International Journal of Asian Social Science
ISSN(e): 2224-4441
ISSN(p): 2226-5139
DOI: 10.18488/journal.1.2017.75.424.433
Vol. 7, No. 5, 424-433

URL: www.aessweb.com

ANALYSIS OF INEQUALITY IN HEALTHCARE UTILIZATION AMONG PREGNANT WOMEN IN NIGERIA: CONCENTRATION INDEX APPROACH

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Article History
Received: 15 August 2016
Revised: 16 January 2017
Accepted: 22 February 2017
Published: 27 March 2017

Keywords
Inequalities
Healthcare
Concentration index
Nigeria
Utilization
Women.

ABSTRACT

Social inequalities in health care are considered to arise from social and economic determinants outside the health care services. There is an increasing interest in the role of the health care system. It is generally assumed that socioeconomic gradients in access to health care are very high, but only recently has this been subject to critical review. This study adopts health concentration index as a measure of inequalities in health status among pregnant women in Nigeria. The study observes that socioeconomic inequalities in healthcare utilization in Nigeria can be attributed to the high level of poverty in the country, as a major barrier that discourages household from gaining access to health care services. For healthcare utilization among pregnant women in Nigeria to be effective, the study suggests for interventions in order to promote maternal health care service utilization among pregnant women in Nigeria.

Contribution/ Originality: The study contributes to the existing literature on analysis of inequality among pregnant women utilization of health care services in Nigeria. Health concentration index was adopted as a measure of inequalities in health status among pregnant women in Nigeria. The findings show that socioeconomic inequalities in healthcare utilization in Nigeria can be attributed to the high level of poverty in the country.

1. BACKGROUND TO THE STUDY

The effects of the rising socioeconomic inequalities in healthcare utilization among pregnant women in Nigeria as inherent in other Sub-Saharan African countries have received great attention over the years. According to World Health Organization (WHO) 2006, all pregnant women should at least receive care during early stages of pregnancy within the first three months followed by at least 4 antenatal visits (WHO, 2006). A woman reproductive age has been defined by WHO as those between 15-49 years, and these constitute more than one fifth of the world's population and are repeatedly exposed to the risk of pregnancy and childbearing.

Maternal health refers to the health of the mother during pregnancy, childbirth and the postpartum period (AbouZahr and Wardlaw, 2004). Maternal healthcare utilization is essential for early discovery of mothers who are exposed to ill health and mortality during pregnancy (WHO, 2006). However, in the developing countries, these problems such as poor access to healthcare,

low income etc. are more prevalent due to the current socioeconomic conditions and inaccessibility of health facilities (Okereke, 2012).

Antenatal care encompasses a broad range of clinical procedures and care provided to pregnant women. Ideally, all pregnant women should have proper access to effective antenatal care irrespective of their social, economic, cultural and geographical background. Antenatal care plays a vital role in ensuring a healthy mother and baby during pregnancy and after delivery. Pregnant women are given this care to maximise good health outcomes; low maternal and neonatal mortality, low postpartum anemia, and appropriate birth weight (WHO, 2006; Awusi *et al*., 2009).

Countries all over the world are campaigning seriously for easy access to healthcare especially among pregnant women. In view of this, deliberate efforts are taken to ensure provision of appropriate content of antenatal care in order to reap admirable maternal health outcomes. In line with Millennium Development Goals (MDGs) 4 & 5, provision of appropriate content of antenatal care is an important means of reducing child mortality by two-thirds and reducing the maternal mortality ratio by three-quarters, (Adekanle and Isawumi., 2008).

In a developing country like Nigeria with inadequate healthcare systems, it is generally assumed that socioeconomic gradients in access to healthcare are very high, nevertheless only recently has this been subjected to critical review. However, there is an obvious need to study the social pattern of utilization of healthcare especially by women and pregnant ones in particular. Hence, women's utilization of maternal healthcare facility is an important health issue with regard to the wellbeing and survival of both the mother and child during childbirth (Igberase *et al*., 2009).

2. STATEMENT OF THE RESEARCH PROBLEM

The main sources of inequalities in healthcare are considered to arise from social and economic determinants outside the health services. This has sparked increasing argument on the role of the socioeconomic disparity in accessing healthcare services (Exworthy *et al*., 2003). Evidence from the World Health Organization has shown that Nigeria with a population of over 167 million, shares the world's second largest total number of maternal deaths, and has one of the highest maternal mortality ratios at 840 deaths per 100,000 live births (95% uncertainty interval, 460–1,500).

