

MATERNAL HEALTH INSURANCE COVERAGE AND ANTENATAL CARE SERVICE UTILISATION IN NIGERIA

Chukwuechefulam, K. Imo

Adekunle Ajasin University Akungba-Akoko, Ondo State, Nigeria

Correspondence: Chukwuechefulam, K. Imo (*PhD*), Department of Sociology, Adekunle Ajasin University, PMB 001, Ondo State, Nigeria E-mail: imochuksco@yahoo.com; Phone: +2348069226978

Abstract

Maternal health care services during pregnancy and childbirth covered in health insurance benefit packages is important for the well-being of both the mother and their unborn babies. Adequate social research attention has not been given to the association between maternal health insurance and antenatal care (ANC) service in Nigeria. This study, therefore, examined the association between maternal health insurance coverage and ANC service utilisation using data from sample of 21,449 childbearing women extracted from 2018 Nigeria Demographic and Health Survey (NDHS). This study revealed that health insurance coverage is low and associated with ANC service utilisation among childbearing women in Nigeria. For instance, the likelihood of having health insurance coverage was significantly high for women who had 4 or more ANC visits (Odds Ratio (OR): 1.64; CI: 1.18-2.26) and delivered in both public and private health facilities (OR: 3.02; CI: 2.35-3.87 and OR: 2.98; CI: 2.24-3.96, respectively). It is concluded that being covered by health insurance is positively associated with adequate ANC visits, early initiation of ANC and proper choice of place of delivery during pregnancy among childbearing women. Hence, health policymakers should intensify efforts towards comprehensive health insurance coverage aimed at achieving Sustainable Development Goal 3 target of reducing maternal and child mortality in Nigeria.

Keywords: Maternal health insurance coverage, ANC service utilisation, Nigeria

INTRODUCTION

Globally, maternal health care services during pregnancy and childbirth are important for the survival and well-being of both the mother and their unborn babies. In sub-Saharan Africa, there has been a substantial decline in both maternal and child mortality rates since the 1990s (UN IGME, 2018). For instance, maternal mortality ratio fell by approximately 45%, however, unevenly across the countries studied (Kuruvilla *et al.*, 2014). Obviously, this success is largely attributed to the active policy and programmatic efforts by numerous national and international health and development organisations (Assefa, Damme, Williams & Hill, 2017; Ghose *et al.*, 2017; Yaya, Bishwajit & Shah, 2016). It has been

revealed from most sub-Saharan African countries that health outcomes and access to key maternal health services, are unevenly distributed across different social groups of the population and that women and children from socio-economically disadvantaged homes have higher morbidity and mortality rates, as well as a lower coverage of health services relative to those from wealthier homes (Barros *et al.*, 2012; Eshetu & Woldesenbet, 2011; Zere, Oluwole & Mwikisa & Mbeeli, 2011; Houweling & Kunst, 2010).

Maternal health care utilisation which refers to the health seeking behaviour of a woman during pregnancy and childbirth directly or indirectly affect mother or child health outcome. Inadequate maternal health care during pregnancy and childbirth are widely acknowledged to be major contributors to maternal and child mortality, especially in Nigeria with unequal distribution among residence (Imo, 2017). In addition, studies have shown that maternal health care utilization is a promising path to prevent pregnancy-related complications and ensure good health of newborns (Friberg *et al.*, 2010; Kinney *et al.*, 2010). The importance of maternal health care during pregnancy which include number of ANC visit, timing of ANC visit during pregnancy and place of delivery are parts of the key strategies recommended as a unique opportunity to set both mothers and babies on a good start (Lambon-Quayefio & Owoo, 2014; Singh, Pallikadavath, Ram & Alagarajan, 2014).

With health insurance on the rise in most developing countries, a growing body of literature documents the impact of health insurance on access and use of health care, financial protection, and health status in these countries (Dixon *et al.*, 2014; Escobar, Griffin & Shaw, 2010; Hong, Ayad & Ngabo, 2011). Consequently, studies have investigated the impact of health insurance on the use of general health care for both outpatient and inpatient care (Giedion, Alfonso & Diaz, 2013), but there is limited empirical evidence of its impact on the use of antenatal care services considered an important public health issue in a country like Nigeria. Maternal health services are typically covered in health insurance benefit packages. However, few studies have used secondary data to investigate nexus between maternal health insurance coverage and ANC service utilisation in Nigeria.

Previous studies have shown that many Western countries have socio-economic equity in utilization of health care, whereas more pro-rich inequity arises in the use of health services from medical specialists (Kraus, Piff & Keltner, 2009). This is not the same with most African countries, like Nigeria, where evidence indicates that inequality across socio-economic classes manifests in having access and utilization of these services (Antai, 2010; Aremu, Stephen & Dalal, 2011; Grasdal & Monstad, 2011; Imo, 2017). Most studies have focused on maternal health promotion messages during ANC as means of increasing the survival and health of babies (Arunda, Emmelin & Asomoah, 2017; Khan, Zahidie & Rabbani, 2013). These studies are either parochial and the implication is that their findings could be limited in informing strategic interventions in terms

of policy formulation with respect to maternal health insurance coverage and ANC service utilisation.

