Impact of Poverty on Access to Healthcare Facilities and Services in Nigeria: A Study of Nasarawa State

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Abstract

Poverty, hunger, disease and unemployment have become a scourge and are widespread and their occurrence have increasing devastation on the economy and the quality of life of the people. The scourge of poverty is not restricted to only accessibility to the minimum income earned by an individual, but it includes poor per calorie intake, nutritional diet, food, the level of accessibility to clean water. The broad objective of this study was to empirically investigate the relationship between poverty and healthcare in Nasarawa State using Instrumental Variable approach and the study adopted the Grossman Model. The area covered are three senatorial zones namely: Nasarawa North, Nasarawa South, Nasarawa West. In Nasarawa North, General Hospital Akwanga. In Nasarawa South, Dalhatu Araft Specialist Hospital Lafia. In Nasarawa West, Federal Medical Centre Keffi. Questionnaire was the instrument used in data collection. Using a Smith (1984) sample formular, a sample size of 298 was arrived at from a population of 3508; and these sample made up the number of questionnaires that were distributed. The study developed an instrumental model, and the estimation techniques used was the STATA statistical software. The results revealed that, the per capita income has a negative and insignificant impact on peoples' access to health care facilities in Nasarawa state. In addition, it was discovered from the results that, the per calorie intake (such as protein, carbohydrates, vitamins, minerals, etc) had a poor impact on under 5 mortality rates in Nasarawa State; and these were due to lack of awareness and ignorance, food insecurity, poor intra family food distribution, poor access to good quality health and sanitation services. Finally, the result showed that, the literacy level was discovered to have an insignificant effect on maternal mortality rate in Nasarawa state. The study therefore recommends that amount charged on health services provided to rural communities, especially in Nasarawa state should be provided in a subsidized form to enable those with low income to have access to available health care services.

Keywords: Poverty, healthcare, Per capita Income, Maternal mortality

JEL Classification: P36, 111,112

1. Introduction

The imperative of the association between poverty and health have long been recognized. Until recently the primary focus for social scientists has been on examining the relationships between income (or consumption) poverty and key indicators of health status, such as mortality, morbidity and nutrition. However, the pressure for 'multidimensional' and 'people centred' understandings of poverty, fueled by the work of Sen (1984), has critiqued such utilitarian measures of poverty and welfare and encouraged a focus on individual capabilities (the means which enable people to function) and more nuanced conceptualisations of poverty. From such perspectives, preventable deaths and ill-health are not merely outcomes of poverty but integral components of poverty itself. Such conceptualisations are reflected in the increasing use of broader measures such as the UNDP's human development index (HDI) and human poverty index (HPI) that incorporate health indicators in their computation. Health is also measured by a number of indicators with the most common being life expectancy, infant mortality rate and the fertility rate.

In Sub-Saharan Africa, it is estimated that almost (50) per cent of the population live in absolute poverty (Avery, 2016; Rowson, 2011; WHO, 2009). It is significant, however, to mention that the estimate of poverty incidence in sub-Saharan Africa would increase if poverty was seen beyond income poverty (Sahn and Stifel, 2012). The problem of faltering social progress is especially acute in Africa in contrast with other regions that have witnessed more sustained improvements in living standards (World Bank, 2011). Social exclusion, human right abuse and gender inequalities are major dimensions of poverty that deprive most people in Africa of their human dignity other than income differentials. Klasen (2010), Carter and May (2011) attribute South Africa's poverty situation to apartheid policies and its aftermath that denied equal access to education, employment, social services and resources to the black population in the country. Poverty thus has strong racial, social and political dimensions with high concentration among African population.

The increase in poverty rate across Nigeria has been coupled with a correspondent increase in the incidence of diseases and deaths. A life expectancy of 51 years has been recorded (Sindiga, 2015). Mortality rate is high especially for children below five years of age. Data from the World Development Indicators show that life expectancy at birth for Nigeria has declined over the past 15 years from 49 years in 1990 to 47 in 2015, and infant mortality rates increased in many sub-Saharan countries where poverty remains pervasive (World Bank,

2016). According to Sindiga, (2015) some 14.5 million children die every year in developing countries; while (10) per cent of all births end up in death by the first birthday and (20) per cent by the fifth birthday. It is emphasized that the relatively high mortality rate in Nigeria is as a result of parasitic infectious diseases. Diseases such as malaria, schistosomiasis, trypanosomiasis are endemic in many parts of Nigeria which affect productivity.