In spite of the urgent need to provide effective maternal healthcare services in Nigeria, little attention is paid to understanding of the utilization of maternal healthcare services among pregnant women. Pregnancy to some women in Nigeria today brings fear instead of joy, not a celebration of new baby but an acceptance that death during childbirth is a very real possibility. Pregnancy-related complications are on the high side in the country, a condition that is widely blamed on rising rate of inequalities especially socioeconomic inequalities. Therefore, *this study seeks to evaluate the socioeconomic inequalities in healthcare utilization among pregnant women in Nigeria*.

3. LITERATURE REVIEW

Many empirical studies have been conducted across the world on socio-economic inequality, most as it concerns healthcare, with some of the studies arguing that women and children are vulnerable to healthcare inequality. Others opined that women from affluent households are more likely to avail themselves of adequate maternal care than those from poorer households. Gage and Calixte (2006) had examined inequalities using National Sample Survey Data on Morbidity and Treatment of Ailments during 1980s, they observed that income of the households exert considerable influence in child survival, particularly in the early years of life and likelihood of a child getting immunized with increase in economic status of the households.

Wagstaff (2002) in his cross-national comparison of health inequalities, observed that poor children in poorer countries are less likely to get immunized or oral rehydration therapy in case of diarrhea. The study identified significant inequality in maternal mortality, and opined that unequal access to financial resources is one of the major barriers impeding access to preventive as well as curative health services.

Idris *et al*. (2012) studied inequality trends in maternal and child healthcare services access and noted that interventions have been more effective in reaching the better-off than the worst-off. Their index measure showed improved movements through equal distribution. They observed some trend differentials from health index which reveal a significant correlation between health

outcomes, deprivation and geographic affiliation. In their conclusion, they argued that healthcare services access and use are determined by both socio-economic status and a number of factors including resource allocation and contextual factors.

Chukuezi and Comfort (2010) studied the socio-cultural factors associated with maternal mortality and morbidity in rural Nigeria using the gender perspective. The study argued that socio-economic, cultural factors and gender discrimination contribute to high maternal mortality and morbidity in rural Nigeria.

Owumi and Raji (2013) carried out an assessment on the maternal health in a view to determine the available maternal healthcare services and the level of accessibility to residents, to find out the pattern of the maternal health seeking behavior and to examine the relationship between the socio-cultural characteristic and maternal healthcare seeking behavior among the residents of the Same Border Community in Republic of Benin. The findings show that residents tend to have a terrible level of access to the maternal services as there is no enough publicity either through word of mouth referrals or information from social service workers. The findings also discovered that a very large proportion of the residents of the area use both the western maternal care services and traditional substances.

4. METHODOLOGY AND MODEL SPECIFICATION

The most common measures of inequality are the Slope Index, Gini Coefficient and Concentration Index. However, this study adopts Concentration Index in investigating the socioeconomic inequality in healthcare utilization among pregnant women in Nigeria. The health concentration index provides a measure of the extent of inequalities in health that are systematically associated with socioeconomic status. It takes values between – 1 (this occurs when all the population's ill-health is concentrated among the most disadvantaged person) and + 1 (this occurs when all the population's ill-health is concentrated in the least disadvantaged person). This can be used to identify whether socioeconomic inequality in healthcare utilization exists and whether it is more pronounced at one point in time than another or in one country than another (Kakwani *et al.*, 1997). In line with this, the concentration index (*C*) can be computed very easily from micro data (as the case of this study) by using the "convenient covariance" formula given as:

$$C = \frac{2}{\mu} Cov(H, R) \quad \text{---------- (2)}$$

where

C = Concentration index; μ = mean of the health variable; H = health sector variable

R = fractional rank of individual, i in the living standards distribution, and

$R_i = \frac{i}{N}$, where i = 1for the poorest and i = N for the richest.

Wagstaff *et al.* (2003) demonstrates that the health concentration index can be decomposed into the contributions of individual factors to income-related health inequality, in which each contribution is the product of the sensitivity of health with respect to that factor and the degree of income-related inequality in that factor. Therefore, ranking socioeconomic inequality by healthcare indicators, the following transformation can be made to achieve the objective.

$$2\sigma_{R_i}^2\left(\frac{Anc}{\mu}\right) = \alpha + \beta_1(\mathrm{R}_1/\mathrm{qy}) + \beta_2(\mathrm{R}_2/\mathrm{ha}) + \beta_3(\mathrm{R}_3/\mathrm{pd}) + \beta_4(\mathrm{R}_4/\mathrm{led}) + \beta_5(\mathrm{R}_5/\mathrm{ins}) + \beta_6(\mathrm{R}_6/\mathrm{ocp}) + \beta_7(\mathrm{R}_7/\mathrm{hs}) + \beta_8(\mathrm{R}_8/\mathrm{age}) + \mu_t \quad \text{---- (4)}$$

where

σ^2 = the variance of the fractional rank.

