

Female economic empowerment as a significant factor of social exclusion on the use of antenatal and natal services in Nigeria

Abstract

The access and utilization of Maternal Health Services (MHS) is partly influenced by the cost and the level of income of a pregnant woman. This study assessed the association between women's income levels and the use of MHS as measured the number of antenatal care visits and the place of delivery using the Anderson health care utilization model as the theoretical framework. A secondary data analysis of 31,985 women in the reproductive age (15-49 years) was conducted using Pearson Chi and Multiple Logistic Regressions. Income was significantly associated with both the frequency of antenatal care visits (Adjusted OR=3.056; CI 2.625-3.567; $p < 0.0001$) and the place of delivery (Adjusted OR=13.245; CI 7.255-24.180) even after controlling for confounders such as education, availability of skilled health worker, religion, distance, and age. The finding has provided information that might influence policy makers and health managers on the need for inter-sectorial collaboration with stakeholders at community, state and national levels towards a holistic multi-prong intervention.

Keywords: female economic empowerment, antenatal care, place of delivery, income, Nigeria

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Introduction

The ability to pay for the cost of health care received includes transport fare to and from a health facility, consultation, investigation and management fees is a function of individual and family income levels as well as the operating health care financing mechanism. Income has been reported to be among the major obstacles to the access and utilization health services is found to be a strong barrier to the use of modern health care facility, even among countries where health care is provided freely.¹ For instance, although family planning programmes in the developing countries are either free or highly subsidized, however, the World Health Organization (WHO) reported that pooled data from 2005 to 2015 showed that more than two-thirds of Nigerian women (married or in consensual relationship) have unmet need for family planning² suggesting a low utilization of family planning methods. This scenario might be due to distance to service points, which translates as unforeseen financial burden in form of transport fare to women who resides far from service delivery points. Additionally, in many communities females are accompanied by relatives when going to health facility that is located outside of their place of domicile which add to the financial cost of seeking health care services. The economic downturn experienced by many developing countries like Nigeria has led to the removal of subsidy on social services including, commercialization and privatization of health care services has led to a correspondent high increase in out of pocket payment for health expenditure³ and low utilization of health care service.^{4,5}

However, a study among the three major ethnic groups in Nigeria that constitutes more than 50% of the country's population has reported that the income and or cost of services received were not among the top three major obstacles of seeking and using modern health services.⁶ Recent study among educated participants among the Yoruba ethnic

group of south West geopolitical zone of Nigeria reported that cost of health care is not a major determinant of the utilization of health care services.⁵ However, this is not consistent with the findings of other studies that were conducted South East⁷ and North West⁸ geopolitical zones of Nigeria, Kenya^{9,10} and the USA,¹¹ where income was reported as a major influence of health seeking behaviour. The latter studies advanced that women in high income level were more likely to seek for the services of highly skilled health workers locally or overseas. Such unequivocal conclusions on the role of income in the use of health services coupled with the fact that the Nigerian and Kenyan studies were conducted in a small fraction of their respective countries indicated a weakness in their external validity¹² and significance of their findings beyond their study area.¹³ This weakness was further compounded by the fact that 98% of Nigerian women between the ages of 15 to 49 years have no health insurance policy,¹⁴ coupled with the weaknesses of the external validity of the studies cited, and raises concern for the need of a robust countrywide community based study.

This study aimed to address this gap by assessing the association between women's income and the use of maternal health services (MHS) measured the number of antenatal care visits made during a specific pregnancy and the place of delivery. The Anderson health care utilization model^{15,16} was the theoretical framework of this study. The model provides constructs namely predisposing (individual), enabling (community and health system) and need (perceived and technical) factors. The practicality of the model was attested by its application in a study on maternal weight gain during pregnancy and incidence of gestational diabetes in Australia;¹⁷ physical exercise, maternal weight gain during pregnancy and incidence of chronic diseases (heart, diabetes) and faetal complications in the State of Israel¹⁸ and the magnitude of obesity in the united States of America.¹⁹⁻²¹