The specific causes of morbidity and mortality are respiratory infections such as pneumonia, tuberculosis and whooping cough and water-borne diseases such as dysentery, typhoid and cholera. With regard to the major causes of poor health conditions in Africa, especially Northern Nigeria, Sindiga (2015) explains that, most of the Tropical diseases are related to poor housing with little ventilation as well as sanitation; clean water supplies are often unavailable and waste disposal is a problem. As regards human waste, many people do not have pit latrines and thus help themselves in the bush. This is often collected by rain water and taken to rivers where people water their livestocks and also fetch water for domestic use. The diseases that account for (50¬90) per cent of illness and death among the poor. These, according to Sanders (2015), are nutritional deficiencies and communicable diseases which sometimes act separately but more often act together and aggravate each other (GHD, 2014). Thus, the high spate of mortality and morbidity in relatively Nigeria are associated with nutritional deficiencies, defective hygiene and lack of certain basic needs of life. The paper is organized into seven sections. One is the introduction, two is the conceptual review, three is the theoretical issues, four is the Empirical Review, five is the methodology, six is the results and discussions and its ends with conclusion and recommendations.

2. Literature Review
Conceptual Review
Concept of poverty: Several streams of ideas have emerged to inform and shape the new literature on poverty discourse across the globe. While these streams have many ideas in common, they do not add to a single coherent conceptual framework for defining poverty. However, Osmani (2013) points out that, a major common theme underlying all these streams of ideas is the diversity of ways in which people perceive and experience poverty, diversity of how poverty is measured and how poor people strive either to escape poverty or to cope with it, and diversity of policy interventions needed for combating poverty. It is important therefore for researchers into poverty to appreciate the diversity in the definitions of poverty in any poverty survey, notwithstanding the need to identify with a specific definition of poverty for any particular study.

Rowson (2011) gives the facts and figures about the relationship between poverty and health and suggests what health professionals should be doing about it. Rowson highlighted poverty as the number one killer in the world today, outranking smoking as the leading cause of death. His article "Poverty and Health" briefly surveys several areas including definitions of poverty and the number of people who are poor. He examines causes of poverty, the linkages between poverty and ill health and what can be done to reduce poverty both inside and outside the health sector. In his survey Rowson identified two main dimensions of poverty from which it could be defined; the income dimension and the non- income dimension. From the income dimension, he made reference to the World Bank's poverty line of US$1 expenditure level for every person a day; a figure representing the minimal amount on which a person can fulfill his physical needs. Thus from the income perspective, a person is considered to be living in 'absolute poverty' if his income fell below US$1 a day (World Bank, 2010). By this measure about 1.2 billion people are living in absolute poverty in developing and transitional economies (Rowson, 2011). In 2014, the WHO report showed that about 1811 million people live in absolute poverty in the world (WHO, 2016). A cross reference of the two surveys by Rowson and WHO shows that absolute poverty, as defined in terms of US$1 expenditure level, is rapidly increasing.

Concept of Health: In the constitution of the WHO cited in Stuart (2014), health is defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". However, this definition of health by the WHO has been described by some researchers into health issues as idealist. The concepts of disease, disability, and death tend to be much easier for health professionals to address than this idealistic concept of health (Yassi, et. al., 2011). The broader WHO definition of health is, however, the most appropriate for use and constitutes a universal 'basic need'- a social need and basic right aligned to social justice (Doyal and Gough, 1991). The Stockholm Environmental Institute (SEI) (2004) related health to vulnerability or susceptibility to diseases. In simple terms, it described vulnerable people as those who are at risk from damage or deterioration to their health for a variety of reasons (Stuart, 2014). Health is thus the ideal condition of a perfect physical, psychic and social well-being more than the absence of a disease. The main factors of a good health have been identified by Hendy (2010) as healthy nutrition, healthy environment, health in the area of the spiritual factors and the main danger for good health is a disease. Disease is thus defined as a disturbance of the efficiency and the well-being of an organ.

