Determinants of Antenatal Care Services Utilization in Nigeria

Abstract

Background: Maternal Mortality Ratio (MMR) is high in Nigeria despite available antenatal care services in the country. This study aims to investigate the determinants of ANC utilization in Nigeria

Methods: This study was a secondary analysis of the 2021 Multiple Indicator Cluster Survey (Mics) & National Immunization Coverage Survey (Nics). Descriptive statistics and logistic regression were used to determine factors associated with the frequency of ANC visits and place of delivery.

Results: the factors that consistently determine the utilization of ANC services are the maternal level of education, place of residence, and wealth index. ANC utilization was more frequent in the southern part of the country compared to the northern regions.

Conclusion: This study underscores the need to thoroughly explore and address context-based barriers affecting the utilization of ANC services in order to reduce maternal mortality and provide equitable access to maternal healthcare in Nigeria. The recommended solution to these identified barriers is community engagement through health promotion interventions, increasing government budgetary allocation for health and improving ANC use by making it available, accessible and affordable to all women in Nigeria irrespective of their demographic characteristics.

1.0. INTRODUCTION

Antenatal care (ANC) utilization has been considered one of the means for reducing high maternal death in SSA (Mekonnen *et al.*, 2019). Adequate and appropriate attendance at ANC provides the opportunity for the timely detection of pregnancy-related risks and the introduction of appropriate measures to avert possible complications (World Health Organization, 2016). It also provides the opportunity for essential health tasks such as health promotion, screening and diagnosis, and disease prevention (WHO, 2016). The (WHO, 2016) guidelines now recommend a minimum of eight ANC (≥8) visits to improve maternal outcomes and to provide a more positive experience for pregnant women.

Maternal mortality (MM) is a critical challenge in Nigeria. The 2018 Nigeria Demographic and Health Survey (NDHS) revealed a MM ratio of 512 per 100 000 live births (National Population Commission and ICF, 2019), recent estimates rank Nigeria fourth among nations with the highest MMR globally (UNICEF, 2023). Despite the promising benefits of adequate utilization of ANC, studies suggest that coverage and utilization of these services remain inadequate in Nigeria (Fagbamigbe *et al*., 2021). Antenatal care utilization in Nigeria has been seemingly associated with a number of socio-demographic and economic factors (Fagbamigabe and Idemudia, 2017; Adewuyi *et al*., 2018), and addressing these factors has been posited to increase uptake and adequate ANC utilization.

Although the evidence for reducing maternal mortality through access to skilled pregnancy care is largely relevant, it remains inadequate in ensuring a substantial decline in maternal deaths in Nigeria (Ope, 2020). Existing studies are often focused on only one or two study areas within the country, and thus are not generalizable. In addition, even fewer studies have examined the impact of these factors on the frequency and timing of ANC visits. This is significant based on the new WHO guidelines, and eight or more contacts for antenatal care can reduce perinatal deaths by up to 8 per 1000 births when compared to 4 visits (WHO, 2016).

The current study sought to bridge this research gap by drawing data from a Nationally representative survey and exploring determining factors for the adequate utilization of ANC based on WHO recommendations on frequency and timing. Broadening the scholarly discussion of such an important topic creates insights into a deeper understanding of the nature and existence of factors that predict the use of

ANC, thus providing invaluable assistance to researchers and practitioners. It also provides evidence that policymakers can use to develop more accessible, acceptable, affordable, and available ANC services in Nigeria. Therefore, the proposed research aims to investigate the determinants of adequate maternal healthcare utilization in Nigeria.

1.1.Research Questions

1. What are the determinants of ANC services utilization in Nigeria?
2. How do these determinants affect the frequency of ANC visits and place of delivery among Nigerian women?