In the context of global maternal and child health priorities (AbouZahr, 2003), there is a growing need to evaluate whether health insurance has contributed to greater use of maternal health care, especially ANC service in Nigeria. A previous study reported the influence of health insurance on use of maternal care services across some countries (Wang, Temsah & Mallick, 2014). This study provides a more in-depth look at the extent of influence of health insurance coverage on ANC service utilisation in Nigeria. The study is important in Nigeria, considering the fact that maternal mortality is estimated at 512 maternal deaths per 100,000 live births far above the target of Sustainable Development Goal (SDG) 3.1 of reducing the global maternal mortality ratio to less than 70 per 100,000 live births by 2030 (NPC & ICF International, 2019). Also, in spite of the under-five mortality decline from 213 deaths per 1,000 live births in 1990 to 132 deaths per 1,000 live births (NPC & ICF International, 2019). The slow pace of decline in maternal and child mortality has been attributed to poor progress in maternal health care utilisation and child survival interventions (Akinyemi, Bamgboye & Ayeni, 2015).

Thus, this study fills the gap by examining the relationship between maternal health insurance coverage and ANC service utilisation in Nigeria using the latest Nigeria Demographic and Health Survey (NDHS) data. The outcome will provide up-to-date information on levels of health insurance coverage and help to expand understanding of the influence of maternal health insurance on the utilisation of ANC services in a range of areas poorly covered in the existing literature.

METHOD

Data source and design

The data for this study were obtained from the individual record data file of the 2018 Nigeria Demographic and Health Survey (NDHS). The NDHS 2018 is a cross-sectional study and the sixth survey of its kind to be implemented by the National Population Commission. It provides up-to-date information on demographic and health indicators in Nigeria. The sample was selected using a stratified, two-stage cluster design, with enumeration areas (EAs) as the sampling units for the first stage.

The second stage was a complete listing of households carried out in each of the 1,400 selected EAs. A representative sample of 41,668 households was selected for the survey. Data were generated from 41,821 women age 15-49 and 13,311 men aged 15-59. A detailed report of the data collection methods and procedures for 2013 NDHS has been published elsewhere (NPC & ICF International, 2019). The analyses for this study covered a weighted sample of 21,449 women who reported a live birth in the 5 years preceding the survey. This is to improve the representativeness of the data from the group of women interviewed in the survey (i.e. 2013-2018).

Measures

Three types of ANC service utilisation within the scope of pregnancy (number of ANC visit, timing of first ANC visit and place of delivery) were the dependent variables. All the variables were measured based on the answers by the individual respondents and recoded as per the World Health Organisation guidelines (WHO, 2016).

The main explanatory variables were self-reported health insurance coverage for number of ANC visit, timing of first ANC visit during pregnancy and place of delivery. The 2018 NDHS asked respondents whether they were covered by health insurance. As a result, there is a dichotomous measure of maternal health insurance coverage coded as: Yes (1) and No (0).

In addition, to adjust the analysis for potential confounding variables, the following were included in the study based on the availability in the dataset and theoretical relationship with the dependent and explanatory variables: age (15–24, 25–34, 35+); marital status (never in union, married/living with partner, widowed/divorced/separated); educational attainment (no education, primary, secondary/higher); employment status (not working, currently working); wealth index (lowest, middle, highest); place of residency (urban, rural) and region (North-central, North-east, North-west, South-east, South-south, South-west) (Acharya *et al.*, 2013; Bosomprah, Ragno, Gros & Banskota, 2015; Fenny, Asuman, Crentsil & Odame, 2018; Kibusi, Sunguya, Kimunai & Hines, 2018; Singh, 2016; Mensah *et al.*, 2010; Yaya, Bishwajit & Shah, 2016). Similar variables have been controlled for in other analyses of the association between health insurance and use of health care in previous studies (Dixon *et al.*, 2014; Ettenger, Barnighausen & Castro, 2014; Hong, Ayad & Ngabo, 2011).

Ethical consideration

This study utilized secondary datasets with all identifier information removed. Hence, confidentiality and anonymity are guaranteed. The formal approval to use the data was obtained from the DHS programme.

Data Analysis

Three levels of analysis (univariate, bivariate and multivariate) were employed in this study. Pearson chi-square test was used at bivariate level to investigate the prevalence of health insurance coverage across the socio-demographic variables. At the multivariate level, binary logistic regression analysis was used to examine the odds ratios (OR) of the associations between measures of maternal ANC service utilisation with health insurance coverage status while adjusting for the socio-demographic parameters.

