DETERMINANTS OF NUTRITIONAL STATUS OF CHILDREN IN NIGERIA

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ABSTRACT

The study examined the determinants of child health care in Nigeria. Data from Nigeria Demography health survey (2009) was employed. Four variables were examined; Per-Capital Household expenditure (as a proxy for Household income), Household Structure, Parental education and Geographical location of the Household (in terms of the six Geo- political zones of Nigeria) as some of the key determinants of children nutritional status. These variables were subjected to Nested Multinomial logit Model (NMLM) regression. Our result revealed that the squared of the proxy for household income was found to be a positive determinant of children nutritional status although insignificantly. This suggests that nutritional status of children in Nigeria is non-linear. Polygamous family structure and once married status had no correlation with children nutritional status. Residency in any of the geo-political zones of Nigeria was also a significant determinant of child nutritional status. Parental education was also revealed to be a key determinant of children nutritional status in Nigeria. Government at all levels needs to invest heavily in education and also educate people on the need for family planning. Food demonstration unit also needs to be established in all health centers.

Key Words: Nutritional status, Determinants, Nested logit model, Demography.

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INTRODUCTION

With the estimated population of over 140 million Nigeria is the largest country in sub-Saharan Africa and also ranked the tenth most populated country in the globe. A Cursory examination of Nigeria's population shows that the greatest percentages of the people live in the rural area, constituting about 64 percent. In terms of the age structure about 45 percent of Nigeria's aggregate population is under 15, while about 20 percent (representing about 24million) are under 5. However, infant and child mortality rates are the basic indicators of any country's socio-economic situation and quality of life (UNDP, 2007). The importance of the rates cannot be underestimated because they are useful instrument in identifying population group at risk and also helps in planning, monitoring and evaluation of health programme and policies in order to achieve one of the MDG goals of reducing child mortality by two-third by the year 2015. The percentage of children population out of the total population in Nigeria, therefore, demands that child survival issues be given a greater attention. There are so many factors responsible for child mortality in Nigeria, such include; nutritional deficiencies and illnesses, particularly malaria, diarrheal diseases, acute respiratory infections (ARI) and vaccine preventable diseases (VPD). Nutritional deficiencies have been identified as the major factor accounting for child morbidity in Nigeria (policy, project, 2012).Early childhood mortality rates based on data from the 2008 NDHS shows that between 1987 – 1992, the under-five mortality rate is 199 deaths per 1,000 live birth, this translates to about one in every eight children born in Nigeria dying before their fifth birthday. However, between 1993 – 1998, under five mortality decreased from 199 deaths per 1000 births to 157 deaths per 1000 births. In terms of nutrition, more than, 50 percent of all childhood deaths have under-nutrition as an underlying factor (NPC/UNICEF, 1998).According to policy project report (2002) adequate nutrition for under 5 children is assessed from various indicators such as breast feeding, salt iodization and Vitamin-A supplementation. The 1999 NDHS reports show that about 19.6 percent of infant less than three months and 8 percent of infants less than six months were exclusively breastfed; this suggests that Nigerian infants are not getting the maximum benefit of exclusive breastfeeding; this puts them at risk of diarrheal infection which is an underlay factor in malnutrition. (PPR, 2002). Further, nutritional indices for under 5 children are nothing to write home about. About 50% are stunted (height for age < -2SD), about 25 percent stunted (< - 3SD), indicating chronic malnutrition, 12 percent are wasted

(weight for height), this shows an acute or shortage of food or severe disease within a short time span, and 27 percent are under weight, which shows a shortfall in weight-for-age, indicating a combination of acute and chronic malnutrition. (NDHS, 2008). The NDHS report of 2008 shows that the trend in the nutritional status of Nigerian children has worsened in terms of stunting and wasting (from 46% in 1999 to almost 50% in 2007 for stunting and 12% in 199 to 16% in 2007 for wasting). Against this background, the major objective of this paper is to examine the household characteristics (socio and economic variables) and nutritional status of children in Nigeria, while the two specific objectives are: (1) to find out the impact of in- equality in household characteristics in childhood malnutrition in the six geo-political zones of rural and urban areas of Nigeria, and (2) to establish the effect of household characteristics conditions on nutritional status of children in Nigeria.

Household Characteristics, in-equality and childhood nutritional status in Nigeria: A survey of Literature.