Empirical Review on Poverty and HealthCare Status
Various studies have tried to establish the relationship that exist between poverty and health with mixed results. For instance, Benzeval and Judge (2011) as cited in CIHI (2013) provided pieces of evidence from sixteen

studies using eight different data sets from different countries about the relationship between poverty and health. The health status outcome measures they used included: subjective health reports, mortality, emotional stability, chronic conditions, general life satisfaction and physical functioning of the bodily organs; while socio-economic status measures include current income levels, recent income change, poverty flags, current earnings, multi-period average incomes, distribution and number of spells of poverty. The WHO observed that ill health is both a cause and a consequence of poverty. Illness can reduce household savings, create lower learning ability, reduce productivity, and lead to a diminished quality of life- thus creating or perpetuating poverty. The poor in turn are exposed to greater personal and environmental risk, less well nourished, have less exposure to information and are less able to access health care facilities. "The poor are therefore more at risk of illness and disability". The poverty and health research also provided evidence that better health can offer a route out of poverty. However, less attention has been given to this stand, but it is obvious that better health makes children able to learn, while adult breadwinners are more able to work hard and provide for their families.

In summing up their review, the authors concluded "all of the studies that include measures of income levels are significantly related to health outcomes." (Benzeval and Judge 2011 cited in CIHI, 2013). It has been estimated that if developing countries enjoyed the same health and social conditions as the most developed nations, the current annual toll of more than twelve million deaths in children younger than 5 years of age could be reduced to less than four hundred thousand (WHO, 1999).

Some other researchers into poverty and health emphasize that some pathways through which chronic deprivation can dramatically worsen health are through limited access to food, proper housing, and education. Significantly too, the poor are also exposed to environmental toxins, physical threats to health and safety, unsafe jobs as well as chronic psychological stress (Levins cited in Minkler, 2009). Minkler also added that income inequality has a higher propensity to cause ill health. He emphasized that not just being income poor but being poor in a country where many others are rich, causes individuals to experience elevated stress, lower feelings of control over their lives and lack of trust in society and surroundings. In this regard, poverty and socio-economic status have been cited as one of the most important factors that cause emotional distress (Patel and Kleiman, 2013; Aidoo and Harpham, 2011). Psychosocial factors interact with material, behavioural and socio-cultural factors to contribute to the health outcome of the people living in the rural communities (Bernadette, 2015). Wilkinson (1998) assembled two sets of data. First, he found no clear relation between income or wealth and health when comparisons were drawn between countries (for example, there was no relation between per capita gross domestic product and life expectancy at birth in comparison between developed countries at similar levels of industrialization). But in 1999 Wilkinson's observation showed a strong relation between income inequality and mortality within countries, a relation that has been confirmed more recently in a survey by Kennedy and Kaplan (2011).

Theoretical Framework

The theory underlining this study is Grossman Healthcare Demand theory. Amongst theories and empirical studies on the demand function for healthcare highlighted the relationship between health, healthcare and economic growth. The Demand for healthcare services is described within an orthodox static utility-maximizing framework originally pioneered by Grossman (1972). In this framework, individuals are assumed to consume healthcare not because they value healthcare per se, but because it improves their stock of health, which is used as a productive resource. Cropper (1977) extended Grossman's model to account for the disutility that illness may impose on individuals, and examine differences in the demand for preventive and curative care, and the dynamics of demand for healthcare over the life cycle.

Healthcare is fundamentally a production process and shares many of its economic concepts with production generally. Several studies offer insights into the contribution of healthcare to health. On one hand, evidence suggests that lifestyle and environment expenditure could provide more marginal benefits per dollar cost of health than healthcare. On the other hand, healthcare is seen as a major contributor to health. Economists and policymakers are so much concern about the price and income elasticities of the demand for healthcare. This is because; they determine the effects of various pricing and distributional policies on healthcare demand. If there is no responsiveness of demand to price, then prices play little role in determining the allocation of healthcare resources among individuals. In the absence of financing constraints, free provision of healthcare might be warranted. But, if healthcare is responsive to price, then some user fees should be charged to discourage abuse. These charges should however, not be so high as to force individuals into imprudent decisions about whether to seek medical attention. Similarly, if income has a large, with direct effect on demand equally pressure on the price responsiveness of demand, some form of targeting of subsidized healthcare services may be desirable.