Three models were fitted in all. Model 1 presents the unadjusted odds ratio (OR) showing the relationship between maternal health insurance coverage and ANC service utilisation, as well as selected background characteristics. Model 2 considered the adjusted odds ratio (aOR) of all the variables described

as maternal ANC service utilisation, while Model 3 adjusted for the effect of all maternal ANC service utilisation and selected socio-demographic characteristics.

Measures of association between outcome variable and explanatory variables were expressed as OR with 95% confidence intervals (CI). A variable with OR greater than 1.00 implied that the variable increases the likelihood of the outcome (health insurance coverage), while it is the opposite when the OR is less than 1.00. All the analyses were conducted using Stata software (version 14).

RESULTS

Table 1:
Distribution of all the study variables of the sample

Socio-economic and demographic characteristics	Number(%)	Maternal health Insurance coverage and ANC service utilisation	Number(%)
Variable/category	Number(%)	Variable/category	Number(%)
Age		Health insurance coverage	
15 – 24	5,337(24.9)	No	20,964(97.7)
25 – 34	10,109(47.1)	Yes	485(2.3)
35 +	6,003(28.0)	ANC visits during pregnancy	
Marital status		No ANC	5,365(25.0)
Never in union	594(2.8)	1-3 visits	3,786(17.7)
Married/living with partner	20,100(93.7)	4 or more visits	12,298(57.3)
Widowed/divorced/separated	755(3.5)	Timing of first ANC visit	
Educational attainment		No ANC visit	11(0.1)
No education	9,485(44.2)	First trimester	3,884(24.2)
Primary	3,337(15.6)	Second trimester	10,181(63.3)
Secondary or higher	8,627(40.2)	Third trimester	2,008(12.5)
Employment status		Place of delivery	
Not working	6,902(32.2)	Home	12,336(57.5)
currently working	14,547(67.8)	Public health facility	6,175(28.8)
Wealth index		Private health facility	2,938(13.7)
Lowest	9,875(46.0)		
Middle	8,458(39.4)		
Highest	3,116(14.5)		
Place of residence			
Urban	7,509(35.0)		
Rural	13,940(65.0)		
Region			
North-central	3,833(17.9)		
North-east	4,494(21.0)		
North-west	6,301(29.4)		
South-east	2,335(10.9)		
South-south	2,042(9.5)		
South-west	2,444(11.5)		

Percentage distribution of all the study variables of the sample

The percentage distribution of the socio-economic and demographic characteristics is presented in Table 1 above. The largest proportion of the women (47.1%) was aged 25-34. With respect to marital status, an overwhelming majority of the women (93.7%) reported to be married or living with a partner. Women with no formal education (44.2%) comprised the largest proportion of the respondents. Considering the employment status, a little above two-third of the women (67.8%) was employed. Forty-six percent of the women were found in the lowest wealth quintile household. The women who were rural residents (65.0%) formed larger proportion of the respondents in the sample. Also, the proportions of the women across the region ranged from 29.4% in the North-west and 9.0% in the South-west.

In addition, the results of maternal health insurance coverage and ANC service utilisation presented in Table 1. An overwhelming majority of the women (97.7%) were not covered by health insurance. Over one-half of women had 4 or more ANC visits (57.3%). With respect to timing of first ANC during pregnancy, the largest proportion of women had their first ANC visits within the second trimester of pregnancies.

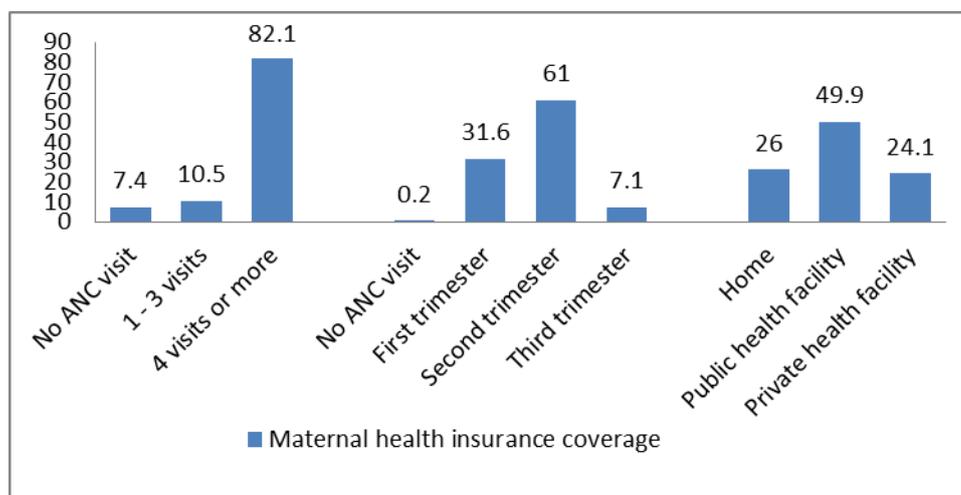


Figure 1: Maternal ANC service utilisation covered by health insurance, NDHS 2018