R_i = ranks of antenatal healthcare utilization by socioeconomic variables

Anc = Antenatal healthcare utilization; qy_i = wealth of the pregnant woman,

ha_i = healthcare Attendant; pd = place of Delivery,

led = Level of Education of the pregnant woman; ins = access to insurance services,

ocp = occupation of the pregnant woman; hs = household size, and

age = age of pregnant woman; β = slope coefficients of the socioeconomic factors

α = intercept; μ = stochastic error terms

The residual component - captured by the last term reflects the socioeconomic - related inequality in antenatal healthcare that is not explained by systematic variation in healthcare variables, and should approach zero for a well - specified model. The concentration index is defined as twice the area between the concentration curve, $L(p)$, and the line of equality (the 45^0 line running from the bottom-left corner to the top-right). So, in the case where there is no income-related inequality, the concentration index is zero. The convention is that the index takes a negative value when the curve lies above the line of equality, indicating disproportionate concentration of the health variable among the poor, and a positive value when it lies below the line of equality. The data adopted for this study is cross-sectional data, sourced from the Demographic Health Survey (2008). The software adopted for the estimation is STATA 13.0.

5. RESULTS AND INTERPRETATIONS

In the model, the rank variable which is the antenatal health care utilization proxy by antenatal visit by pregnant women and the health variables of interest which are wealth index, skill birth attendant proxy by prenatal doctor, prenantal nurse/auxiliary, prenatal auxiliary/midwife, place of delivery, education attainment of the pregnant woman, health insurance coverage, occupation of the pregnant women, number of household size, and the age of pregnant woman. The result of the concentration index is presented in table 4.1.below;

Table-4.1. Summary of Concentration Index Result

Variables	Estimate	Standard Error	t- Values	% by 75
Wealth index	0.087728	0.001082	81.08	6.58
Doctor	0.553796	0.009673	57.25	41.53
Nurse/midwifery	0.434256	0.007414	58.57	32.58
Auxiliary/midwifery	0.541120	0.020574	2.63	40.58
Place of delivery	0.100730	0.002979	33.81	7.55
Education attainment	0.224975	0.002922	76.99	16.87
Covered by insurance	-0.029035	0.019857	-2.14	3.18
Occupation of pregnant women	0.053765	0.003779	14.22	4.03
Household size	-0.029035	0.000989	-29.36	-2.18
Women age	0.038839	0.000476	81.59	2.91

(**Source:** Researchers computation using STATA 13)

From the above result, the estimated coefficient value of the wealth index is 0.87728 units with t-value of 81.08, implying a positive and statistically significant influence on the healthcare utilization among pregnant women in Nigeria. This variable indicated 6.58% inequality in favour of the richer households. Also the concentration curve is below the line of equality which shows that the concentration is more among the higher socioeconomic group. See graph below for clarity.

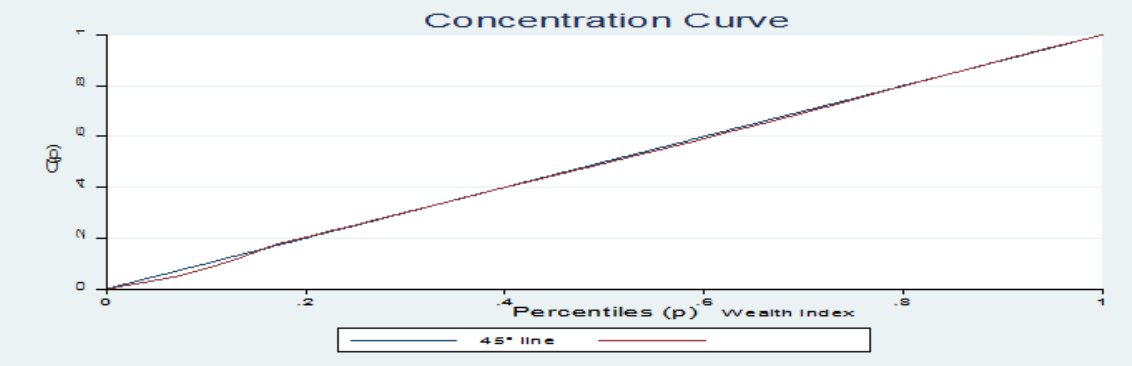

Fig-1. Concentration curve for Wealth index

Source: The Researchers' computation from STATA 13.

