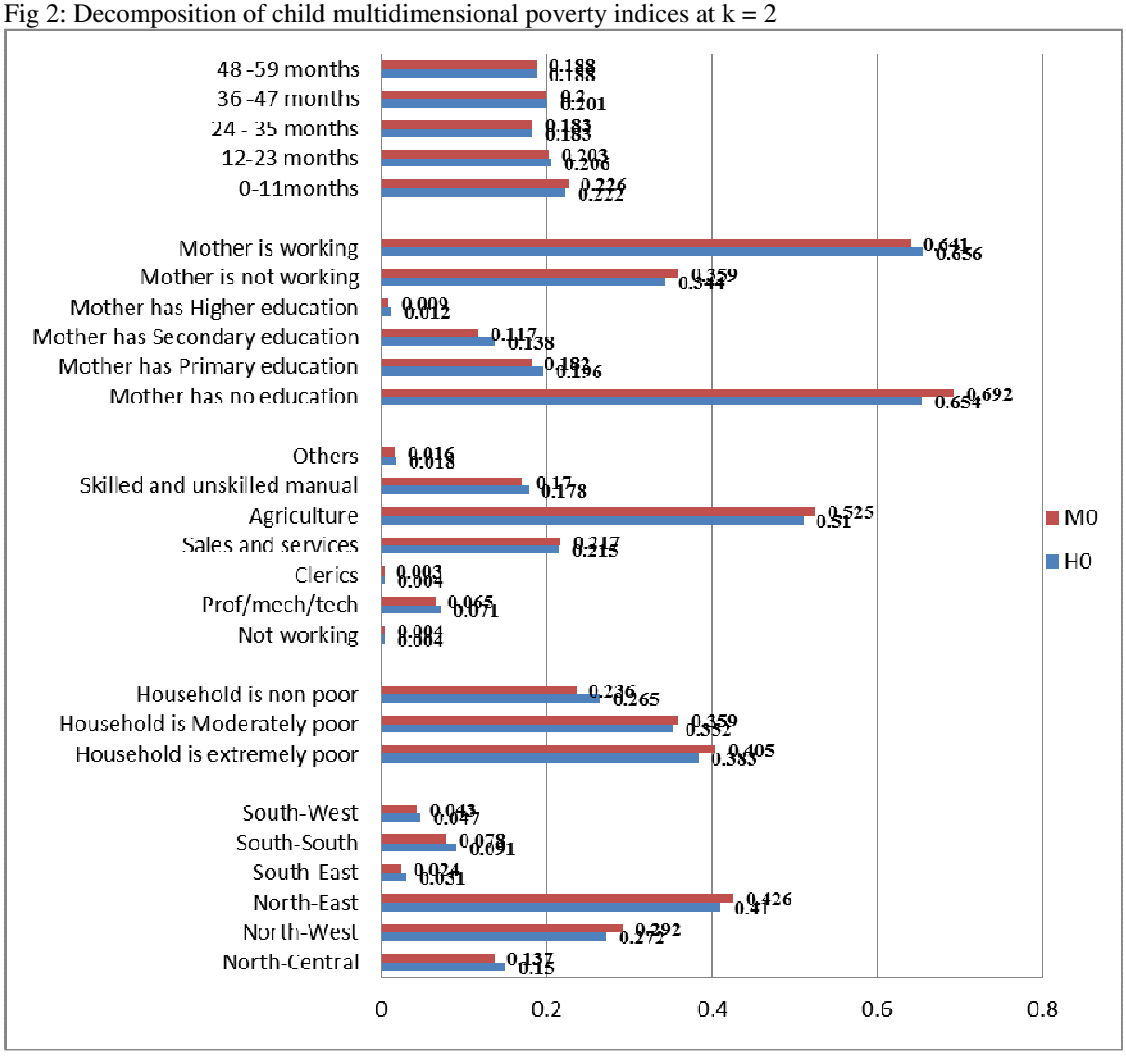
 

poor classes[1] while the headcount ratio when k = 3 (0.460) was used to separate children in the poor class into moderately and extremely poor classes.

**Characteristics of poor children**

Children in the extremely poor class are those who were extremely deprived in both self and household deprivations. Children in this group were characterized by poor access to health facilities as 38.59% had not taken any vaccine. They had poor access to sanitation as 74.87% had unimproved toilet facilities and 72.87% used unimproved water as their source of drinking water. They also had poor shelter as 92.22% had houses with rudimentary flooring. The percentage of class in the modality revealed that most of the children not vaccinated at all (72.45%) and severely malnourished in terms of height for age and weight for height (63.14% and 55.15%) within the study were in this group. The probability of suffering from multiple deprivations was highest in this group and 46.0% of children who were alive in rural Nigeria fell within this class (i.e. approximately 5 out of every 10 under five children). These results are similar with the findings of Ngeutse and Hevi, 2009 where 73.4% of children in Cameroon were found to be affected by multidimensional poverty and 25.4% extremely poor.