Maternal ANC service utilisation and health insurance coverage

Figure 1 showed the relationship between maternal ANC service utilisation and health insurance coverage. With respect to number of ANC visits, it was revealed that the highest proportion of women who reported having health insurance coverage had 4 or more ANC visits. Considering timing of first ANC visit during pregnancy, the result showed that majority of women who reported to have been covered by health insurance had their first ANC within the second

trimester of pregnancy. Also, the largest proportion of women who reported to have delivered in public health facilities was covered by health insurance.

Table 2:
Bivariate association between health insurance coverage with the socio-demographic variables, NDHS 2018

Variable/category	Maternal health insurance coverage		Total number N = 21,449	Chi-square
	No N = 20,964	Yes N = 485		
Age				54.230***
15 – 24	5,281(99.0)	56(1.0)	5,337	
25 – 34	9,864(97.6)	245(2.5)	10,109	
35 +	5,819(96.9)	184(3.1)	6,003	
Marital status				8.098*
Never in union	589(99.2)	5(0.8)	594	
Married/living with partner	19,631(97.7)	469(3.3)	20,100	
Widowed/divorced/separated	744(98.5)	11(1.5)	755	
Educational attainment				326.767***
No education	9,410(99.2)	75(0.8)	9,485	
Primary	3,315(99.3)	22(0.7)	3,337	
Secondary or higher	8,239(95.5)	388(4.5)	8,627	
Employment status				1.650
Not working	6,759(97.9)	143(2.1)	6,902	
currently working	14,205(97.7)	342(2.4)	14,547	
Wealth index				889.650***
Lowest	9,816(99.4)	59(0.6)	9,875	
Middle	8,329(98.5)	129(1.5)	8,458	
Highest	2,819(90.5)	297(9.5)	3,116	
Place of residence				209.193***
Urban	7,189(95.7)	320(4.3)	7,509	
Rural	13,775(98.8)	165(1.2)	13,940	
Region				60.056***
North-central	3,721(97.1)	112(2.9)	3,833	
North-east	4,460(99.2)	34(0.8)	4,494	
North-west	6,136(97.4)	165(2.6)	6,301	
South-east	2,273(97.3)	62(2.7)	2,335	
South-south	1,992(97.6)	50(2.5)	2,042	
South-west	2,382(97.5)	62(2.5)	2,444	

Note: *p < 0.05; ***p < 0.001

Maternal socio-demographic characteristics associated with health insurance coverage

Table 2 presents the bivariate relationship between maternal socio-demographic characteristics and health insurance coverage. The results revealed

that all maternal characteristics were significantly associated with health insurance coverage, with the exception of employment status. The relationship between maternal age and health insurance coverage showed that women aged 35 and above (3.1%) had the highest proportion of health insurance coverage and lowest among those aged 15-24 (1.0%; $p<0.001$). With respect to other characteristics, the highest proportions of health insurance coverage were recorded among women who were married or living with partners (3.3%; $p<0.01$), women with secondary or tertiary education (4.5%; $p<0.001$), women found in highest wealth index households (9.5%; $p<0.001$) and women who resided in urban areas (4.3%; $p<0.001$). Also, the results showed that proportion of women covered by health insurance was lowest in the North-east (0.8%) and highest in the North-central (2.9%; $p<0.001$).

Table 3:
Odds Ratio (OR) and 95% Confidence Interval (CI) for Maternal Health Insurance coverage with ANC Service Utilisation and Selected Socio-Demographic Variables