Methodology

The Federal republic of Nigeria is organizationally divided into 36 states and a Federal Capital territory (FCT). Each of the state and the FCT is further subdivided into districts called local government areas (LGAs), and each LGA is divided into political wards. During national census, each of the political wards is further subdivided into enumeration areas (EAs). This is a quantitative cross-sectional study using secondary data of the Nigerian Demographic and health Survey (NDHS). The data of 31985 of women in the reproductive age group was analyzed. The women were recruited from all the 36 states and the Federal capital territory using a two stage cluster and weighted proportionate to size sampling technique.¹⁴ The first level of cluster selected during the survey was the random selection of EAs from the list of each EAs (sampling frame) in each state and the FCT which then forms the primary sampling unit (PSU) for the survey data that I have used for this study.¹⁴ A total of 888 clusters (286 are urban and 602 are rural areas) were selected, in each cluster households were selected based on the weighted population size. The mapping and line listing of households in each of the EAs was conducted and was the sampling frame for the second stage of the cluster sampling strategy used.¹⁴ Within each selected household, a woman was randomly selected from the list of all women who had given birth within a year before the survey date. Additional details of the sample size estimation and sampling techniques is available online.¹⁴ The survey was jointly sponsored by United States of America International Development, The Nigerian Nation Population Commission and other international partners.¹⁴

Thus the NDHS has provided an opportunity for a community based study with high external validity.¹² Based on the research question whether Nigerian women’s income levels is associated with use of MHS as measured by the number of ante-natal visits and place of delivery, the following hypothesis was developed and tested:

- i. H_{01} : There is no significant statistical association between the income level of a woman and the use of MHS as measured by the number of antenatal visits and place of delivery.
- ii. H_{02} : There is a significant statistical association between the income level of a woman and the use of MHS as measured by the number of antenatal visits and place of delivery.

The dependent/outcome variables are dichotomous categorical with antenatal clinic visits (<4 or ≥ 4) in line with recommendation of the World Health Organization,²² while place of delivery categorized

as home or institutional). The data was analyzed using Pearson Chi square test and a two-step Multivariate Logistic Regression (MLR). MLR was initially conducted for one covariate at a time to obtain the unadjusted odd ratio (UOR) and those that were found to be statistically significant were included into the second step of the MLR in order to obtain the adjusted odd ratio (AOR). However, independent/predictor variables (Variables adjusted in the model: education, parity, availability of skilled health worker, religion, distance to the nearest health facility, and age) that were included were selected based on the findings of previous studies, the use of directed-acyclic graphs, and variables that were statistically significant. This approach was similarly used in other previous studies using the DHS data to assess the determinants of why women give birth alone with no assistance from anybody²³ and failure to complete the national immunization schedule.²⁴ The critical level was set at 95% confidence interval (CI).

Ethical approval

An approval to access the raw DHS data was granted by the custodian of the data-ORC Macro and ICF International, Calverton Maryland, United State of America. Ethical approval was granted the Institutional Review Board of the Walden University, 100 Washington Avenue, South, Minneapolis, MN 55401, USA with reference number 01-23-15-0338613.

Results

The level of income of women was statistically associated with the number of antenatal clinic visits made during the last pregnancy before the survey ($\chi^2=1154.812$; $df=4$; $p<0.001$) (Table 1). Women in the higher income level were four times more likely to make at least four antenatal clinic visits compared to women belong to the lowest income levels (UOR=3.654; CI 3.344-3.993). The influence of a woman’s level of income persisted following adjusting for confounders showing a three-fold likelihood that the richest women will attain four or more number of antenatal clinic visits compared to their colleagues in the lowest income bracket (AOR=3.056; CI 2.625-3.567; $p<0.0001$) (Table 1). Similarly, income was statistically associated with the choice of place delivery ($\chi^2=5476.24$; $df=4$; $p<0.001$), with rich women demonstrating a sixty fold more likelihood to have their delivery in a health facility compared to their poor counterparts (UOR=57.875; CI 49.861-67.177). This was similarly consistent with the richest women having a 13 times more likelihood to have institutional delivery compared to the poorest women (AOR=13.245; CI 7.255-24.180) (Table 2).

Table 1 The association between the level of income of women and the frequency of antenatal clinic visits

Income quintile	Bivariate analysis		Multivariate logistic regression analysis							
	ANC visits < 4 visits	ANC visits ≥ 4 visits	Pearson’s Chi-square	UOR	95% CI for AOR		AOR	P Values	95% CI for AOR	
					Lower limit	Upper limit			Lower limit	Upper limit
Poorest	6265	887	0.001*	1			1			
Poorer	5207	1333		1.808	1.648	1.983	1.739	0.001*	1.563	1.935
Middle	4483	1768		2.786	2.548	3.046	2.619	0.001*	2.344	2.926
Rich	4184	2004		3.383	3.097	3.695	3.148	0.001*	2.777	3.569
Richest	3858	1996		3.654	3.344	3.993	3.056	0.001*	2.625	3.557

*p is significant at the 0.05 level.

Note: Variables adjusted in the model: parity, religion, education, age and distance.

