

Nexus between Women Autonomy and Utilization of Maternal Healthcare Services in Nigeria: What are the Choices and Determinants in Nigeria

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Abstract

It has been established that despite increasing intervention by the Nigerian government in maternal healthcare, the utilization of maternal healthcare has continued to deteriorate. Though there has been a multiplicity of research on maternal health care in some developing countries including Nigeria, most of these researches pay little or no attention to the relationship between women's autonomy and the utilization of maternal healthcare services in Nigeria. This is the motivation of this study. The major findings of were that the most popular maternal healthcare services complied by women in Nigeria is antenatal visits (63%). In addition, 43% of women made their own decisions on the use of their income, while only 6% of the respondents allowed their partner to decide on the use of their income. Eleven percent of respondents allowed both partners to make decisions on the use of their health. Surprisingly, the study found that 53% of the respondents allowed only their partner to make decisions on their healthcare matters, while only 9% of respondents make own decision of their healthcare matters. The regression result women autonomy influenced the utilization of the three indicators of maternal healthcare services in Nigeria. Base on the findings, the study recommended among others that NGOs and private health providers should sensitize the citizens on the need for women to utilize maternal healthcare services and government and NGOs should continue to sensitize women and fathers on the importance of women in decision-making in the household.

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I. Background

The population health status is a major indicator of welfare in developed and developing countries. Health is underpinned in the United Nations (UN) Sustainable Development Goal (SDG) (no 3), which is the aim of achieving universal health coverage (UHC) (World Bank, 2018). Utilization of health care services has been a great concern to many stakeholders as population mortality and morbidity remained high in Sub – Saharan African compared to the developed world (Okedo-Alex, Akamike, Obumneme&Uneke 2019). Nigeria appeared in the statistics with a maternal mortality ratio of 917/100000 live births, and neonatal maternal mortality ratio of 36/1000 live (WHO, 2018). This is a testament of deteriorating health conditions in Nigeria, which poses great concerns for the provision of healthcare services in the Nigerian health system.

The deteriorating situation of maternal health in Nigeria made the government to initiate some programmes geared towards the achievement of the Sustainable Development Goal in health. More prominent of these programmes include the establishment of primary health care in every Local Government Areas (LGAs) in Nigeria and the establishment of a health insurance scheme (Ukachi, 2019). However, these programmes have achieved mixed successes especially in maternal healthcare utilization probably because of poor research targeting, and/or poor implementation strategies (Ahmad, Muktar, Koya, Said & Adam 2019; Ovikumagbe 2017; Ukachi, 2019). For instance, studies have reported that the number of women in Nigeria who deliver in the hospital or maternity home, attended the WHO recommended antenatal visits, and went for a regular checkup at least 42 days after delivery are quite low (Ajayi&Akpan 2020; Adebowale, &Akinyemi 2016).

Though multiplicity of studies has demonstrated that variations of maternal healthcare utilization behavior can be related to Anderson's behavioural model, which consists of the need for care variables, predisposing variables, and enabling variables (Anderson, 1968, Benjamin, 2005; Nepand&Doku, 2013; Ukachi, 2019). Some of these variables on maternal healthcare utilization have remained stable, others have changed rather considerably over time (Martínez-Caro, Cegarra-Navarro, García-Pérez&Fait, 2021). Thus, the need for the use of more recent health data becomes a compelling necessity. More so, many pieces of research have

examined the individual and household determinants on the utilization of maternal healthcare services. However, one important conclusion on the review of existing literature is that several authors have properly noted that the determinants of utilization of maternal healthcare services vary across and within sociocultural and socioeconomic status (Ibiwoye&Adeleke 2009; Olugbenga-Bello &Adebimpe 2010; World Bank, 2018). Very few of these researches have gone beyond individual and household factors (Ajayi&Akpan, 2020; Adebowale&Akinyemi, 2014; Ovikuomagbe, 2017). Therefore posing a serious research gap. For instance, an evaluation carried out by Ononokpono&Odimegwu (2017), using the available demographic health shows that maternal health-seeking behaviour was associated with a significantly lower rate of healthcare service use. Some other studies identified significant variations in maternal health services utilization across Nigerian communities, which appear to be more strongly determined by maternal health-seeking behaviour such as women autonomy (Okedo-Alex, et al, 2019). Women autonomy, which is the manipulation of one's environment through resource control and through information to make decisions about one's concerns (be it health or income). This includes level of education, and residency. For instance, some important variables, which have influenced maternal health care services in other countries, have been excluded in most if not all the available studies in Nigeria. Study such as Shrestha (2012), has also shown that women autonomy such as deciding on health and income of the women also has an influence on pattern and utilization of maternal healthcare services in Nepal. Ameyaw, Dickson &Adde (2021) in Ghana, identified that that poorer women, those without health insurance and those living with their partners have a lower likelihood of utilizing the WHO recommended maternal health care services. Alena &Nazim (2020) identified that lack of women's autonomy is associated with a lower probability of: all the indicators of maternal health care services in Tajikistan's. Therefore, this paper examined the nexus between women autonomy and utilization of maternal healthcare services in Nigeria with a view of making a sustainable recommendation.