Fig 2: Decomposition of child multidimensional poverty indices at k = 2




Source: DHS 2013

[1] The poverty line was set when the cut-off (k) was two because UNICEF's global study on child poverty and disparities (2008) states that children experiencing TWO OR MORE severe deprivations of basic human need (i.e. multiple deprivation) are considered to be living in absolute poverty.

Table 3: Characteristics of poor children

| Childs needs | Modalities | Extremely poor | | | Moderately poor | | |
|---|---|---|---|---|---|---|---|
| | | Freq. | % of modality in class | % of class in modality | Freq. | % of modality in class | % of class in modality |
| **Access to water** | **Improved source** | 2,001 | 27.13 | 27.60 | 2,235 | 48.10 | 30.83 |
| | **Non improved source** | 5,374 | 72.87 | 61.51 | 2,412 | 51.90 | 27.61 |
| **Access to sanitation** | **Improved facility** | 1,853 | 25.13 | 31.99 | 1,704 | 36.67 | 29.42 |
| | **Non-improved facility** | 5,522 | 74.87 | 54.16 | 2,943 | 63.33 | 28.87 |
| **Health** | | | | | | | |
| **Taken at least 1 vaccine** | **Yes** | 4,529 | 61.41 | 37.56 | 3,708 | 79.79 | 30.75 |
| | **No** | 2,846 | 38.59 | 72.45 | 939 | 20.21 | 23.91 |
| **Shelter** | **Finished floor material** | 574 | 7.78 | 8.36 | 2,523 | 54.29 | 36.77 |
| | **Rudimentary floor material** | 6,801 | 92.22 | 74.53 | 2,124 | 45.71 | 23.28 |
| **Nutrition** | | | | | | | |
| **Height for age** | **Adequate** | 3,417 | 46.33 | 36.82 | 2,800 | 60.25 | 30.17 |
| | **Moderately malnourished** | 1,491 | 20.22 | 53.21 | 848 | 18.25 | 30.26 |
| | **Severely malnourished** | 2,467 | 33.45 | 63.14 | 999 | 21.50 | 25.57 |
| **Height for weight** | **Adequate** | 5,945 | 80.61 | 44.85 | 3,826 | 82.33 | 28.87 |
| | **Moderately malnourished** | 745 | 10.10 | 49.97 | 425 | 9.15 | 28.50 |
| | **Severely malnourished** | 685 | 9.29 | 55.15 | 396 | 8.52 | 31.88 |

Source: DHS 2013

Children in the moderately poor class had better access to health as most (79.79%) of children had been vaccinated at least once. They also had better access to shelter as 54.29% had households with finished floor materials. However, majority (51.90%) still had households that used unimproved water as their source of drinking water while 63.33% had households with unimproved toilet facilities. The percentage of class in the modality revealed that 25.57% of those severely deprived in terms of height for age and 31.88% of those severely deprived in terms weight for height within the study are in this group. The probability of suffering from multiple deprivations was lower in this group when compared to children who were most poor and 19.20% of children in rural Nigeria fall within this group (i.e. approximately 2 out of every 10 under five children).

**Characteristics of non-poor children**

Non–poor children are expected to have the best access to needs that promote positive child welfare. The level of access to needs in the dimensions of child poverty among children in the non-poor class is shown on table 4

Table 4: Characteristics of non-poor children

| | | Non-poor | | | |
|---|---|---|---|---|---|
| **Childs needs** | **Modalties** | **Freq.** | **% of modality in class** | **% of class in modality** | **F-test** |
| **Access to water** | **Improved source** | 3,014 | 76.02 | 41.57 | 1450.90*** |
| | **Non improved source** | 951 | 23.97 | 10.88 | |
| **Access to sanitation** | **Improved facility** | 2,235 | 56.37 | 38.59 | 975.26*** |
| | **Non-improved facility** | 1,730 | 43.63 | 16.67 | |
| **Health** | | | | | |
| **Taken at least 1 vaccine** | **Yes** | 3,822 | 96.39 | 31.69 | 995.06*** |
| | **No** | 143 | 3.61 | 3.64 | |
| **Shelter** | **Finished floor material** | 3,765 | 94.96 | 54.87 | 8725.38*** |
| | **Rudimentary floor material** | 200 | 5.04 | 2.19 | |
| **Nutrition** | | | | | |
| **Height for age** | **Adequate** | 3,061 | 77.20 | 32.99 | 561.27*** |
| | **Moderately malnourished** | 463 | 11.68 | 16.52 | |
| | **Severely malnourished** | 441 | 11.12 | 11.29 | |
| **Height for weight** | **Adequate** | 3,483 | 87.84 | 26.28 | 60.63*** |
| | **Moderately malnourished** | 321 | 8.10 | 21.53 | |
| | **Severely malnourished** | 161 | 4.06 | 12.96 | |