3. Methodological Framework
Description of the Study Area

Fig 1: Map of Nasarawa State

Nasarawa State was created from the former Plateau State on October 1, 1996. It has a land mass of 27,117km2, 70% of which is arable land for agriculture. The State has an official population of 1,869,377 million but is projected to be over 2 million in 2009. It is made up of 13 LGAs comprising diverse ethnic groups, such as, Alago, Eggon, Kanuri, Gwandara, Igbira, Mada, Gbagi etc. It is bounded by 7 states namely, Plateau in the North East, Kaduna in the North, Kogi in South West, Taraba in South East, Benue in South and FCT in the North West.

The state has three senatorial zones namely: Nasarawa North, Nasarawa South, Nasarawa West.

The is drawn from Nasarawa North, General Hospital Akwanga. Nasarawa South, DalhatuAraft Specialist Hospital Lafia and Nasarawa West, Federal Medical Centre Keffi.

The study used primary data which were generated through administration of questionnaire

Population and Sample Selection Procedure

The study population was derived from the selected areas of Nasarawa state, namely: Federal Medical Centre Keffi; General Hospital Akwanga; and Dalhatu Araf Specialist Hospital, Lafia. The population is 3508 people that have access to health care facilities in the study area. They were selected based on a stratified sampling technique. The selection of these centres is based on purposive population 3508 of the three health centers stated that covers the area under review.

The Smith (1984) formula was used in the determination of the sample size for this study.

The Smith (1984) sample formula is stated thus:

$$n = \frac{N}{3 + N(e)^2}$$

Where;
n = sample size;
N = population size;
e= Level of precision required;
3 = constant
In determining the sample size, the following variables were used:
Confidence interval = 95 %
e = Margin of error = 0.05

Table 1: Selected Locations in Nasarawa State

S/N	Area	Senatorial Districts	Population	Sample
1	Federal Medical Keffi, Keffi.	West	1282	$\dfrac{298*1282}{3508}=109$
2	General Hospital, Akwanga	North	1109	$\dfrac{298*1109}{3508}=94$
3	Dalhatu Araf Specialist Hospital, Lafia	South	1117	$\dfrac{298*1117}{3508}=95$
		Total	**3508**	**298**

Source: Nasarawa state Medical Board, 2017

Substituting into the formula, we have;

$$n = \frac{3508}{3+3508(0.05)^2}$$

$$n = \frac{3508}{3+3508(0.0025)}$$

$$n = \frac{3508}{3+8.77}$$

$$n = 298$$

Proportional allocation formula Kumar (1976) quoted in Udeze (2005) was applied thus:

$$nh = \frac{nNh}{N}$$

Where   nh = number allocated each class of respondents

n = total sample size

Nh = total population of each class of respondents

N = overall respondents that is, total population

Applying the formula, we have:

Method of Data Analysis: Data analysis method entailed editing, coding and tabulation of data collected into manageable summaries. To ensure easy analysis, the questionnaire was coded according to each variable of the study to ensure accuracy during analysis. The data will be analyzed using descriptive statistics (which include frequencies, percentages, mean and standard deviations) and the instrumental variable approach.

Model Specification: The study adopted the demand for healthcare theory pioneered by Grossman (1972). In his framework, individuals are assumed to consume healthcare not because they value healthcare per se, but because it improves their stock of health, which is used as a productive resource. Grossman's model which accounts for the disutility that illness may impose on individuals, and examine differences in the demand for preventive and curative care, and the dynamics of demand for healthcare over the life cycle.

The Instrumental Variable (IV) approach will provide support for anticipated directions of the association between independent and dependent variables. This approach allows us to later apply these results to models with the same statistical structure as simultaneous equations models. Importantly, we can study the IV estimator from the beginning and easily relate it to the more traditional three-stage least squares estimator.