II. Methodology

3.1 Area of Study and Data for the Study

This research was conducted in Nigeria. Nigeria has 36 states and the Federal Capital Territory, where the capital, Abuja, is located. Nigeria's population is estimated at 206,139,589 people in 2020 (UN. 2019). The study employed secondary data analysis using the 2018 Nigeria Demographic and Health Survey (2018 NDHS) data, which is a nationally representative survey of 42,000 households, 1,389 clusters in the Nigerian six geopolitical zones from both urban and rural settings. The 2018 NDHS was implemented by the National Population Commission (NPC) and the National Bureau of Statistics. Data collection took place from 14 August to 29 December 2018. Specifically, NDHS among other things sourced information on awareness and use of family planning methods, nutritional status of women and children, maternal and child health, adult and childhood mortality, women's empowerment, the prevalence of malaria, awareness and behaviour regarding HIV/AIDS and other sexually transmitted infections (STIs), disability, and other health-related issues from women aged between 15 to 49 years. Three sets of questionnaires were used for the 2018 NDHS: The Household Questionnaire, the Woman's Questionnaire, and Man's Questionnaire. The Woman's Questionnaire was used to collect information from all eligible women age 15 to 49 years. The Man's Questionnaire was administered to all men aged between 15 to 59 years in the subsample of households selected for the men's survey. The Man's Questionnaire collected much of the same information as the Woman's Questionnaire other than reproductive history or questions on maternal and child health.

3.2 Data Analysis

In view of the objective of this study, descriptive and inferential statistics were used to achieve the objectives of the study. Specifically, the researcher ran three models for each of the indicators of maternal health care services and used frequency distribution. Data was analyzed with STATA software version 17.0

3.2.1 Theoretical Model

This study is guided by Andersen's behavioural model, which consists of three aspects: the need for care variables, predisposing variables, and enabling variables (Anderson, 1968). Over the years, researchers in the areas of medical sociology and public health have extended the model to incorporate these aspects of access to medical. For health economists, the consumer demand model remains the main theoretical framework. Some researchers have incorporated Anderson's model as a useful conceptual framework in identifying potential patterns and determinants that may influence health demand. Given Andersen's model, healthcare utilization patterns and determinants capture the members of the population that have used different types of health services. In the present study and context, the indices of need for care can be observable through the prevalent diseases and the population health as it is obtainable in the National Demographic and Health Survey of 2018. Although there may be evidence of alternative healthcare among the population all things being equal, the conventional model for approaching prevailing diseases significantly appears to be the available healthcare

services obtainable in the system and by implication include as a carrying capacity, the enabling factors. Predisposing variables as captured in Anderson’s model project, the socioeconomic factors surrounding the members of the society as well as determining their proximity to the available healthcare services obtainable in the system. While in most cases, there could be the availability of healthcare services, there is still the question of poverty status that defines utilization. As is the case in Nigeria and other developing nations, several factors appear to be a hindrance between some members of the society and the available healthcare services. Predisposing variables are connected to enabling variables, which in their appearance in the model, represent the ability of the members of the society to access the available healthcare services depending on the socioeconomic wellbeing and capacities of the individual members of the society. In the context of this study, we have added women's autonomy as part of enabling factors in the Nigerian context, which is the focus of this study, the three components of Anderson’s model with some modifications to include the new variables. The model specified in the study informs these considerations.