This simply shows that wealth of a pregnant woman positively influences her healthcare utilization. The implication of this result is that women from households with higher economic status have power of affordability and greater exposure to accessing relevant information and knowledge concerning maternal healthcare utilization. Also the socioeconomic inequalities in healthcare utilization in Nigeria could be attributed to the high level of poverty in the country, which is a major barrier to health care services.

For wealth being positively related with antenatal care, implies that the use of the service is associated with the cost of consultation and the purchase of recommended medication alongside other indirect costs such as transportation cost. Theoretically, it is expected that the higher the wealth of an individual, the more likely is the person's healthcare utilization.

The estimates of skill birth attendant indicate positive and statistically significant influence on healthcare utilization. This is evident from the coefficient values of the concentration index of 0.553796, 0.434256, and 0.541120 for Doctor, Nurse/midwifery and Auxiliary/midwifery in their order respectively. The result further revealed 41.53%, 32.58% and 40.58% inequalities in favour of the rich households. The concentration curve is below the line of equality, indicating that the concentration is more among the higher socioeconomic group in healthcare utilization.

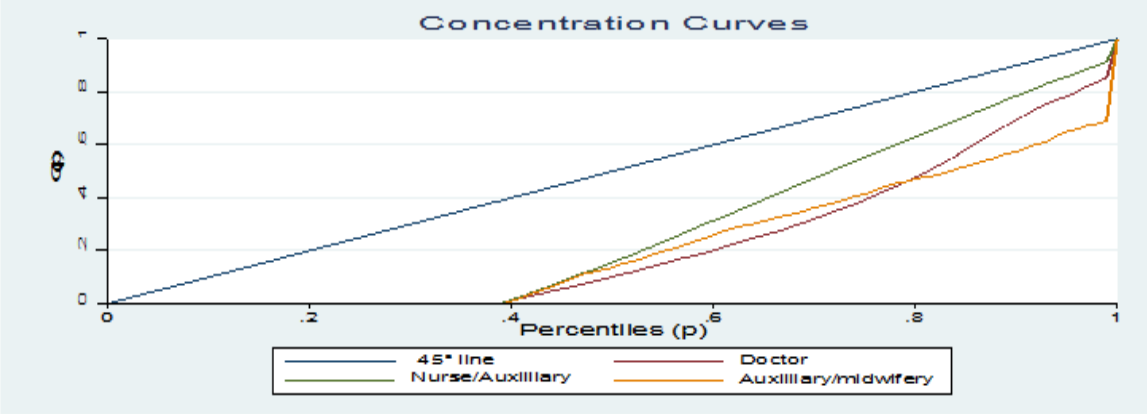

Fig-2. Concentration curve for Prenatal care index

Source: The Researchers computation from STATA 13.

With regards to the place of delivery, the concentration index coefficient is 0.100730, indicating positive inequality and statistically significant (33.81) in favour of the richer household with 7.55%, and the concentration curve below the diagonal line indicates that the concentration is more among the higher socioeconomic group in healthcare utilization among pregnant woman in the country. See the graph below for clarity.

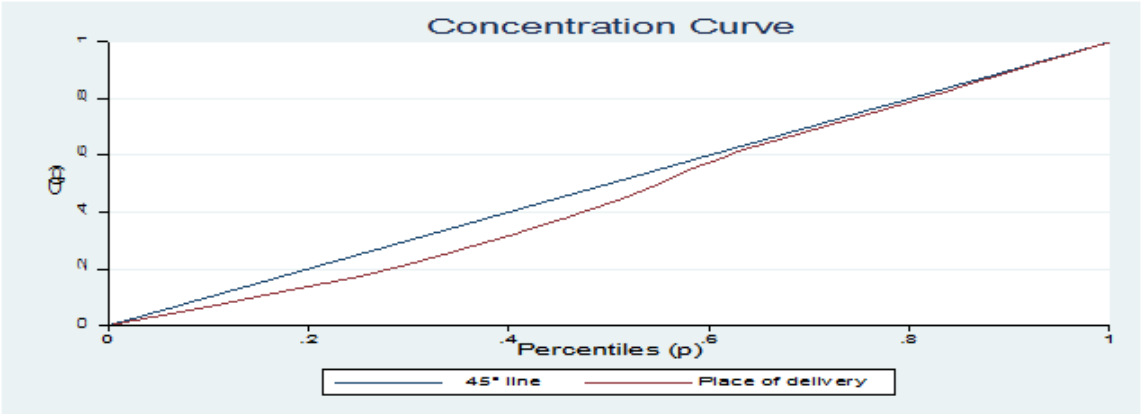

Fig-3. Concentration curve for place of delivery index

Source: The Researchers computation from STATA 13.