Thus, our poverty-health model specification is given as:

$$AH = \alpha_0 + \sum_{j=-k}^{p}\left(\beta_1 PCI_t\right) + \sum_{j=-k}^{p}\left(\beta_2 D_t\right) + \sum_{j=-k}^{p}\left(\beta_3 LM_t\right) + \varepsilon_t -----(1)$$

$$U5M = \alpha_0 + \sum_{j=-k}^{p}\left(\beta_1 PCL_t\right) + \sum_{j=-k}^{p}\left(\beta_2 D_t\right) + \sum_{j=-k}^{p}\left(\beta_3 LM_t\right) + \mu_t -----(2)$$

$$MMR = \alpha_0 + \sum_{j=-k}^{p}\left(\beta_1 LL_t\right) + \sum_{j=-k}^{p}\left(\beta_2 D_t\right) + \sum_{j=-k}^{p}\left(\beta_3 LM_t\right) + \upsilon_t -----(3)$$

Where;

AH   =   Access to health care facilities

PCI   =   Per capita income

U5M   =   Under 5 mortality rates

PCL   =   Per calorie intake (such as protein, carbohydrates, vitamins, minerals)

MMR   =   Maternal Mortality rates

LL   =   Literacy level

Other explanatory variables used as instrumental variables are:

D = Deprivations
LM = Livelihood means

α_0 = Intercept or autonomous parameter estimate

β_1, β_2, β_3 are parameter co-efficient of Per capita income, Per calorie intake, and Literacy level

ε_t, μ_t and υ_t are the error terms

Therefore, incorporating our poverty and health relationship into the IV model framework of so as to obtain a steady-state model of the form:

$$AH = \alpha_0 + \beta_1 PCI + \beta_2 D + \beta_3 LM + \beta_4 G + \varepsilon_t ----- (4)$$

$$U5M = \alpha_0 + \beta_1 PCL + \beta_2 D + \beta_3 LM + \beta_4 A + \mu_t ----- (5)$$

$$MMR = \alpha_0 + \beta_1 LL + \beta_2 D + \beta_3 LM + \beta_4 MS + \upsilon_t ----- (6)$$

AH, U5M and MMR are the outcome variables which measures health; while *PCI, PCL and LL* are the explanatory which was used to measure poverty levels; while; *D and LM* are the instrumental variables. In this set of structural equations, the variable *AH, U5M and MMR* are endogenous, which means that it is explained by other variables in the model, in this case the instrumental variable *D and LM* are supposed to be linearly related to *PCI, PCL and LL* and are exogenous, that is, explained by variables outside the model.

4. Results and Discussion
Statistical Test of Hypothesis
H0$_1$: Per capita income has no significant impact on peoples' access to health care facilities in Nasarawa state
Table 2: Results on Per capita income and access to health care facilities and services

Method	I.V-Approach				
Source	Sum of Square	DF	MSE	No. of obs	274
Model	5.09215396	1	5.09215396	F(1,273)	4.66
Residual	298.013301	273	1.09162381	Prob > F	0.0317
Total	303.105455	274	1.10622429	R-squared	0.5117
				Adj. R-squ.	0.4917
				Root MSE	1.0448

HCF	Coef.	Std. Err.	Z(P>|Z|)	[95% Conf. Interval]	
_Cons	2.849401	.2569856	11.09 (0.000)	2.343476	3.355327
PCI	-0.0850229	0.0756078	-1.12 (0.262)	-0.2338713	0.0638255

Source: Author's Computation, 2017(STATA 14)

Table 2 revealed that there is no significant relationship between Per capita income and peoples' access to health care facilities and services in Nasarawa state. This was captured by the value of the Z-statistic (Z) -1.12 and an associated PV of 0.262 that which is greater than 0.05. Therefore, the study accepts the first null hypothesis (H01) and state that per capita income has no significant impact on peoples' access to health care facilities in Nasarawa state. The F- statistics value is 0.0317 which confirms the good fit of the model.

The R^2 is 51.17 percentage which implies that about 51 percentage change in peoples' access to health care facilities and services in Nasarawa state was due to per capita income, while 48.83 percent unaccounted variations were captured by the white noise error term. The reasons for this uncounted variation are due to unstable health care reforms that were carried out in the state; and which has proved to be a huge deviation from the realities on ground.