3.4.2 Model specification

The study ran three independent probability, regression models. This is informed by the fact that maternal healthcare services include antenatal care (ANC), which is many visits to the hospital during pregnancy, delivery care (PAD), which is the proportion of birth delivered in health centres, and postnatal care (PNC). which are periods of postnatal visits within 42 days after delivery. Bivariate analyses were carried out for the three maternal health care variables. For the analysis, the response category was collapsed to create a dichotomous variable based on whether or not the woman had received maternal healthcare services. The outcome variables were coded as 1 if the women complied with WHO recommended ANC, which is attending at least 4 times antenatal visit during pregnancy, and as 0 if she did not. For professionally assisted delivery (PAD), a woman is coded 1 if she was attended by a trained health professional during their delivery, and 3) for postnatal care (PNC) a woman is coded 1 if she received a medical checkup from a health professional within 42 days after delivery, otherwise zero. These response variables were collapsed to create a dichotomous variable (comply or not comply)

The logistic regression considers the relationship between a binary dependent variable and a set of independent variables. However, in the bivariate logit, let the latent variable y_1^* represent the underlying continuous index affecting the decision of participating in ANC, PAD, and PNC, which are the measures of maternal healthcare services and y_i^* represent the decision of woman not participating in those maternal healthcare services. Therefore, the general specification for a two-equation model would be

$$y_1^* = \beta_1 + \varepsilon_1, y_1 = 1 \text{ if } y_1^* > 0, 0 \text{ otherwise (ANC)----- (1)}$$

$$y_2^* = \beta_2 + \varepsilon_2, y_2 = 1 \text{ if } y_2^* > 0, 0 \text{ otherwise (PNC)----- (2)}$$

$$y_3^* = \beta_3 + \varepsilon_3, y_3 = 1 \text{ if } y_3^* > 0, 0 \text{ otherwise (PAD)----- (3)}$$

The study specifies a binary logit model for the factors surrounding healthcare utilization. The binary logit model is a generalized linear model and is the most widely used for categorical response with two possible outcomes. If P is the probability of an individual who needs and receives healthcare and 1- P is the direct opposite, then

$$\frac{P}{1-P} \dots\dots\dots (4)$$

is the ratio of the probability of an individual who needs and receives healthcare to the probability of an individual who needs but does not receive healthcare. The binary logit model is defined as: $\log_i(P) = \ln\left(\frac{P}{1-P}\right) = \alpha + \beta^x \dots\dots\dots (5)$

Where x is a vector of input variables explaining the variation in the output variable, α is a constant term and β is a vector of coefficients determining the contribution of each influential variable. The parameters in the binary logit model are estimated using the maximum likelihood approach. The most common problem associated with the binary logit model, which has been observed in this study is the problem of over/under dispersion. However, the problem was checked using chi-square test. The interpretation of the estimated model is usually based on the odds ratio. The reason is that the model is based on a link function called logit. The logit can be described as the log transform of the dependent variable. In view of the objectives of the study the model, healthcare utilization is considered an output variable and was treated as either utilized or not. The healthcare utilization considered as the output variable was used alongside the influential factors as the input variables in the model which with maximum likelihood estimation techniques, the parameters for each categorical covariate were estimated relative to the selected base-level category.

The logistic model for K independent variables (x1, x2, x3, . . . ,xk) is given as:

$$\text{logit } P(x) = \alpha + \sum \beta_i x_i \dots\dots\dots (6)$$

Logit P(X) = odds ratio for a woman participating in the ANC, PAD, and PNC i versus not having characteristic i

β = Regression coefficient

α = constant

X = set of independent variables

Specifically, the independent variables are listed as thus:

Socioeconomic Characteristics

X1 Age of the woman (years)

X2 Age of woman squared

X3 Household Size (number)

*Woman has no education (1 if had no formal education, 0 otherwise)

X3 Women attended Primary Education (1 if holds a primary education, 0 otherwise)

X4 Women attended Secondary Education (1 if holds a secondary education, 0 otherwise)

X5 Women attended Tertiary Education (1 if holds a tertiary education, 0 otherwise)

X6 Rural (1 if in rural areas, 0 otherwise)

*North East (1 if resides in North East, 0 otherwise)

X7 South East (1 if resides in South East, 0 otherwise)

X8 South West (1 if resides in South West, 0 otherwise)

X9 South-South (1 if resides in South-South, 0 otherwise)

X10 North Central (1 if resides in North Central, 0 otherwise)