Source: DHS 2013

The percentage of class in the modality revealed that most of children with access to improved water source (41.57%) and households with finished floor materials (54.87%) in the study were within this group. The probability of suffering from multiple deprivations was lowest in this group and 24.80% of children in rural Nigeria fell within this group (i.e. approximately 2 out of every 10 under five children). The analysis of variance showed significant difference existed in the distribution of child poverty indicators between the poor and non poor children. This indicates that the amount of child poverty indicators in each class independently defined each class of child poverty.

**Child poverty and household poverty**

The relationship between child poverty and household asset poverty was explored by analyzing the distribution of poor and non poor children across the poverty status of their households.

Table 5: Distribution of child poverty status across household asset poverty in rural Nigeria

| | Household poverty | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Child poverty** | **Extremely poor** | | | **Moderately poor** | | | **Non poor** | | |
| | **Freq.** | **% of modality in class** | **% of class in modality** | **Freq.** | **% of modality in class** | **% of class in modality** | **Freq.** | **% of modality in class** | **% of class in modality** |
| **pooled** | | | | | | | | | |
| **Extremely poor** | 3,710 | 68.80 | 50.31 | 2,710 | 52.73 | 36.75 | 955 | 17.48 | 12.95 |
| **Moderately poor** | 1,188 | 22.06 | 25.56 | 1,599 | 31.12 | 34.41 | 1,860 | 34.05 | 40.03 |
| **Non poor** | 487 | 9.04 | 12.28 | 830 | 16.15 | 20.93 | 2,648 | 48.87 | 66.78 |
| **North-central** | | | | | | | | | |
| **Extremely poor** | 420 | 65.42 | 40.82 | 366 | 48.61 | 35.57 | 243 | 19.33 | 23.62 |
| **Moderately poor** | 148 | 23.05 | 17.96 | 226 | 30.01 | 27.43 | 450 | 35.80 | 54.61 |
| **Non poor** | 74 | 11.53 | 9.26 | 161 | 21.38 | 20.15 | 564 | 44.47 | 70.59 |
| **North-west** | | | | | | | | | |
| **Extremely poor** | 1,464 | 79.74 | 61.00 | 734 | 62.95 | 30.58 | 202 | 24.63 | 8.42 |
| **Moderately poor** | 274 | 14.92 | 30.79 | 297 | 25.47 | 33.37 | 319 | 38.90 | 25.38 |
| **Non poor** | 98 | 5.34 | 18.42 | 135 | 11.58 | 25.38 | 299 | 36.46 | 56.20 |
| **North-east** | | | | | | | | | |
| **Extremely poor** | 1,460 | 68.13 | 47.13 | 1,353 | 54.53 | 43.67 | 285 | 28.36 | 9.20 |
| **Moderately poor** | 555 | 25.90 | 30.75 | 823 | 33.17 | 45.60 | 427 | 42.49 | 23.66 |
| **Non poor** | 128 | 5.97 | 17.63 | 305 | 12.29 | 42.01 | 293 | 29.15 | 40.36 |
| **South-east** | | | | | | | | | |
| **Extremely poor** | 49 | 39.20 | 44.55 | 35 | 30.43 | 31.82 | 26 | 4.87 | 23.64 |
| **Moderately poor** | 44 | 35.20 | 22.00 | 48 | 41.74 | 24.00 | 108 | 20.22 | 54.00 |
| **Non poor** | 32 | 25.60 | 6.90 | 32 | 27.83 | 6.90 | 400 | 74.91 | 86.21 |
| **South-south** | | | | | | | | | |
| **Extremely poor** | 154 | 40.74 | 38.69 | 108 | 27.55 | 27.14 | 136 | 10.33 | 34.17 |
| **Moderately poor** | 115 | 30.42 | 17.16 | 144 | 36.73 | 21.49 | 411 | 31.23 | 61.34 |
| **Non poor** | 109 | 28.84 | 10.71 | 140 | 35.71 | 13.75 | 769 | 58.43 | 75.54 |
| **South-west** | | | | | | | | | |
| **Extremely poor** | 163 | 62.45 | 47.94 | 114 | 49.14 | 33.53 | 63 | 11.86 | 18.53 |
| **Moderately poor** | 52 | 19.92 | 20.16 | 61 | 26.29 | 23.64 | 145 | 27.31 | 56.20 |
| **Non poor** | 46 | 17.62 | 10.86 | 57 | 24.57 | 13.38 | 323 | 60.83 | 75.82 |