H0₂*: Per calorie intake (such as food, clean water, and nutritional diet) has no significant effect on under 5 mortality rates in Nasarawa State

Table 3: Results on Per calorie intake and under 5 mortality rates

Method	I.V-Approach				
Source	Sum of Square	DF	MSE	No. of obs	274
Model	108.57212	1	108.57212	$F_{(1,273)}$	84.17
Residual	350.862186	273	1.28993451	Prob > F	0.0000
Total	459.434307	274	1.68290955	R-squared	0.4363
				Adj. R-squ.	0.4135
				Root MSE	1.1358
PCI	Coef.	Std. Err.	Z(P>|Z|)	[95% Conf. Interval]	
_Cons	1.319672	0.1614627	8.17(0.000)	1.001796	1.637547
U5M	0.5204108	0.0567245	9.17 (0.000)	0.4087358	0.6320857

Source: Author's Computation, 2017(STATA 14)

Table 3 however revealed that per calorie intake (such as food, clean water, and nutritional diet) has no significant effect on under 5 mortality rates in Nasarawa State as captured by the Z-statistic value of 9.17 and its associated PV of 0.000 which was found to be less than 0.05. Therefore, the study rejects the second null hypothesis (H02) and concludes that per calorie intake (such as protein, carbohydrates, vitamins, minerals etc) has had a significant effect on under 5 mortality rates in Nasarawa State.

In addition, the F-statistics value is 0.000 which is less than 0.05 and it could be observed that the model also has a good fit.

The R^2 is 43.63 percent which implies that about 44 percentage change in under 5 mortality rates in Nasarawa State was due to Per calorie intake while 56.37 percent unaccounted variations were captured by the white noise error term. It revealed that per calorie intake had a poor impact on under 5 mortality rates in Nasarawa State.

H0₃: literacy level has no significant effect on maternal mortality rate in Nasarawa state

Table 4: Results on literacy level and maternal mortality rate

Method	I.V-Approach				
Source	Sum of Square	DF	MSE	No. of obs	274
Model	13.9801946	1	13.9801946	$F_{(1,273)}$	11.28
Residual	338.361624	273	1.23941987	Prob > F	0.0009
Total	352.341818	274	1.28591904	R-squared	0.5863
				Adj. R-squ.	0.5135
				Root MSE	1.1133
MMR	Coef.	Std. Err.	Z(P>|Z|)	[95% Conf. Interval]	
_Cons	1.807325	0.1628046	11.10(0.000)	1.486813	2.127837
LL	0.1905225	0.1400900	1.36(0.233)	0.0788422	0.3022028

Source: Author's Computation, 2017(STATA 14)

Lastly, from the Table 4, the decision is to accept the null hypothesis (H03) and reject the alternative hypothesis. This is premised on the fact that the calculated Z-value of 1.36 and an associated PV of 0.233 is not significant at 5 percent levels. Thus, it can be concluded that literacy level has no significant effect on maternal mortality rate in Nasarawa state

Also, by examining the overall fit and significance of the maternal mortality rate model, it was found to have a good fit, as indicated by the high *F*-statistic value of 11.28 and it is significant at the 5.0 per cent level. That is, the F-statistic p-value of 0.0009 is less than 0.05.

The R^2 is 0.5863 percentage. It showed that about 58.63 percent of the variation in maternal mortality rate is explained by literacy level, while the remaining 41.37 percentage unaccounted variation is captured by the error term.

Policy Implications

The results from data analysed indicated that per capita income has a negative and insignificant impact on peoples' access to health care facilities and services in Nasarawa state. In Nigeria where malnutrition is high, inadequate feeding of young children preceded economic hardship. Because resources to buy adequate quantities of high quality foods have declined in some families, feeding practices have deteriorated further which impinge on access to health care facilities and services difficult. Particularly, payment for health services has continued to threaten the consumption and livelihood pattern of the rural dwellers than the urban dwellers, especially as payment for health services reduces the amount available for other household consumption, and which consequently forced the families to embark on perpetual borrowing to enable them to survive. Thus, this

increases the poverty level of the population. This is in agreement with Minkler (2009) findings that income inequality has a higher propensity to cause and sustain ill health. He emphasized that not just being income poor but being poor in a country where access to health care facilities and services are difficult, causes individuals to experience elevated stress, lower feelings of control over their lives and lack of trust in society and environment. Mavis (2015) also affirmed this finding where maternal mortality rates tends to occur red primarily in poor families as a result of the adverse socio-economic and environmental conditions typically associated with poverty, including poor housing and sanitation, exposure to infectious and parasitic diseases, inadequate health care, large family size, very limited educational and occupational opportunities, poor feeding and child care practices etc