2.0. LITERATURE REVIEW

A number of studies in Nigeria have examined determinants and barriers to the utilization of ANC services (Ahuru, 2020; Sui *et al*, 2021; Etokidem *et al*., 2022). Demographic factors including employment, maternal level of education, maternal age, and region of residence have been cited as factors that determine the utilization of ANC services in Nigeria. Some studies demonstrated that a husband's level of education impacted women's ANC usage (Adewuyi *et al*., 2018). The place of residence was also significant to the utilization of ANC (Fagbamigbe, *et al*., 2021). This could be attributed to the rural-urban differentials in the distribution and availability of healthcare facilities in the country (NPC and ICF, 2019).

(Fagbamigbe and Idemudia, 2017) also found that ANC utilization reduced with parity and maternal age, although this is at variance with (Elkhatib *et al*., 2020) where older women were more sensitive to ANC utilization. In addition, marital status, and media exposure, were also factors that determined the use of ANC services in Nigeria (Adewuyi *et al*., 2018; Okonufua *et al*., 2018; Elkhatib *et al*., 2020).

Economic factors such as the direct and indirect costs of ANC have also been found to significantly determine the use of ANC services. These studies suggested that mothers who had health insurance or utilize free maternal care were more likely to undertake ≥8 ANC visits. This is in conformity with previous studies from Nigeria and Ghana (Blanchet *et al*., 2012; Ahuru *et al*., 2021).

2.1. Theoretical Framework

The proposed research is framed within the Social Economical Model (SEM). The SEM conceptualizes health broadly and focuses on multiple factors that might affect health. The SEM provides a framework for understanding the interplay between individual, physical, social and political environmental factors that influence health behaviour (CDC, 2015). It suggests that individual behaviour is shaped by a range of factors, including interpersonal relationships, community norms and values, and the broader social, economic and political context.

In this research context, SEM can be used to understand the broader socio-environmental factors that influence pregnant women's access to ANC services, such as educational attainment, the cost and quality of ANC services, and the policy and regulatory environment.

3.0. RESEARCH METHODOLOGY

The study utilized data from the 2021 Multiple Indicator Cluster Survey (Mics) & National Immunization Coverage Survey (Nics). The Multiple Indicator Cluster Survey (MICS) was carried out in 2021 by the National Bureau of Statistics (NBS) as part of the Global MICS Programme (NBS and UNICEF, 2022). The survey was cross-sectional, collecting information from 38, 806 eligible women aged 15-49 years. The Women's Questionnaire collected information on background characteristics, reproductive history and childhood mortality, family planning methods, fertility preferences, antenatal, delivery, and postnatal care and a host of other health issues relating to specific diseases and disease-prevention programmes/interventions. The survey process went through the required ethical clearance procedures; For the purpose of this study, Information collected from these questionnaires on ANC was transformed into SPSS for statistical analysis.

3.1. Data Analysis

3.1.1. Study Variables

The outcome/dependent variables for this investigation are two. The first is whether or not a woman aged (15-49 years with a live birth) had at least 8 or more ANC visits in the last 2 years preceding the survey by any provider. The second outcome variable is the place of delivery (that is either at home or any other place outside of the health

facility). These outcome variables were examined against independent variables/covariates, that is the socio-demographic and socio-economic factors of the respondents. Factors examined include maternal age, Geo-political Zone, Place of residence, maternal educational attainment and wealth index.

3.1.2. Statistical Analysis

First, descriptive statistics related to the utilization of ANC, and place of delivery were generated by means of a frequency table as seen in Table 1. Secondly, Multivariate logistic regression analysis was used to determine the association between the two outcome variables and the independent variables (Table 2). Statistical analyses were conducted using IBM SPSS vs 22.

4.0. DISCUSSION/RESULTS

4.1. Results

Table 1 shows the percent distribution of women with eight or fewer antenatal care services, and those delivering at home/health facilities. Regarding ANC utilization, women in the southern part of the country utilized ANC services better compared to their northern counterparts; similarly, women residing in urban areas attended more ANC visits than those residing in rural areas (50.9% against 12.4%).