Most women who deliver at home are from the lower economic status households, while those medium and upper status households take place in health institutions. The household economic status also, is significantly related to place of delivery. A

greater proportion of those who deliver at home are from the lower economic status households. On the other hand, over 75% of births in medium and upper status households take place in health institutions.

On the pregnant women education attainment, the result show a coefficient value of 0.224975 with t-value of 76.99, implying a positive and statistically significant influence on healthcare utilization among pregnant women. The result also indicated 16.89% inequality associating with education attainment in favour of the richer households. With the concentration curve below the diagonal which shows that the concentration is more among the higher socioeconomic group of the pregnant women.

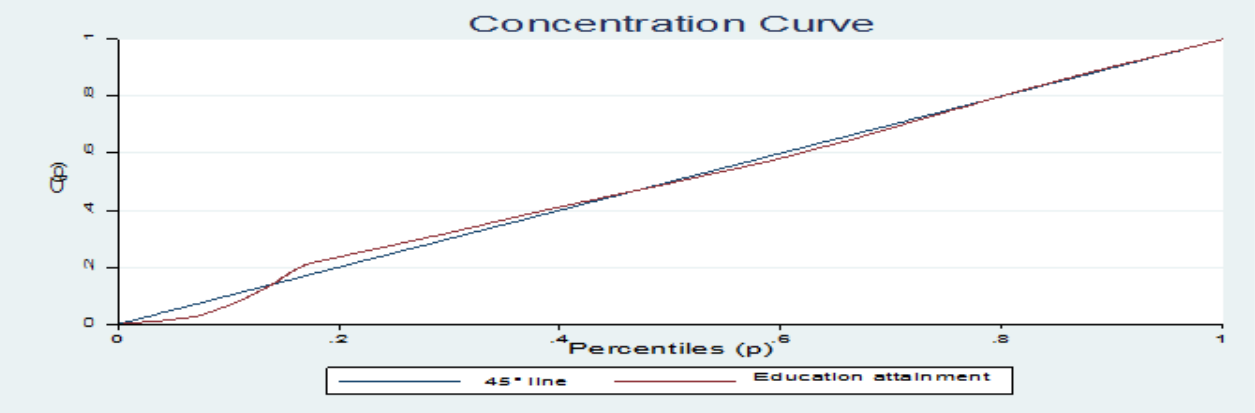

Fig-4. Concentration curve for Education attainment index

Source: The Researchers' computation from STATA 13.

By implication, as the educational level of a woman increases, her knowledge of healthcare utilization and quest for safe delivery also increases. This is mainly due to the fact that an educated mother explores herself through the increasing level of knowledge and as a result tries to put her decision regarding health related issues in the household. Besides, educated mothers also have more confidence in handling the public officials and have the ability and willingness to travel outside the home to seek health services. Our finding is further supported by Ogunlesi and Ogunlesi (2012) which shows significant positive effect of education on maternal health service utilization.

This finding could also connote the fact that educated women have better access to health service information, improved perceptions of the causes of disease and treatment and can utilize such information optimally. In other words, educated women have greater autonomy to make decisions and have greater ability to use quality healthcare inputs.

The estimated coefficient of pregnant women covered by health insurance is –0.042419 with t-value of -2.14. This indicates negative and statistically significant influences on healthcare utilization among pregnant women in Nigeria. It also shows 3.18% inequality in favour of the poorer household. The concentration curve is above the diagonal line which reaffirmed that the concentration is more among the lower socioeconomic group in healthcare utilization among pregnant women. See fig. below for clarity.