Table 2 The association between the level of income of women and the place of delivery

Income Quintile	Bivariate analysis			Multivariate logistic regression analysis						
	Place of delivery		Pearson's Chi-square	UOR	95% CI for UOR		AOR	P value	95% CI for AOR	
	Home	Facility			Lower limit	Upper limit			Lower limit	Upper limit
Poorest	4353	391	0.001*	1			1			
Poorer	3490	723		2.306	2.023	2.629	1.701	0.003*	1.199	3.146
Middle	2290	1206		5.863	5.175	6.642	2.316	<0.001*	1.278	4.195
Rich	1244	1785		15.975	14.079	18.125	4.802	<0.001*	2.689	8.575
Richest	398	2069		57.875	49.861	67.177	13.245	<0.001*	7.255	24.18

*p is significant at the 0.05 level.

Note: Variables adjusted in the model: education, religion, availability of skilled health worker, distance to the nearest health facility, age and parity.

Discussion

The appropriate use of MHS in terms of making at least antenatal visits and institutional deliveries are considered an effective approach to reduce the magnitude of maternal mortality in high burden countries like Nigeria. However, a woman's ability to pay for direct cost (consultation, investigations, medication) and indirect cost (transport fees, loss of work day for unskilled employees) might be a hindrance to the optimal use of MHS.¹ In this study, women in the richest income class have higher frequency in antenatal clinic visits and institutional delivery by about 3 and 14 times respectively. Similar observation due to income disparity has been reported in the developed countries,^{11,25} Asia^{26,27} other parts of Africa^{9,10,28,29} and from both Northern and Southern parts of Nigeria.^{7,8,30,31} The North eastern and western parts of Nigeria were reported to be the poorest part of Nigeria with more than 70% living below \$2 per day¹⁴ and correspondently having the lowest MHS as observed in this study and other previous studies.^{32,33} High poverty level is one of the plausible contributing factors on why some states in the North East^{32,34} and North West³³ geopolitical zones of Nigeria having the highest maternal mortality ratio (MMR) of 1,791^{32,34} and 1,100³³ per 100,000 live births respectively compared to the national figure of 820 per 100,000 live births³⁵ with the southern zone having much lower figures.^{36,37} Moreover, less than 5% of Nigerian women have health insurance policy means that individuals and families have to bear the cost of health services and this was reflected by that fact that, 50%(2001) and more than 95% (2011) of Nigeria's health expenditure was out of pocket payment.³ The continued pursue of policies from the 1980's to date such as the Structural Adjustment Programme, Austerity Measures, the removal of subsidies in social services such as health, education, agricultural inputs, transport in terms of higher prices of petroleum products, privatization and commercialization of health sciences in Nigeria has led to inflation in goods and services,⁴⁻⁵ high unemployment, decrease productivity and poverty with a corresponding decrease in the economic access of health care services particularly among the poor segment of the Nigeria population. The combined synergistic impact of these policies and the rising poverty levels partially explains the inability of Nigeria to achieve the Millennium Development Goal 5 (MDG) by the end of 2015 aimed to reduce maternal deaths by two-thirds compared to the number of deaths recorded in 1990.²

Conclusion and recommendations

Hence, this study further reinforces that, income is a major obstacle to achieve the minimum desired number of antenatal clinic visits or deliver in a health facility even after adjusting for education, parity, availability of skilled health worker, religion, distance to the nearest health facility, and age. The current health related Global targets as outline in the Sustainable Development Goal 3 (SDG 3) by 2030 that is aimed to bring down MMR to ≤300/100,000 live births² for countries with high maternal deaths such as Nigeria, might be missed unless economic access to MHS is addressed. Addressing these issues requires additional qualitative data in order to shed more light on what transpired at family level in terms of how families recognized danger signs, make decision on when, where and how to seek modern medical services and how to reach the nearest functional maternity health centre. This approach in addition to the quantitative data of this study and other similar ones will provide information that might influence policy makers and health managers on policy, planning and broad proactive participation of various stakeholders at community, state and national levels.

Strengths and weaknesses of this study

The data used in this study has a large sample size of >33,000 with representative sample drawn across all the 36 states and the Federal Capital Territory and thus findings have high external validity and generalizable.¹² Findings demonstrated the impact of income on the use of MHS after adjusting for covariates such as education, distance, religion, age and availability of skilled health workers. It highlighted the need for the need for holistic planning with stakeholders at all levels. However, because the study design was cross-sectional, it does not infer causes rather association between the predictor and outcome variables. The DHS data also lack qualitative information in terms of who takes decision, when and how decisions are made at family level and how they finance the cost of health services. Hence, there is need for further research in these areas.

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Conflict of interest

The author declares no conflict of interest.

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