X11 North West (1 if resides in North West, 0 otherwise)

*Partner makes Decision on the woman's Income (1 if the partner makes a decision on the use of her income, 0 otherwise)

X12 Women makes the decision on her Income (1 if women make the decision on the use of her income, 0 otherwise)

X13 Both Partner makes Decision on the woman's Income (1 if both partners decide on the use of her income, 0 otherwise)

*Partner makes Decision on women's health (1 if the partner decides on her health issues, 0 otherwise)

X14 Woman decides on her Health Issue (1 if women make a decision on her health issues, 0 otherwise)

X15 Both Partner makes Decision on women's health (1 if both partners decide on her health issues, 0 otherwise)

III. Result And Discussions

The result and discussions of the analyzed data are presented in this session. The presentation and discussion were structured according to the specific objectives of the study.

4.0.1 Compliance of Indicators of Maternal Healthcare Services by Women in Nigeria

Generally, the most popular maternal healthcare services in Nigeria is antenatal visits (65%), followed by health professional assisting in delivery (45%). While the least was attending check-ups by professional health workers at least 42 days after delivery (10%) (Table 4.1). However, overall, the health institutions, public hospitals had more patronage from all the indicators of maternal healthcare services with assistance by a health professional during delivery being the most responsive indicator in both health institutions. While compliance to check-up by professional health worker at least 42 days after delivery received the least patronage across health institutions.

Table 4.1: Percentage Distribution of Utilization of three indicators of Maternal Healthcare Services across Public and Private Institutions

Maternal Health Services	Public (%)	Private (%)	Average (%)
ANC	73	26	65
PAD	60	27	45
PNC	20	9	10

Source: Computed from NHDS, 2018

Note multiple responses were recorded

4.1. Background Characteristics of Respondents

The background characteristics of the respondents are presented in Table 4.2.

Table 4.2: Background Characteristics of the Respondents

Variables	Frequency	Percent
Age (Years)		
15-19	1,461	1.15
20-24	8,543	6.70
25-29	19,007	14.90
30-34	23,618	18.52
35-39	26,740	20.97
40-44	23,696	18.58
45-49	24,480	19.19
Mean	46.51	
Educational		
no	63,699	49.94
Primary	25,311	19.84
Secondary	30,756	24.11
Higher	7,779	6.10
Sector		
Urban	44,111	34.58
Rural	83,434	65.42
North Central	21656	16.98
North East	26293	20.61
North West	39928	31.31
South East	14072	11.03
South South	12436	9.75
South West	13160	10.32
Poverty Status		
Poor	60596	47.51
Middleclass	27120	21.26
Non-Poor	39829	31.26
Woman Autonomy		
Mother working	94453	74.09
Partner makes Decision on the woman's Income	7023	5.51
Women makes decision on her Income	54407	42.66
Both Partner makes Decision on the woman's Income	13943	10.93
Variables	Frequency	Percent
Partner makes Decision on women's Health	67988	53.31
Woman makes decision on her Health Issue	11606	9.10
Both Partner makes Decision on women's health	37294	29.24

Source: Computed from NHDS, 2018

The result shows that the largest cohort of women (21%) were between 35 to 39 years old. Those that were aged between 45 and 49 years old (19%) closely follow this. The least category in terms of age were those between 15 and 19 years old (1%). The average age of respondents in the survey was approximately 47 years. The result also shows that half of the women in the survey (50%) had no formal education, while 24% of respondents had secondary school education. The majority (89%) were married.

The majority (65%) of respondents resided in rural areas while many of the respondents (31%) resided in northwest Nigeria. This is followed by those that resided in North East (21%). Fewer numbers of the respondents lived in the South-South geopolitical zone in Nigeria. In terms of the poverty status of the respondents, 48% of respondents were classified as poor. This includes core and mid-poor. The middle class is the least in the population (21%). It is also important to note that the least 31% of respondents were classified as non-poor.

Further, the number of women that had occupations constitutes a major cohort of the respondents (74%). In addition, 43% of women made their own decisions on the use of their income, while only 6% of the respondents allowed their partner to decide on the use of their income. Eleven percent of respondents agreed that both partners made decisions on the use of their income. Surprisingly 53% of respondents allowed their partner to make decisions on their healthcare matters, while only 9% of respondents make own decision of their healthcare matters. This has implications for the utilization of maternal healthcare services.