The increasing level of women's education as well increases linearly with the use of ANC; 53% of women with a tertiary level of education utilized at least 8 ANC visits compared to only 18.4% and 5.9% respectively with primary and without formal education. About 56.3% of women in the rich wealth index had at least 8 ANC visits while only 19.3% of women in the poor household had up to 8 ANC visits. Women who had at least 8 ANC visits were more likely to deliver in health facilities **(Table 2)**.

Women in the older age brackets were more likely to deliver in health facilities (52.5% against 33.8%). Women in urban areas (74.3%) delivered in health facilities compared to women residing in rural areas (34.5%). Expectedly, births in health facilities are higher in Southern geopolitical zones than in Northern zones; and linearly related to maternal levels of education.

Table 1. % distribution of place of delivery and number of ANC visits by women's demographic characteristics.

Variables	ANC Visits	Place of delivery	
	≥8	Health facility	Home
Maternal Age			
Less than 20	13.1	33.8	66.0
20-34	24.3	50.5	49.3
35-49	24.9	52.5	47.7
Geo-political			
zone	13.3	59.4	40.6
North-central	3.0	34.1	65.7
North-east	5.2	20.6	79.4
North-west	54.1	91.3	8.5
South-east	44.2	62.7	36.9
South-south	55.5	79.3	20.5
South-west			
Place of			
residence	50.9	74.3	34.5
Urban '	12.4	25.7	65.3
Rural			
Maternal Edu			
level	5.9	19.5	80.4
None	18.4	42.5	57.2
Primary	38.8	74.9	24.9
Secondary	53.9	91.0	8.9
tertiary			
Wealth index			
Poor	5.6	21.6	78.2
Middle	19.3	51.7	48.0
Rich	56.3	89.0	10.8

Table2. Logistic analyses of determinants of frequency of ANC visits, and place of delivery

Independent variables	Frequency of ANC visits		Place of delivery	
	p	95% C.I.	P	95% C. I
Maternal Age				
Less than 20	1.00	1.00	1.00	1.00
20- 34	<0.001	(1.25 - 1.52)	<0.001	(1.07-1.56)
35 – 49	<0.001	(1.77- 2.20)	<0.001	(2.09 – 2.11)
Geo-political zone				
North-central	0.05	(0.25 – 1.55)	0.4	(0.13 – 0.17)
North-east	<0.001	(0.39 – 0.46)	0.4	(0.03 – 0.46)
North-west	<0.001	(0.30 – 0.34)	0.02	(0.25 – 1.20)
South-east	0.02	(0.71 – 2.50)	<0.001	(1.12 – 1.47)
South-south	<0.001	(0.62 – 0.73)	<0.001	(0.34 – 0.42)
South-west	1.00		1.00	
Place of residence				
Urban	1.00			
Rural	<0.001	(0.45 – 0.49)	0.02	(0.25 – 1.59)
Maternal Education				
None	1.00		1.00	
Primary	<0.001	(2.17 – 2.46)	<0.001	(5.08 – 6.11)
Secondary	<0.001	(3.91 – 4.37)	<0.001	(10.32 – 15. 57)
Tertiary	<0.001	(4.45 – 4.82)	<0.001	(18.41 – 21.62)
Wealth Index				
Poor	1.00		1.00	
Middle	<0.001	(2.04 – 2.32)	<0.001	(4.25 – 5.04)
Rich	<0.001	(5.54 – 6.42)	<0.001	(11.57 – 16.15)

4.2. Discussion

The purpose of this study was to determine the factors influencing the adequate utilization of antenatal care (ANC), and health facility delivery among Nigerian women using the 2021 NMICS data set. The use of ANC, as well as institutional delivery, remains some of the important strategies in reducing maternal and child morbidity and mortality. Nigeria continues to be one the largest sources of maternal and child mortality worldwide and therefore, investigating the determinants of ANC, as well as health facility use of delivery will provide evidence for policy directions and a basis for programmatic planning.

4.2.1. Frequency of ANC visits

This study identified several factors that indicate a strong positive influence on the utilization of ANC services: age of the mother, place of residence (rural/urban), maternal level of education, and wealth quintile. The factors identified here as determinants of ANC use are consistent with those identified by Fagbamigbe *et al*., 2021.