Variable/category	Model 1 OR(95% CI)	Model 2 aOR(95% CI)	Model 3 aOR(95% CI)
ANC visits during pregnancy			
1-3 visits (RC)	1.00	1.00	1.00
4 or more visits	2.45(1.82-3.28)***	1.64(1.18-2.26)**	1.25(0.89-1.76)
Timing of first ANC visit			
First trimester (RC)	1.00	1.00	1.00
Second trimester	0.73(0.59-0.90)**	0.86(0.70-1.07)	0.87(0.69-1.08)
Third trimester	0.42(0.29-0.63)***	0.77(0.51-1.17)	0.86(0.55-1.34)
Place of delivery			
Home (RC)	1.00	1.00	1.00
Public health facility	3.95(3.18-4.91)***	3.02(2.35-3.87)***	1.63(1.23-2.15)**
Private health facility	3.99(3.09-5.16)***	2.98(2.24-3.96)***	1.39(1.00-1.94)
Marital status			
Never in union (RC)	1.00		1.00
Married/living with partner	2.81(1.16-6.82)*		2.14(0.87-5.28)
Widowed/divorced/separated	1.74(0.60-5.04)		1.45(0.49-4.31)
Educational attainment			
No formal education (RC)	1.00		1.00
Primary	0.83(0.51-1.34)		0.70(0.40-1.21)
Secondary or higher	5.91(4.60-7.58)***		2.64(1.80-3.86)***
Employment status			
Currently not working (RC)	1.00		1.00
currently working	1.17(0.93-1.39)		1.08(0.86-1.36)
Wealth index			
Lowest (RC)	1.00		1.00
Middle	2.58(1.89-3.51)***		2.35(1.51-3.64)***
Highest	17.53(13.21-23.25)***		11.63(7.32-18.49)***
Place of residence			
Urban (RC)	1.00		1.00
Rural	0.27(0.22-0.33)***		0.81(0.64-1.02)
Region			
North-central (RC)	1.00		1.00
North-east	0.25(0.17-0.37)***		0.70(0.46-1.05)
North-west	0.89(0.70-1.14)		1.82(1.36-2.44)***
South-east	0.91(0.66-1.24)		0.46(0.33-0.64)***
South-south	0.83(0.59-1.17)		0.50(0.35-0.71)***
South-west	0.85(0.62-1.17)		0.31(0.22-0.44)***

Note: *p < 0.05; **p < 0.01; ***p < 0.001; RC= Reference category.

Multivariate analysis

The results of maternal ANC service utilisation and selected socio-demographic characteristics associated with health insurance coverage using multivariate analysis are presented in Table 3. Results from the unadjusted OR (Model 1; Table 3) indicated significant relationships between maternal ANC service utilisation variables and health insurance coverage. For instance, the results showed that likelihood of being covered by health insurance were significantly higher for women who had 4 or more ANC visits (OR: 2.45; CI: 1.82-3.28, $p < 0.001$) and women who delivered in private and public health facilities (OR: 3.99; CI: 3.09-5.16 and OR: 3.95; CI: 3.18-4.91, $p < 0.001$, respectively) compared to those in the reference categories. In contrast, the likelihood of being covered by health insurance significantly reduced for women who had their first ANC visits within second and third trimesters of pregnancies (OR: 0.73; CI: 0.59-0.90, $p < 0.01$ and OR: 0.42; CI: 0.29-0.63, $p < 0.001$, respectively).

With respect to maternal health insurance coverage and selected socio-demographic characteristics, the results showed that likelihood of being covered by health insurance was significantly higher for women who were married or living with partners (OR: 2.81; CI: 1.16-6.82, $p < 0.05$), women with secondary or tertiary education (OR: 5.91; CI: 4.60-7.58, $p < 0.001$) and women found in highest and middle wealth index households (OR: 17.53; CI: 13.21-23.25, $p < 0.001$ and OR: 2.58; CI: 1.89-3.51, $p < 0.001$, respectively) compared to those in the reference category. The results further revealed that the likelihood of being covered by health insurance significantly reduced for women who resided in rural areas (OR: 0.27; CI: 0.22-0.33, $p < 0.001$) and women in North-east region (OR: 0.25; CI: 0.17-0.37, $p < 0.001$) relative to their counterparts in the reference category.

After adjusting for all ANC service utilisation variables in Model 2 (Table 3), the results indicated similar findings in Model 1. For instance, the likelihood of having health insurance coverage was higher for women who had 4 or more ANC visits (OR: 1.64; CI: 1.18-2.26, $p < 0.01$) and women who delivered in public and private health facilities (OR: 3.02; CI: 2.35-3.87 and OR: 2.98; CI: 2.24-3.96, $p < 0.001$, respectively) compared to those in the reference categories. In contrast, though not significant, the likelihood of having health insurance coverage was lower for women who had their first ANC visits within second and third trimesters of pregnancies (OR: 0.86; CI: 0.70-1.07 and OR: 0.77; CI: 0.51-1.17, respectively).

Model 3 which contains maternal ANC service utilisation variables and selected socio-demographic characteristics indicated significantly higher likelihood of being covered by health insurance for women who delivered in public health facilities (OR: 1.63; CI: 1.23-2.15, $p < 0.01$), women with secondary or tertiary education (OR: 2.64; CI: 1.80-3.86, $p < 0.001$), women found in highest and middle wealth index households (OR: 11.63; CI: 7.32-18.49, $p < 0.001$ and OR: 2.35; CI: 1.51-3.64, $p < 0.001$, respectively) and women from the North-west

(OR: 1.82; CI: 1.36-2.44, $p < 0.001$) compared with those in the reference categories. But the likelihood of being covered by health insurance significantly reduced among women found in the South-south (OR: 0.50; CI: 0.35-0.71, $p < 0.001$), South-east (OR: 0.46; CI: 0.33-0.64, $p < 0.001$) and South-west (OR: 0.31; CI: 0.22-0.44, $p < 0.001$).