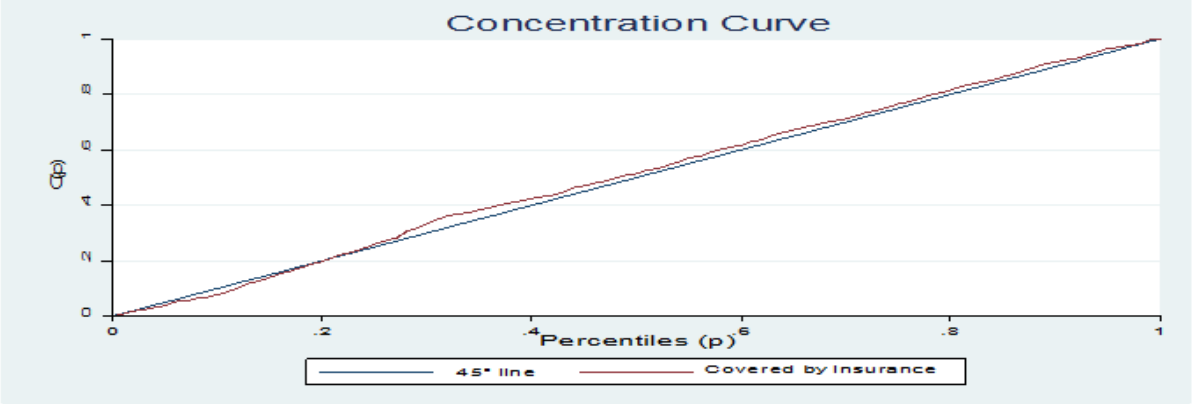

Fig-5. Concentration curve for Insurance coverage index

Source: The Researchers' computation using STATA 13.

Objectively, national health insurance in Nigeria is meant to favour the poor households who cannot afford healthcare expenses. But in contrary, due to coverage, the richer group benefits more in health insurance scheme than the poorer group. The fact is that health service utilization is primarily by out-of-pocket expenditure in Nigeria. In other words, health of women covered by insurance favours the richer household at the expense of the poorer household.

The estimated coefficient of the occupation of the pregnant woman is 0.053756 with t-value of 14.22. The index indicates positive inequality and statistically significant in favour of the richer household with 4.03% and concentration curve below the equality line that shows that the concentration is more among the higher socioeconomic group in healthcare utilization among pregnant women in the country.

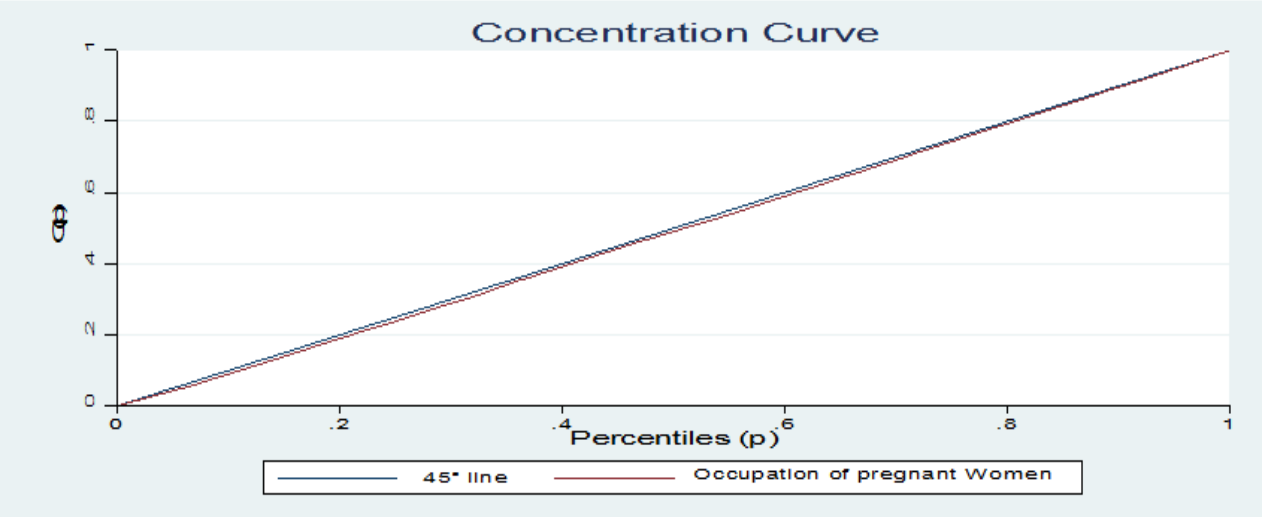

Fig-6. Concentration curve for occupation of pregnant women index
Source: The Researchers' computation using STATA 13

The finding is consistent with other studies such as Johnson *et al.* (2009) and Thind *et al.* (2008) that found strong influences of education and occupation on use of government and private health facilities. The studies also revealed that women in professional occupations and those with a higher level of education were more likely to use both public and private health facilities than those in non professional occupations.

The estimated coefficient of the household size is -0.029035 with t-value of -29.36. The concentration index indicates negative inequality and statistically significant in favour of the poorer household with 2.18% and the concentration curve above the line of equality which shows that the concentration is more among the lower socioeconomic group in healthcare utilization among pregnant woman as is indicated on the graph below.