More so, it was discovered from the analysis that per calorie intake (such as protein, carbohydrates, vitamins, minerals, etc) had a poor impact on under 5 mortality rates in Nasarawa State. The major underlying causes of nutritional problems include poor maternal and child care practices, lack of awareness and education, family food insecurity, poor intra family food distribution, poor access to good quality health and sanitation services (World Bank, 2012). Nutrition problems as revealed in this study are due to lack of education and proper intake of appropriate food mix rather than lack of food. The finding is in-line with Atkins (2002) findings that malnutrition remained one of the major contributing factors that enhances disease and death in the world, as its impact is more pronounced in poorer and underdeveloped parts of the world, where protein energy malnutrition accounts for 49% of deaths in children under the age of 5 years. Findings of Burgess and Grace (1998) which were also in agreement with our findings of this study, equally revealed that poor nutrition prevents children and communities from reaching their full potential and from participating fully in social and economic life. Even more pronounced, is under-nutrition which affects not just one generation under malnourished parents do bear undernourished children, and that have community externalities in the overtime. Thus, lack of access at all times to a sufficient quantity and quality of safe and nutritious food for an active and healthy life causes under-nutrition and micronutrient deficiencies, which affect every age group throughout the country.

Lastly, literacy level was discovered to have an insignificant effect on maternal mortality rate in Nasarawa state. Nutrition problems and maternal mortality rates are due to lack of education and proper utilization of food rather than lack of food. In-line with this study, Rokx and Brown, (2002) findings revealed that lack of knowledge about healthy nutrition behaviours and practices have been a major cause of maternal mortality in most of the developing world. This also affirmed in the findings of Sindiga (2015) whose study showed that about 14.5 million children die every year in developing countries; while 10 per cent of all births end up in death by the first birthday and 20 per cent by the fifth birthday. It is emphasized that the relatively high mortality rate in Nigeria is as a result of parasitic infectious diseases. Increased awareness of the pathophysiological processes associated with malnutrition can guide therapies to reduce the associated morbidity and mortality. Improved access to food-providing a balanced combination of energy and nutrients continues to be the key to prevention of malnutrition.

5. Conclusion and Recommendations

In conclusion, no nation can afford to waste its greatest human resource which lies in the health of its people. Complex societal, economic, and political factors must be overcome in order to provide effective coordinated programmes targeted at eradicating poverty and improving the health condition of people living in Nasarawa state. The on-going health sector reform in Nasarawa state has various provisions that could make for improved health outcomes through improved health behaviour and improved quality of health service delivery in Nasarawa state. These are expected to impact on poverty because of the strong linkage between poverty and health. Thus, the health sector reforms have the potential as a health system intervention to break the vicious cycle of ill-health, poverty and under-5 mortality rates, and maternal health issues through improved health outcome and translate it into a virtuous cycle of improved health status, prosperity and sustainable development. Government should as a deliberate policy provide adequate health care facilities across the nooks and crannies of the nation, especially at the rural level.

Based on the findings, the following recommendations are made:

     i.   Subsidies should be provided for individuals who have health challenges that their parents level of income cannot take care of. This will go a long way in ameliorating the poverty and health challenges and enable them access health care facilities and services in the face of the income constraint by this group of people.

    ii.   The amount charged on health services provided to rural communities should be provided in a subsidized form to enable those with low income to have access to available health care services wherever they are especially in cases of emergencies. Attempt should be made to subsidize charges on private hospitals and increase regulatory capacities (institutional quality) to improve the overall availability and accessibility of health services to the citizenry so as to improve

the life expectancy of people living in the country.

    iii.   In order to improve per calories intakes there is the need for additional resources for healthcare, which should be accompanied by reforms to improve efficiency and effectiveness of healthcare organization and delivery in Nasarawa state. In addition, there is the need for government to establish polices that will address the health and nutritional needs of under-five children in Nigeria due to low level of income among most people living in rural areas.

iv.   The health ministry should collaborate with ministry of education, ministry of women affairs and other relevant stakeholders to advocate for girl child education and women education that would help reduce the maternal mortality rates in Nigeria.

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