DISCUSSION

This study documents the extent of health insurance among childbearing women across socio-demographic backgrounds, as well as the relationship between maternal health insurance coverage and ANC service utilisation. Overall, a microscopic few of the women reported having health insurance coverage. The findings on maternal ANC service utilisation and health insurance coverage revealed that over one-half of the women who had 4 or more ANC visits and sought their first ANC within the second trimester of pregnancy were covered by health insurance. In a similar vein, the largest proportion of the women who delivered in public health facilities reported having health insurance coverage. This is a clear indication that being covered by health insurance is associated with adequate ANC visits, early initiation of ANC and choice of place of delivery among childbearing women during pregnancy.

Expectedly, this study revealed significantly positive influence of health insurance coverage on ANC service utilisation. For instance, having health insurance coverage increased the likelihood of making at least 4 ANC visits and delivering at public health facility during pregnancy. The findings further showed that women who had their first ANC visit during the second and third trimesters of pregnancies were less likely to be covered by health insurance when controlled with some socio-demographic variables. Hence, it is revealed that maternal health insurance coverage was generally associated with adequate ANC visits, early initiation of ANC and choice of place of delivery among childbearing women in Nigeria.

With respect to socio-demographic characteristics of respondents, the results revealed that older women aged 35 and above, those who were married or living with partner, women with secondary or tertiary education, those found in highest wealth index households and urban areas had health insurance coverage. The results further showed that health insurance coverage among childbearing women ranged from 2.9% in the North-central to 0.8% in the North-east calls for urgent policy attention. It is evident that the existence of socio-demographic gaps in health insurance coverage seems to remain a challenge in the sub-Saharan African countries, especially in Nigeria where a substantial proportion of the women are disadvantaged and least capable of accessing healthcare services, despite sharing higher health risks and disease burden. This is in line with previous documentations of socio-economic barriers to maternal health care utilisation (Singh, 2016; McNamee, Ternent & Hussein, 2009; Gage, 2007). These findings have some policy implications for maternal health care utilisation

in Nigeria, hence the need for large-scale researches on the extent to which the most marginalised women are benefiting from the health insurance programmes in the context of reproductive and maternal health care services.

As a result of the observed influence of maternal health insurance coverage on ANC service utilisation on this study, there is the need for health policymakers to pay urgent and special attention to the marginalised women in the identified regions and rural areas. Such urgent and special attention should be geared towards strengthening free maternal health care services, especially ANC care during pregnancy. There is no doubt that having health insurance coverage for ANC services motivate women to utilise such services resulting to positive maternal and child health outcome. This corroborates earlier findings on positive relationship between health insurance coverage and maternal health care service utilisation in some African countries (Kanya, Obare, Warren, Abuya, Askew & Bellows, 2014; Kibusi, Sunguya, Kimunai & Hines, 2018; Wang, Temsah & Mallick, 2017).

CONCLUSION

This study revealed low health insurance coverage among childbearing women in the Nigeria. Being covered by health insurance is positively associated with adequate ANC visits, early initiation of ANC and choice of place of delivery among childbearing women during pregnancy. The influence of socio-demographic variations and inequality on health insurance coverage is common.

Recommendation

Based on the study's conclusion, It was recommended that health policymakers should intensify efforts and give special attention to the marginalised women across socio-demographic backgrounds with respect to health insurance by the three tiers of government in the country. Also, the need for further studies to explore behavioural and cultural factors that might have influenced comprehensive health insurance coverage among childbearing women can have positive implications towards maternal and child survival and ensuring the achievement of SDG 3 target of reducing maternal and under-five deaths by less than 70 per 100,000 live and less than 25 per 1,000 live births, respectively by 2030 in Nigeria.

Limitations

This study is not without some limitations. One of the limitations is using DHS data which constrained inference of cause-effect relationship given that the data are cross-sectional. Thus, the explanatory variables are only temporal factors associated with maternal ANC service utilisation. There is likelihood of reporting bias about maternal health insurance coverage and ANC service utilisation because of the self-reported information from women. However, the survey lacked information on behavioural and cultural factors that might have influenced

the estimation of the positive influence of health insurance coverage. In spite of these limitations, the findings are important for more strategic policies and programmes, especially for marginalised women on maternal health insurance coverage and provision of ANC services influencing maternal and child health outcome.