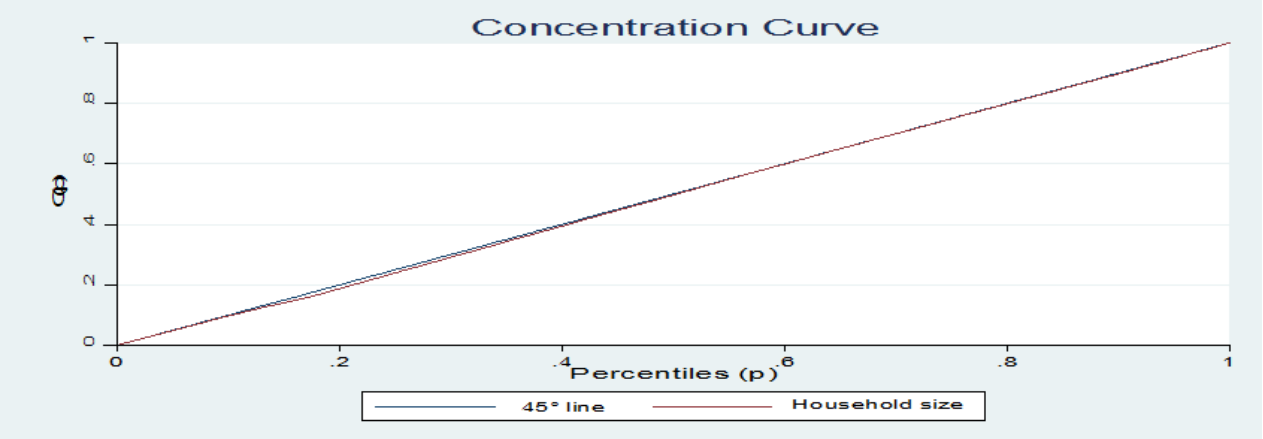

Fig-7. Concentration curve for Household size index
Source: The Researchers' computation using STATA 13

Cultural norms that operate on a community level penetrate household dynamics and may affect a woman's ability to regulate her fertility. Expectations of high fertility and large families as well as early marriage and early childbearing are encouraged in many settings, particularly among poor families where use of services is low and maternal mortality is still high.

The estimated coefficient of the pregnant woman's age is 0.038839 with t-value of 81.59. The index indicates positive inequality and statistically significant in favour of the richer household with 2.91% and the concentration curve below the equality line which shows that the concentration is more among the higher socioeconomic group in healthcare utilization among pregnant woman

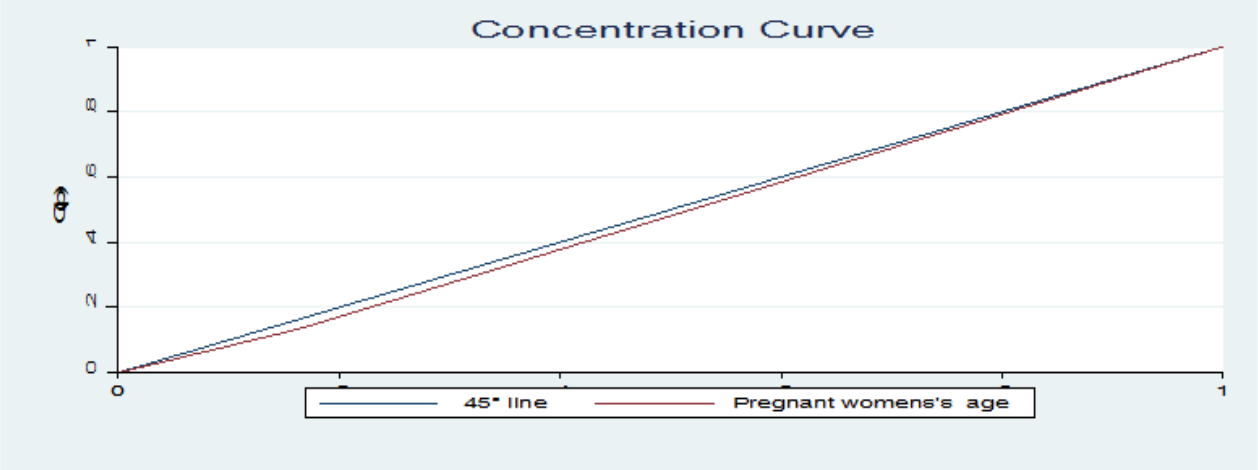

Fig-8. Concentration curve for Age of the pregnant women index
Source: The Researchers' computation using STATA 13

Maternal age has been shown to affect both the timing of antenatal visit and health care utilization in general (Simkhada *et al.*, 2008; Beeckman *et al.*, 2010). This is an important variable in understanding the level of utilization of health facility in general and maternal healthcare services in particular among pregnant woman and nursing mothers. This is due to the fact that the age at which a woman first gets married influences the length of time she is exposed to the risk of pregnancy during her Childbearing age.