The unexpected finding in this study is that being in the age group of 35 and above consistently increased the odds of the utilization of ANC. The influence of maternal age on the use of ANC is unclear and inconsistent; some researchers suggest that women in their thirties are more likely to use ANC services compared to those that are younger as observed in this study. This inconsistent finding could be due to confounding from parity; among older women, it could be due to previous unpleasant experiences with ANC services (quality, content, derived benefits and satisfaction with received care) or due to previous uneventful pregnancies that women now perceive ANC as unnecessary. Among the younger women (including teenagers) it could be a lack of knowledge of the benefits of ANC, or the pregnancy could be unwanted and sought care less.

Rural places of residence negatively affected the utilization of ANC by 12.4%. Previous studies have documented how urban residents confer some advantages on the use of ANC. This study further revealed that maternal education level is a significant predictor of ANC use. Both factors showed a dose-response relation between the level of education and the likelihood of use of ANC; women with tertiary education were more than four times more likely to use ANC than those with no formal education.

4.2.2. Health Facility Delivery

Access to skilled care at birth is one strategy that can reduce maternal and child mortality. The regression model identified geopolitical zone of residence, place of residence (rural/urban), maternal education, and household wealth as factors consistently significant in predicting facility delivery **(Table 2).** Maternal education appears to be the most powerful predictor of facility delivery, with an increasing level of education there is a corresponding increased chance of facility delivery.

In most developing countries including Nigeria, these findings are not unexpected due to the existing inequity in the distribution and location of healthcare facilities across urban and rural areas. There also exist widespread socio-structural barriers to fair access to essential healthcare services including high poverty and illiteracy levels coupled with geographical differences that can be attributed to predominant socio-cultural contexts. With the current poor maternal health outcomes and existing inequity, the possibility of attaining UHC by 2030 in Nigeria without equitable access to quality and affordable healthcare services is very unlikely.

5.0. RECOMMENDATIONS

1. **Community level.**

To fully scale up the utilization of ANC and delivery services, a system of continuous dissemination of information on the benefits of these services targeted at mothers at the community level using existing community structures should be instituted. Community-based strategies to promote maternal health can help raise awareness of pregnancy danger signs and preparations for emergencies (USAID, 2019). Therefore, public health campaigns, with the support of community health workers and leaders, need to inform pregnant women about maternal healthcare benefits and support them to utilize maternal healthcare services. Entrepreneurial and educational programmes, targeting women, their families, and the whole community should be instituted.

2. **Governmental Level**

Maternal healthcare services should be made free or subsidized in Nigeria, which has shown a positive impact on the utilization of ANC in some African countries (Wang *et al*., 2017). Health insurance should be made compulsory with a comprehensive benefits package, especially for the poor, vulnerable and informal population in the country.

Adequate budget allocation to maternal healthcare, and ensuring full geographical coverage of healthcare services, especially in rural areas are strongly recommended.

3. **Global Level**

There is a need for more investment from global communities in Nigeria, not just within the health sector but other sectors such as education, business, and digital/ICT sector among others. This will create employment opportunities, boost national revenue and subsequently improve the standard of living of the Nigerian populace, thereby placing the country on the road map to achieving UHC and other SDGs by 2030. Efforts between the Nigerian government and international communities should be coordinated to yield efficient use of development assistance resources.

6.0. CONCLUSION

This study corroborates previous research investigations on the determinants of ANC utilization. Factors that strongly determine utilization include maternal education level, place of residence, and wealth index. Effective collaboration between governmental, non-governmental organizations and global communities should ensure that policies geared towards improving the accessibility, affordability and quality of ANC services as well as UHC are integrated within the health system to place Nigeria on the path to achieving SDG targets for 2030.

It is important to note that while secondary research provides valuable insights, further primary research may be needed to validate and supplement the findings. Additionally, future research should consider ethnographic factors such as sociocultural beliefs and practices that might affect the utilization of ANC in Nigeria.

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