REFERENCES

- Abouzahr, C. (2003). Safe Motherhood: a brief history of the global movement 1947–2002. *British Medical Bulletin*, *67*(1), 13–25.
- Acharya, A., Vellakkal, S., Taylor, F., Masset, E., Satija, A., Burke, M., & Ebrahim, S. (2013). The impact of health insurance schemes for the informal sector in low- and middle-income countries: A Systematic Review. Policy research working paper 6324. Washington DC, USA: The World Bank, Development Economics Vice Presidency, Partnership, Capacity Building Unit.
- Akinyemi, J. O., Bangboye, E. A., & Ayeni, O. (2015). Trends in neonatal mortality in Nigeria and effects of bio-demographic and maternal characteristics. *BMC Pediatrics*, *15*, 36. <https://doi.org/10.1186/s12887-015-0349-0>
- Antai, D. (2010). Migration and child immunization in Nigeria: individual- and community-level contexts. *BMC Public Health*, *10*(1), 116. doi:10.1186/1471-2458-10-116.
- Arunda, M., Emmelin, A., & Asomoah, B. O. (2017). Effectiveness of antenatal care services in reducing neonatal mortality in Kenya: analysis of national survey data. *Global Health Action*, *10*(1), 1328796, doi: 10.1080/16549716.2017.1328796
- Aremu, O. L., Stephen, M. T., & Dalal, K. (2011). Socio-economic determinants in selecting childhood diarrhoea treatment options in Sub-Saharan Africa: A multilevel model. *Italian Journal of Pediatrics*, *37*(13), 2-8.
- Assefa, Y., Damme, W. V., Williams, O. D., & Hill, P. S. (2017). Successes and challenges of the millennium development goals in Ethiopia: lessons for the sustainable development goals. *BMJ Global Health*, *2*(2), e000318. doi: 10.1136/bmjgh-2017-000318.
- Barros, A. J., Ronsmans, C., Axelson, H., [Loaiza, E.](#), [Bertoldi, A. D.](#), [França, G. V.](#), ... [Victora, C. G.](#) (2012). Equity in maternal, newborn, and child health interventions in Countdown to 2015: a retrospective review of survey data from 54 countries. *The Lancet*, *379*(9822), 1225–1233.
- Bosomprah, S., Ragno, P. L., Gros, C., & Banskota, H. (2015). Health insurance and maternal, newborn services utilisation and under-five mortality. *Archives of Public Health*, *73*, 51. doi: 10.1186/s13690-015-0101-0.
- Dixon, J., Tenkorang, E. Y., Luginaah, I. N., Kuire, V. Z., & Boateng, G. O. (2014). National health insurance scheme enrolment and antenatal care among women in Ghana: Is there any relationship? *Tropical Medicine & International Health*, *19*(1), 98-106.
- Escobar, M. L., Griffin, C. C., & Shaw, R. P. (2010). *The impact of health insurance in low- and middle-income Countries*. Washington DC, USA: Brookings Institution Press.
- Eshetu, E. B., & Woldeesenbet, S. A. (2011). Are there particular social determinants of health for the world's poorest countries? *African Health Science*, *11*(1), 108–114.
- Ettenger, A., Bärnighausen, T., & Castro, A. (2014). Health insurance for the poor decreases access to HIV Testing in antenatal care: evidence of an unintended effect of health insurance reform in Colombia. *Health Policy and Planning*, *29*(3), 352-358.
- Fenny, A. P., Asuman, D., Crensil, A. O., & Odame, D. N. A. (2018). Trends and causes of socioeconomic inequalities in maternal healthcare in Ghana, 2003–2014. *International Journal of Social Economics*, *46*(2), 288–308.