Growing evidence has shown that there exists socio-economic differences in morbidity and mortality rates across the globe and this could be linked to stages of development. (Olusanya 1977, Leslie et al. 1996, Ene-Obong et al. 2001, Faruque et al.2008, Kawala et al. 2010). In Nigeria, it has been well documented that over the years there has been a wide gap in terms of underweight children among the rich and the poor households as a result of in-equality in household status (Ojiako et al, 2009). This is not surprising because the 2000s decade represents a very difficult period for most Nigerian household. The adverse effects of the macroeconomic policies of previous decades, such as the structural adjustment programme (SAP), combined with the political instability in the country generated economic shocks across the country. According to Ichoku and Leibbrandt (2003), there was rapid decline in most major macroeconomic indices. For example, the economy that was growing at the rate of 7.5 percent in the 1970s recorded on average, a zero growth for the greater part of the 1990s. Per capita income fell from $860 in the early 80s to below $300. The national currency, the naira was devalued by more than 11,000 percent. External debt grew to over $30 billion or $200 per capita at the end of the 1990s (Green, 2001). This represents about 144 per cent of 1993 GDP of the country (Kpakol, 2001). Debt service ratio was as high as 71 per cent in some years within that decade (Obadan, 2001).

Political instability brought insecurity and social welfare to very high levels. It was estimated that about $100 billion left the country in the form of capital flight due to political instability (Soludo, 2011).In the face of continued severe economic crises, many household could no longer afford the basic necessities of life for their members. The ability of households to cope with adverse economic conditions was strained, life expectancy at birth was 43.3 years in 2004 (CBN, 2009). Difficult trade offs continue to be made in an attempt to keep households afloat. Nutritional intake and other health-enhancing inputs into the household health production function have either been reduced or eliminated altogether from the household schedule especially for the children (Pearce and Falola, 2003). No wonder, Olaniyan and Odubunmi (2012) identified; poverty, economic insecurity and dwindling economic resources as factors responsible for malnourishment among children in Nigeria. According to NDHS (2008) childhood mortality rates differ substantially between urban and rural areas, and are more prevalent in rural areas than in urban areas for all categories. It has been estimated that the under-five mortality rate is 121 deaths per 1000 births in the urban areas, compared with 191 deaths per 1000 births in rural areas. Among the zones in Nigeria, it has been documented that under 5 mortality ranges from 89 deaths per 1000 birth in south west to 222 deaths per 1000 births in North east. The south west zone has the lowest rates for all five childhood mortality estimates compared with the other zones (59 deaths per 1000 birth), while North east recorded the highest (109 deaths per 1000 births) (NDHS, 2008).Statistics in socio-economic differentials in infant and child mortality in Nigeria also show that higher level of educational attainment is generally associated with lower mortality rates. Children born to mother with no education have the highest under five mortality rate (209) deaths per 1000 live births, compared with 68 deaths per 1000 live birth for children whose mothers have more than secondary education. Under-five mortality rates are lowest for children in households in to the highest wealth quintile (87 deaths per 1000 live births), while the rate for children in the lowest wealth quintile are 219 deaths per 1000 live births (NDSH, 2008).

Methodology

The paper uses the Harmonized Nigerian living standard survey (HNLSS) of 2009 carried out by the Nigerian Bureau of statistics in order to contribute to a better understanding of the current

children health care system. The choice of the 2009 survey is predicted on the fact that it is the most recent household survey conducted in Nigeria. The Nigeria survey fits with a number of studies conducted throughout the world, in an effort to have internationally comparable statistics on a number of socio-economic conditions.

Estimation Techniques

This study adopts the use of the nested multinational logit model (NMLM) estimated technique in the attempt to determine the effects of household characteristics on nutritional status of children in Nigeria. This is because unless the alternatives are completely dissimilar, the multinomial logit model (MLM) cannot be applied. In order words, unless the error terms in the choices are independently distributed, the multinomial logit model would be inappropriate; this is referred to as independent of irrelevant alternative (IIA).

Empirical specification of the study

Following the approach of Kanjilal et al. (2010), we specify a multi-level regression which is due to the stratified nature of data in HNLSS (2009), the children are nested into mothers, mothers are nested into house holds, household are into primary sampling units, primary sampling units into states and states into geo-political zone of Nigeria. According to Kanjilal et al. (2010), multi-level regression model is required to estimate parameter nutritional status among children to avoid under-estimation of parameter from a single level model, since Siblings are expected to share certain common characteristic of the mother and household (mother's education and household economic status).

The model

The model is specific by Kanjilal et al. (2010):

$$Z_{ij}=\beta^{1} X_{ij} +\delta_j + U_{ij}$$

Where Z_{ij} = the highest for age Z score from the children from the J^{th} household in the i^{th} community.

β = vector of regression coefficients corresponding to the effects of fixed covariates $x_{ij,}$ which are the observed characteristic of the child, the household and the community.

i = random community effect denoting the deviation of community i's mean z-score from the grand mean.

j = random household effect denoting the deviation of household ij's mean z-score from the ith community mean.