4.2 Women Autonomy and Utilization of Maternal Healthcare Services in Nigeria

The econometric models used to examine the influence of women autonomy on the utilization of maternal healthcare services were considered under three indicators of maternal healthcare service namely; ANC, PAD and PNC. Table 4.3 shows the number of observations, mean, standard deviation, minimum and maximum for each variable.

Table 4.3: Table Showing the Variables Used in the Regression Model Continues

Variables	Observations	Mean	Standard Deviation	Min	Max
Partner makes Decision on the woman's Income	127545	.0550629	.2281039	0	1
Woman makes decision on her Health Issue	127545	.0909953	.2876036	0	1
Both Partner makes Decision on women's health	127545	.2923988	.4548663	0	1
Partner makes Decision on women's health	127545	.5330511	.49890840	0	1
Woman Covered by health insurance	127545	.0230742	.1501398	0	1

Table 4.3: Table Showing the Variables Used in the Regression Model

Variables	Observations	Mean	Standard Deviation	Min	Max
ANC	127545	.9281979	.258161	0	1
PNC	127545	.0342781	.1819433	0	1
PAD	127545	.4583481	.4982694	0	1
Age of the woman	127529	46.51591	11.88614	14	95
Age of woman squared	127545	2305.925	1202.693	196	9604
Woman has no education	127545	.4994237	.5000016	0	1
Women attended Primary Education	127545	.1984476	.3988325	0	1
Women attended Secondary Education	127545	.2411384	.4277758	0	1
Women attended Tertiary Education	127545	.0609902	.2393133	0	1
Rural	127545	.6541534	.4756453	0	1
South East	127545	.1103297	.3133015	0	1
South West	127545	.1031793	.3041941	0	1
South South	127545	.0975028	.2966424	0	1
North Central	127545	.1697911	.3754506	0	1
North West	127545	.3130503	.4637364	0	1
North East	127545	.2061469	.4045388	0	1
Nonpoor	127545	.3122741	.4634228	0	1
middleclass	127545	.2126308	.4091702	0	1
Poor	127545	.4750951	.4993813	0	1
Women makes decision on her Income	127545	.426571	.4945807	0	1
Both Partner makes Decision on the woman's Income	127545	.1093183	.3120394	0	1
Partner makes Decision on the woman's Income	127545	.0550629	.2281039	0	1
Woman makes decision on her Health Issue	127545	.0909953	.2876036	0	1
Both Partner makes Decision on women's health	127545	.2923988	.4548663	0	1
Partner makes Decision on women's health	127545	.5330511	.49890840	0	1

Source: Computed from NDHS, 2018.

4.2.1 Women Autonomy Factors influencing the Compliance of Women with Recommended Antenatal Visits in Nigeria

The regression result of the influence of women autonomy on maternal healthcare services presented in Table 4.4. The results show that women autonomy influenced compliance with prenatal/antenatal care (ANC). Generally, the regression result shows that the combined effects of the independent variables could explain 36% of women complying with ANC. The result shows that the age of respondents and women with formal education positively influence compliance with recommended ANC visits. This means that an increase in these variables increased the probability of complying with the recommended antenatal visits. Women that had primary education, secondary education, and tertiary education increases the probability of antenatal visit by 0.40%, 0.33% and 0.63% respectively compared with those without any formal education. This agrees with the findings by Doctor et al (2011).

In terms of residence, the result shows that being in a rural area reduced the probability of antenatal visits by 0.18% while being in South West increased the probability of antenatal visits by 0.80% compared with being in the North East. Poverty also influences the probability of antenatal visits. Specifically, being a middle class and non-poor increased the probability of antenatal visit by 0.20% and 0.40% respectively compared with being poor. The results are expected because poverty and being in rural areas are associated with a lack of resources to improve life. This probably makes the women to lack finances to comply with recommended maternal healthcare services (Ajayi and Akpan, 2020). Thus, it is expected that the attitude of mothers in these places is greatly influenced by the lack of resources to comply with recommendations of maternal healthcare services. Similar results have been recorded elsewhere. For instance, Fosu, (1994) and Rajphriya&Johar (2020)

reported in their separate studies that lack of finance emerged as the major issue among women who did not fulfill the minimum requirement of antenatal visits and utilization of other maternal healthcare services is similar to our research result.