6. SUMMARY OF FINDINGS

This study investigates the empirical issues pertaining to the socioeconomic inequality in healthcare utilization among pregnant women in Nigeria using DHS data. The study modeled the likely socioeconomic factors that affect healthcare utilization in Nigeria proxied by the numbers of antenatal visit by pregnant women. In the second model, the researcher examined the extent of socioeconomic inequality in heathcare utilization among pregnant women in Nigeria.

The study found that socioeconomic inequality exist in all the variables at varying degrees, for example the estimates for prenatal doctor, prenantal nurse/auxiliary, prenatal auxiliary/midwife, place of delivery, education attainment of the pregnant woman, occupation of the pregnant women, number of household size, and the age of pregnant woman are statistically significant in favour of the of the pregnant women from the richer households with the curve below the diagonal. Implying that the concentration is more among the higher socioeconomic group at 41.58%, 32.58%, 40.58%, 7.55%, and 16.87%, at which the inequality can be distributed from the higher to lower socioeconomic group. On the other hand, variables such as health insurance coverage and household size indicates to be statistically significant in favour of the pregnant women from the poorer households with the curve above the diagonal line. Showing that the concentration is more among the lower socioeconomic group of the pregnant women with 3.18% and 2.18% at which the inequality can be distributed from the lower to the higher socioeconomic group.

Also the socioeconomic inequalities in healthcare utilization in Nigeria could be attributed to high level of poverty in the country, which is a major barrier and this discourages household from access to health care services. The study observed that most

women who deliver at home are from the lower economic status households, while those medium and upper status households occur in health institutions. The household economic status also, is significantly related to the place of delivery. A greater proportion of those who deliver at home are from the lower economic status households. On the other hand, over 75% of births in the medium and upper status households take place in health institutions.

The study further observed a negative and statistically significant influence on healthcare utilization among pregnant women in Nigeria. The national health insurance in Nigeria is meant to favour the poor households who cannot afford healthcare expenses. But contrarily, due to coverage, the richer group benefits more in the health insurance scheme than the poorer group. The fact is that health service utilization is primarily by out-of-pocket expenditure in Nigeria. In other words, health of women covered by insurance favour the richer households at the expense of the poorer households. The study further found that increase in the household's size will affect their income negatively, and this might have negative effects on the capability to access healthcare, although the result shows that a 1% point increase in household size will induce 2% increase in pregnant women healthcare utilization in Nigeria.

7. POLICY RECOMMENDATIONS

Based on the findings, the following research policy recommendations were suggested:

- Nurses-midwives should encourage and build up a trusting relationship with the pregnant woman and her family in order to ensure maximum use of these services as well as liaise with policy makers in order to eradicate these barriers.
- There should be policies that will increase income generating activities of pregnant women such as skill acquisition or grants for those in business. This is to enable them to improve the income level, since income is a major cause of inequality in healthcare utilization among pregnant women in Nigeria as revealed in the study.
- Comprehensive health promotion through awareness-raising and appropriate education of the pregnant women could help to improve the uptake of ANC services. This is because; recommending that women receive a number of ANC check-up does not ensure that they get quality care.
- This study further suggests government increment of women participation and involvement in education. This is because, increasing women's participation in education, will not only have a long term positive effect on ANC utilization, but will also reduce the observed inequality in healthcare utilization among pregnant women in Nigeria.
- Again, efforts should be made towards ensuring that utilization should be targeted towards rural areas, the importance of modern antenatal care should be emphasized even in the religious settings like churches, mosque and fellowship grounds and younger women should be encouraged to utilize antenatal care services.
- Government hospitals and health centers should be repositioned to provide quality healthcare and methods that would make it interesting for pregnant women to increase their ANC visits. This is essential as the research findings show that government owned health institutions are not effective in encouraging women to attend antenatal care.

8. CONCLUSION

The study confirmed the socioeconomic inequality on health care utilization among pregnant women in Nigeria. Based on this evidence, the study shows that Health attendant proxied by prenatal Nurse/Auxiliary, Education of the pregnant women, wealth index/income of the pregnant women, places of delivery are the major socioeconomic factors that influence healthcare utilization among pregnant women in Nigeria.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

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