The error terms δ_i and μ_{ij} are assumed to be normally distributed with zero mean and variance δ^2_c and δ^2_h respectively.

Description of variables

Household characteristics include; household size, per capita household expenditure and square of per capita household expenditure. Household size is measure as number of person in the household, while capital household expenditure is proxy by the logarithms of income of household's head and squared logarithms of income of household's head and household head level of education. The nutritional status which is the dependent variable is measured by employing a dichotomous variables on probability of a child being chronically malnourished (o = otherwise, 1 = stunted)

Empirical Analysis of Result

Table 1: description of variables used in the empirical nested multinomial Logit model

Household characteristics	Description of variables	Mean	Standard deviation
Household size	Number of people in the household	6.77	2.98
Log of PCH/ house hold Exp.	Log of per capita household expenditure	3.358	3.12
Sqd. Log of PCH/house hold exp.	Square log of per capita household expenditure	0.517	0.123
Monogamous	Married and a monogamous household	0	0
Polygamous	Married and in a polygamous household	0	0
Household head level of education	If household head level of education is secondary or more	3.42	2.98
Household residency	If household is household residency is urban	4.614	3.02
North east	If household location is N/E	3.76	3.12
North west	If household location N/W	3.40	3.14
North central	If household location is North central	4.24	3.02
South east	If household located is South east	6.722	3.47
South west	If household located is South west	6.4	3.38
South-south	If household located is South-south	6.19	3.23

Table 2: Nutritional Status of under 5 children

Measure of nutritional status	classification	Percentage of U5
Weight age (n=626)	Underweight	41.27
	Normal	59.21
	Overweight	6.61
Height age (n=602)	Stunted	68.24
	Normal	40.23
	Tall	2.23
Weight for height (n=598)	Wasted	24.16
	Normal	72.49
	overweight	14.21

Table 3: Nested Logit Regression Result

Variable	Coefficient	P-value
Household	-0.008	0.696
Log of PCH expenditure	-0.097	0.919
Sqd log off PCH exp	0.069	0.602
Monogamous	0.694	0.005
Polygamous	0.603	0.410
Higher level education	0.038	0.003
Primary education	0.336	0.823
Household residency	0.381	0.143
North east		
North west	-0.104	0.442
South west	-0.215	0.255
South east	-0.754	0.001
North central	0.060	0.709
South-south	-0.655	0.000
Urban	0.010	0.042
N	12090	
LR Chi 2	2136.297	
Log like hood	0.000	

Discussion of results.

With respect to the household characteristics ,the proxy for income (per capita household expenditure) was not found to be a significant factor with respect to children nutritional status in Nigeria. This result is at variance with the finding of Ene-obong et al. (2001) where income was found to have a significant positive correlation with children nutritional status in rural community of Enugu state. The sign was also not consistent with the a-priori expectation of a positive sign. However, the squared of the proxy was found to be a positive determinant of children nutritional status although insignificantly. This suggests that nutritional status of children in Nigeria is non-linear. Empirical evidence also revealed that Polygamous family structure and being once married have no correlation with children nutritional status. However, a monogamous family structure was found to be a significant determinant of nutritional status of

children, this might be as a result of the probability that a monogamous family will have lesser number of children compared to a polygamous family structure and as such be able to afford protein energy food for the household which will enhance their nutritional status. In terms of geographical location, our result revealed that children in the south east, south west, north west and south-south have better nutritional status compared to their counterparts in the north east. This result shows that residency in any of the geo-political zones of Nigeria is a significant determinant of child nutritional status. Also, children residing in the urban centre of Nigeria were found to have better nutritional status than their counterpart in the rural area of Nigeria. This result is nor surprising because the probability is that their parents' income is likely to be higher than that of their counterpart in the rural area and as such will be at a better position to be able to provide nutritional food for their children. Parental education was also revealed to be a key determinant of children nutritional status in Nigeria. Higher level of education of the parents was found to be associated with higher nutritional status of children. This result is consistent with the findings of Ojofeitimi et al. (2003), where they found parental educational level to be a major determinant of under five nutritional status of semi-rural community of Ile-ife in osun state, Nigeria.

POLICY IMPLICATION OF RESULT.

It is imperative from our result that household structure, parental education and geographical location are some of the key determinants of nutritional status of children in Nigeria. As such it is therefore necessary for our policy maker to invest heavily in education because education has the probability of enhancing the income level of the household which will in turn boost the consumption of protein energy food that will improve child nutritional status. Also, there is need for government at all levels to educate the people on the need for family planning so as to have a manageable household size that can be adequately catered for. Food demonstration unit also needs to be established in all health centers, children's growth also needs to be promoted and monitored.

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