Furthermore, the probability of antenatal visit increased by 0.11% and 0.21% when women make their own decision and when the decisions are made jointly with their partners respectively compared to when a partner makes a decision alone on women's health. It is very much expected that women utilize maternal healthcare services when women use of their income and take responsibility on their health issues than when others care for their health. This finding is inconsonant with Neupane&Doku (2013) who identified lack of power to decide on women's income and health matters is a major factor responsible for low utilization of maternal healthcare services.

4.2.2 Women Autonomy Factors influencing the Compliance of Women with WHO Recommended Postnatal Care (PNC) in Nigeria.

The econometric results as presented in Table 4.4 also shows that the combined effects of the independent variables explained 22% of changes in the probability to comply with PNC. The age of respondents and women with secondary education were significantly propelled the postnatal care by women. Specifically, women with secondary education increased the probability of complying with postnatal care by 0.37%. The result conforms with a priori expectation. For instance, education undoubtedly increases awareness of the importance of maternal healthcare services and this is inconsonant with the result of the study. This is similar to result found in Ghana by Ameyaw, Dickson & Adde (2021).

In terms of residence, the result shows that being in South East, increased the probability of antenatal visits by 0.17% while being in North West reduced the probability by 0.5% of receiving checkups by health professionals compared to North East. Poverty also influenced the probability of receiving checkups by health professionals. Specifically, being a middle class and non-poor increased the probability of receiving checkups by health professionals by 0.59% and 0.28% respectively compared with being poor. Similar result has been found elsewhere (Ajayi and Akpan, 2020).

The result also shows that making own decisions about income increased the probability of complying with postnatal care by health professionals by 0.70%, while when both partners participated in making decisions on woman's income reduced the probability of complying with postnatal care by health professionals by 0.54% compared with when a partner makes a decision on woman's income. In addition, when both partners participated in making decisions on own health issues reduced the probability of receiving checkup by health professionals by 0.30%. This conforms to research by Shrestha in 2012.

Table4.4: Regression results on the determinants of Complying with Recommended Antenatal Visits (ANC) in Nigeria

Variables	ANC		PNC		PAD	
	dy/dx	P> z	dy/dx	P> z	dy/dx	P> z
Age of the woman	.0015415	0.000**	-.0020231	0.000**	.0007127	0.313
Age of woman squared**	-.000011	0.000**	.0000175	0.000**	-.0000516	0.484
Woman has no education (reference)						
Women attended Primary Education	.0040276	0.000**	.0015241	0.310	.0120391	0.002
Women attended Secondary Education	.0033326	0.001	.0037314	0.009	.0236506	0.000
Women attended Tertiary Education	.0063394	0.000	.0023678	0.217	.0319489	0.000
Rural*	-.001844	0.025	-.001367	0.091	-.004361	0.165
North East (reference)						
South East	-.0047538	0.134	.0168974	0.000	.0070764	0.454
South West**	.0080296	0.000	-.0024721	0.202	.015304	0.015
South South	-.000742	0.629	-.0018857	0.272	-.0408313	0.000
North Central	.0012891	0.234	-.00021	0.888	.0085897	0.041
North West	.0016053	0.112	-.004733	0.001	-.02237	0.000
Poor (reference)						
Nonpoor**	-.0040247	0.000	.0059083	0.000	.0276543	0.000
Middleclass*	.0019929	0.032	.002841	0.017	.0114001	0.002
Partner makes Decision onthe woman's Income (reference)						
Women makes decision ontheir Income	-.0000718	0.942	.0070498	0.000	-.0007216	0.854
Both Partner makes Decisionon the woman's Income	-.0005235	0.697	.0054235	0.000	-.0136324	0.012
Partner makes Decision onwomen's health (reference)						
Woman makes decision onher Health Issue*	.00111	0.020	.0007319	0.524	.0072303	0.093

Note: ** Significant at 1% probability level; * Significant at 5% probability level

Table 4.4: Regression results on the determinants of Complying with Recommended Antenatal Visits (ANC) in Nigeria Continues						
Variables	ANC		PNC		PAD	
	dy/dx	P> z	dy/dx	P> z	dy/dx	P> z
Both Partner makes Decisionon women's health**	.0021486	0.012	-.002985	0.001	.0111899	0.000
Woman Covered by healthInsurance	.0066708	0.001	.0033366	0.042	.0082912	0.311
Constant**	-	0.000	-	0.000	-	0.000
Number of Observations		46659		60570		13605
LRchi2(40)		3610.78		4197.22		10162.14
Prob>chi2		0.0000		0.0000		0.0000
Pseudo R2		0.2087		0.2159		.6043
Log likelihood		-6846.9575		-7623.7643		-3327,6976