- Friberg, I. K., Kinney, M. V., Lawn, J. E., Kerber, K. J., Odubanjo, M. O., Bergh, A. M., ... Black, R. E. (2010). Sub-Saharan Africa's mothers, newborns, and children: how many lives could be saved with targeted health interventions? *PLoS Medicine*, 7(6), e1000295. doi: 10.1371/journal.pmed.1000295.
- Gage, A. J. (2007). Barriers to the utilization of maternal health care in rural Mali. *Social Science and Medicine*, 65, 1666–1682. doi: 10.1016/j.socscimed.2007.06.001.
- Grasdal, A., & Monstad, K. (2011). Inequity in the use of physician services in Norway before and after introducing patient lists in primary care. *International Journal for Equity in Health*, 10(1), 25. <http://www.equityhealthj.com/content/10/1/25>
- Ghose, B., Feng, D., Tang, S., Yaya, S., He, Z., Udenigwe, O., ... [Feng, Z.](#) (2017). Women's decision-making autonomy and utilisation of maternal healthcare services: results from the Bangladesh Demographic and Health Survey. *BMJ Open*, 7(9), e017142. doi: 10.1136/bmjopen-2017-017142
- Giedion, U., Alfonso, E. A., & Diaz, B. Y. (2013). *The Impact of Universal Coverage Schemes in the Developing Countries*. Washington DC, USA: The World Bank
- Hong, R., Ayad, M., & Ngabo, F. (2011). Being insured improves safe delivery practices in Rwanda. *Journal of Community Health*, 36(5), 779-784.
- Houweling, T., & Kunst, A. (2010). Socio-economic inequalities in childhood mortality in low- and middle-income countries: a review of the international evidence. *British Medical Bulletin*, 93(1), 7-26.
- Imo, C. K. (2017). Antenatal health care utilization among women with incidence of under-five mortality in Abia, South-eastern Nigeria. *Sokoto Journal of the Social Sciences*, 7(1), 157-177. doi:10.29816/sjss.7.1.12
- Kanya, L., Obare, F., Warren, C., Abuya, T., Askew, I., & Bellows, B. (2014). Safe motherhood voucher programme coverage of health facility deliveries among poor women in South-western Uganda. *Health Policy and Planning*, 29(1), 14–11.
- Khan, A. A., Zahidie, A., & Rabbani, F. (2013). Interventions to reduce neonatal mortality from neonatal tetanus in low and middle income countries-a systematic review. *BMC Public Health*, 13(1), 322. doi: 10.1186/1471-2458-13-322
- Kibusi, S. M., Sunguya, B. F., Kimunai, E., & Hines, C. S. (2018). Health insurance is important in improving maternal health service utilization in Tanzania-analysis of the 2011/2012 Tanzania HIV/AIDS and malaria indicator survey. *BMC Health Services Research*, 18(1), 112. doi: 10.1186/s12913-018-2924-1.
- Kinney, M. V., Kerber, K. J., Black, R. E., Cohen, B., Nkrumah, F., Coovadia, H.,... Lawn, J. E. (2010). Sub-Saharan Africa's mothers, newborns, and children: where and why do they die? *PLoS Medicine*, 7(6), e1000294. doi: 10.1371/journal.pmed.1000294.
- Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of Personality and Social Psychology*, 97(6), 992–1004.
- Kuruvilla, S., Schweitzer, J., Bishai, D., Chowdhury, S., Caramani, D., Frost, L.,... Bustreo, F. (2014). Success factors for reducing maternal and child mortality. *Bulletin of the World Health Organisation*, 92(7), 533–544. doi: 10.2471/BLT.14.138131
- Lambon-Quayefio, M. P., & Owoo, N. S. (2014). Examining the influence of antenatal care visits and skilled delivery on neonatal deaths in Ghana. *Applied Health Economics Health Policy*, 12(5), 511–522.
- McNamee, P., Tement, L., & Hussein, J. (2009). Barriers in accessing maternal healthcare: Evidence from low-and middle-income countries. *Expert Review of Pharmacoeconomics and Outcomes Research*, 9(1), 41–48.
- Mensah, J., Oppong, J. R., & Schmidt, C. M. (2010). Ghana's national health insurance scheme in the context of the health Mdgs: An empirical evaluation using propensity score matching. *Health Economics*, 19(1), 95-106.
- National Population Commission (NPC) & ICF International. (2019). *Nigeria Demographic and Health Survey 2018*. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF.

- Singh, A. (2016). Supply-side barriers to maternal health care utilization at health sub-centers in India. *Peer-reviewed Journal*, 4:e2675. <https://doi.org/10.7717/peerj.2675>
- Singh, A., Pallikadavath, S., Ram, F., & Alagarajan, M. (2014). Do antenatal care interventions improve neonatal survival in India? *Health Policy and Planning*, 29(7), 842–848. doi: 10.1093/heapol/czt066
- United Nations Inter-agency Group for Child Mortality Estimation (UN IGME). (2018). *Levels and trends in child mortality: Report 2018, estimates developed by the United Nations Inter-agency Group for Child Mortality Estimation*, United Nations Children's Fund, New York. <https://data.unicef.org/wp-content/uploads/2018/10/Child-Mortality-Report-2018.pdf>
- Wang, W., Temsah, G., & Mallick, L. (2017). The impact of health insurance on maternal health care utilization: evidence from Ghana, Indonesia and Rwanda. *Health Policy and Planning*, 32(3), 366-375. doi: 10.1093/heapol/czw135.
- World Health Organization. (2016). WHO recommendations on antenatal care for a positive pregnancy experience. Geneva, Switzerland: 2016 World Health Organization.
- Yaya, S., Bishwajit, G., & Shah, V. (2016). Wealth, education and urban-rural inequality and maternal healthcare service usage in Malawi. *BMJ Global Health*, 1(2):e000085. doi: 10.1136/bmjgh-2016-000085.
- Zere, E., Oluwole, D., Kirigia, J. M., Mwikisa, C. N., & Mbeeli, T. (2011). Inequities in skilled attendance at birth in Namibia: a decomposition analysis. *BMC Pregnancy and Childbirth*, 11, 34. doi: 10.1186/1471-2393-11-34.

Acknowledgements

The author acknowledges the ICF International for the permission to use Demographic and Health Survey datasets for this study