Source: DHS 2013

The results in table 5 revealed that poor children were found in extremely poor, moderately poor and non-poor households and vice versa. This finding is consistent with the findings of Plavgo *et al*, 2013 and Landiyanto (2013) were children with deprivations were found across all the household wealth quintlies. Majority of the poor children came from poor households however 36.57% and 12.95% of the extremely poor children came from moderately poor and non poor households, respectively. Also, 25.56% and 40.03% of the moderately poor children came from extremely poor and non-poor households, respectively. The Southern zones and the North central had higher proportions of extremely poor and moderately poor children from non poor households when compared to the North-West and North-East zones while both zones had higher proportions of non-poor children from extremely poor and moderately poor households. The North-West had highest proportion (18.42%) of non-poor children from extremely poor households while the North-East had the highest proportion (42.01%) of non-poor children from moderately poor households. The South-South had the highest proportion (34.17%) of extremely poor (34.17%) and moderately poor (61.34%) children from non poor households.

**Conclusions and recommendations**

The study examined the extent of child poverty in rural Nigeria. Five groups of child deprivations (health, access to sanitation, quality of shelter, nutrition and acess to safe drinking water) were considered. The distribution of the child poverty indicators indicated a generally low standard of living among children in rural areas as a significant proportion of the children had households with no access to improved sanitation, depended on unprotected water sources and had natural/rudimentary floor materials. The results of the child poverty analysis manifested the predominance of poverty among U5 children and indicates the need for the formulation of policies targeting the various indicators of child poverty (especially health, sanitation and shelter which had the highest contributions). Across occupations, child poverty was mostly prevalent in households with heads who were occupied with agriculture. Also, economic resources generated by U5 mothers who were working did not seem to reduce child poverty as most of the children who were deprived had mothers who were working. This could also be assocaiated with the low literacy level among the mothers (as child poverty was highest among

mothers who had no education) and the poor understanding of the essential requirements of child development. The presence of poor children in non poor homes and vice versa also reveals that the welfare of children depends on the extent to which the basic needs that directly affect the welfare of children are provided within the household. The study recommends that interventions to improve the welfare of children especially in agricultural households should be promoted while mothers should be educated on the indicators child poverty. Also, child poverty and household poverty measures were found to be different and as such, specific policies should be used to address these economic problems (especially in the Southern zones and North central where more poor children had non-poor households) to achieve effective reductions in aggregate poverty. The results also revealed the need for a lot of intervention programmes to be put in place to adress the regional differences in poverty especially in the Northern-zones. The high levels of child poverty in the Northern zones when compared to the Southern zones indicate the need for special interventions in this areas.

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**Appendix**

Appendix 1: Indicators, modalities and child poverty thresholds

| Child's needs | Indicators | Modalities | Child Poverty Thresholds (UNICEF, 2007) |
|---|---|---|---|
| Health | Vaccination | Yes | Deprived if child has not received 8 of BCG, dpt1, dpt2, dpt3, polio1, polio 2 polio3, measles or who did not receive treatment for a recent illness involving acute diarrhea or respiratory infection. |
| | | No | |
| Access to sanitation | Type of toilet | Improved sanitation | Child using unimproved sanitation such as pit latrine without slab, open pit latrine, bucket and hanging toilet. |
| | | Unimproved sanitation | |
| Access to drinking water | Source of drinking water | Improved water | Children using unimproved water from an unimproved source such as open wells, open spring or surface water. |
| | | Unimproved water | |
| Quality of shelter | Flooring | Finished | Children living in houses with no flooring (mud & dung flooring) or inadequate roofing. |
| | | Natural/rudimentary | |
| Nutrition | Height for age | Adequate | Children who are more than -2 standard deviations below the international reference population for nutrition measures. |
| | | Moderately malnourished | |
| | | Severely malnourished | |
| | Height for weight | Adequate | |
| | | Moderately malnourished | |
| | | Severely malnourished | |

Appendix 2: Drop-out rates for individual vaccines in rural Nigeria

| Name of vaccine | % that did not take (dropout rate) |
|---|---|
| BCG | 58.54 |
| DPT1 | 60.05 |
| Polio 1 | 30.32 |
| DPT 2 | 65.87 |
| Polio 2 | 37.39 |
| DPT 3 | 72.33 |
| Polio 3 | 50.93 |
| Measles | 68.33 |
| Polio 0 | 65.33 |

Source: DHS 2013

Appendix 3: Composition of asset index

Natural Assets (Land, cattle), Physical assets (Radio, Television, Refrigerator, Bicycle, Motorcycle, car), Human capital (Level of education of household head) and financial asset (Bank account).