Enrolling in health insurance increased the probability of receiving checkups by health professionals by 0.33%. It is important to note relatively high response of distance to attending checkups. This is an indication of the limited number of health centers and hospitals in Nigeria. A similar result has been found that when the distance to health facilities is either a push or pull factors that play important role in maternal healthcare utilization (Buor, 2003).

4.2.3 Women Autonomy Factors influencing the Delivering of Baby by Trained Health Professionals (PAD)

The econometric results as presented in Table 4.2, shows that several factors influenced the ability of women to deliver baby by health professionals (PAD). Generally, the regression result shows that the combined effects of the independent variables explained 60% of changes in the dependent variable. Having formal education were significantly and positively relatedto PAD. Women with primary, secondary, and tertiary education increased the probability of women delivering their babies by health professionals by 1.2%, 2.4%, and 3.2% respectively compared with those without any formal education. Based on the high value of marginal

effects, the education of women is very important in complying with PAD. The result also shows that being in South West increased the probability of women complying with PAD by 1.53% while being in South-South and North West reduced the probability of women delivering their child by health professionals by 4.08% and 2.23% respectively compared to being in the North East. This is an indication of limited health infrastructure in those zones. Only non-poor has an influence on the probability of women to deliver their child by health professionals by 2.8% compared with being poor.

Further, when both partners participated in making decisions on their own income and own health increased the probability of women delivering their baby by health professionals by 1.4% and 1.11% respectively.

4.2.4 Evaluation of Hypotheses

Since our major interest in this research is on the new variable, which is women's autonomy, the issues of accepting or rejecting went beyond accepting or rejecting hypotheses based on chi-square. However, women autonomy has significant influence on probability of women to comply with the three indicators of maternal healthcare services (ANC, PNC and PAD). For instance, the value of the chi-square were 3610.78, 4197.22 and 10162.14 for ANC, PNC and PAD respectively, which were significant at less than 1% probability level.

Table 4.2 shows that the following variables that were specific for women autonomy were significant at 5% probability level. For instance, women made decision on their health issue ($p=0.020$), attending formal education from primary to secondary schools and both partners make a decision on women's health issue ($p=0.012$) were significant for complying with ANC. The formal education empowerment, women making a decision on their income ($p=0.000$) and both partners making a decision on women's income ($p=0.000$) were significant for complying with PNC. The formal education empowerment, when both partners make a decision on women's income ($p=0.012$) and both partners make a decision on women's health ($p=0.000$) were significant for PAD. Based on these results the study concluded that autonomy significantly affect the likelihood of women complying with all the three indicators of maternal healthcare service in Nigeria.

IV. Conclusions and Recommendations

The study concluded that women autonomy has significant influence on the probability of women to comply with utilization of WHO recommended maternal healthcare services. Therefore, these findings accentuated that going forward, education of women and decision making in household concerning women's health and income interventions are the ones that can be prioritized the empowerment of women.

Based on the findings of this study, it is recommended that the following measures be taken to improve women autonomy as regards to the utilization of maternal health services:

- Wealth is an important variable in encouraging women to utilize maternal healthcare services. Therefore, government and philanthropist should subsidize maternal healthcare services especially for rural women and women in Northern Nigeria where poverty is endemic or even make it free as already claimed.
- For the fact that women autonomy promotes the utilization of maternal healthcare services, there is an urgent need for the government and other health stakeholders to introduce an effective women empowerment programmes such as given a percentage to women employment and decision making in their households. This can also be achieved through the provision of soft loans to women for small-scale businesses and agricultural programmes.
- Government should put in place specific education policies and programs in maternal health utilization for women, which will encourage men's participation in maternal health care of their wives. Such policies should address the constraints to men's participation in maternal health care of their partners. Such policies should address the constraints to men's participation in actively encourage their wives to utilize maternal health services especially in the rural areas and among Islam-dominated communities. There should be rewards to partners that actively encouraged their wives to utilize pregnancy – care related service

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