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RESEARCH **Open Access**

Socioeconomic Disparities in Completed Antenatal Care: Evidence from Nigeria

Nikmatur Rohmah[1a*], Agung Dwi Laksono[2b], Abubakar Yakubu Abbani[3c], Ratu Matahari[4d], Yuly Astuti[2e], Ratna Dwi Wulandari[5f]

[1] Department of Pediatric Nursing, Faculty of Health Science, Muhammadiyah University of Jember, East Java, Indonesia
[2] National Research and Innovation Agency, Republic of Indonesia, Jakarta, Indonesia
[3] Department of Demography and Social Statistics, Federal University, Birnin Kebbi, Nigeria
[4] Department of Public Health, Faculty of Public Health Science, Universitas Ahmad Dahlan, Yogyakarta, Indonesia
[5] Department of Public Health, Faculty of Public Health, Universitas Airlangga, Surabaya, East Java, Indonesia

[a] Email address: nikmaturrohmah@unmuhjember.ac.id
[b] Email address: agung.dwi.laksono@brin.go.id
[c] Email address: abuabbani@gmail.com
[d] Email address: ratu.matahari@ikm.uad.ac.id
[e] Email address: yuly.astuti@brin.go.id
[f] Email address: ratna-d-w@bfkm.unair.ac.id

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Abstract

The Maternal Mortality Rate is still high in Nigeria. Complete antenatal care (ANC) of eight visits during pregnancy is an important strategy to control this condition. This research analyzed the socioeconomic disparities in completed ANC in Nigeria. The study examined secondary data from the 2018 Nigerian Demographic and Health Survey. The study included 21,792 women aged 15 to 49 who had given birth in the previous five years. We looked at eight control factors in addition to completed ANC as an outcome variable and socioeconomic as an exposure variable: domicile, age, religion, marital status, education, occupation, and parity. Data were analyzed using binary logistic regression. The result showed the completed ANC proportion in Nigeria is 21.6%. Meanwhile, the poorer were 1.316 times more likely than the poorest to perform completed ANC (AOR 1.316; 95% CI 1.316-1.317). The middle was 1.994 times more likely to achieve completed ANC than the poorest (AOR 1.994; 95% CI 1.993-1.994). Meanwhile, the richer were 2.808 times more likely than the poorest to achieve completed ANC (AOR 2.808; 95% CI 2.807-2.808). Moreover, the richest were 4.112 times more likely to perform completed ANC than the poorest in Nigeria (AOR 4.112; 95% CI 4.112-4.113). The study revealed significant socioeconomic disparities in the completion of ANC in Nigeria, with wealthier women being more likely to achieve completed ANC compared to their less-wealthy counterparts.

Keywords: Antenatal Care, Maternal Health, Reproductive Health, Public Health.

Corresponding Author:

Nikmatur Rohmah
Department of Pediatric Nursing, Faculty of Health Science, Muhammadiyah University of Jember, East Java, Indonesia
Email: nikmaturrohmah@unmuhjember.ac.id

1. INTRODUCTION

The global endeavor to lower maternal mortality is progressing remarkably. Maternal mortality is unacceptably high. About 287 000 women died during and following pregnancy and childbirth in 2020. Almost 95% of all maternal deaths occurred in low and lower middle-income countries in 2020, and most could have been prevented (World Health Organization, 2021). The sub-Saharan African geographical area, which has the highest MMR worldwide, had a fall in deaths from 987 to 546 deaths (World Health Organization, 2015). Nevertheless, the World Health Organization (WHO) estimated that Nigeria had an MMR of 917 deaths per 100,000 live births in 2017. The situation means that Nigeria has the highest rate of maternal deaths worldwide, with an estimated 67,000 deaths accounting for 23% of all maternal deaths worldwide (World Health Organization, 2019).

The state of maternal health in Nigeria is appalling. The MMR in the nation is declining, but at an incredibly slow pace, indicating that much remains to be learned about the reasons for the lack of significant improvement in maternal health. The demographic and health survey of the country estimated the MMR in 2018 to be 512 fatalities per 100,000 live births, a decrease from 704 deaths in 2003 (National Population Commission (NPC) [Nigeria] and ICF, 2019). If women take advantage of maternal health care services, including antenatal care (ANC) and hospital delivery, these maternal deaths can be avoided (World Health Organizaton, 2021; Yadav et al., 2020). ANC best addresses pregnancy-related health issues, and hospital delivery reduces the risk of death for both mothers and children (Denny et al., 2022; Laksono et al., 2023; Putri & Laksono, 2022).

The WHO also supports evidence-based screenings, which include a core set of interventions like blood pressure monitoring, iron supplementation, tetanus toxoid vaccination, urine testing, hemoglobin testing, and fast tests for sexually transmitted infections. These screenings can identify undiagnosed conditions or diseases in pregnant women who appear healthy by using tests that can be quickly and easily administered to the target population with undeniable benefits regarding maternal and newborn health (Okedo-Alex et al., 2019; Vasconcelos et al., 2023). However, there is a deficiency in the actual use and utilization of these ANC screening procedures, primarily in the nations of sub-Saharan Africa (Abbani et al., 2023; Okedo-Alex et al., 2019).

Despite rising maternal mortality, a new study indicated that lower prenatal interaction is associated with an increased risk of perinatal mortality (Hofmeyr et al., 2023). Thus, to lower child mortality and enhance women's experiences with maternity care, the WHO suggested a minimum of eight interactions in 2016 (World Health Organizaton, 2016). Furthermore, ANC has been shown in certain studies to lower the risk of post-partum hemorrhage (Amanuel, Dache & Dona, 2021; Habitamu, Goshu, & Zeleke, 2019). It is significant because ANC enhances the likelihood of recognizing high-risk pregnancies (Wulandari & Laksono, 2020).

Specific characteristics, such as being older (25–49 years old) and having a formal education, are individual and community-level drivers of ANC visits in nations with high maternal mortality rates. Only 20.3% of women had ≥ 8 ANC contacts, with a urban 35.5% and rural 10.4% areas in Nigeria. The North-East region had the lowest ANC utilisation nationally 3.7% and in urban areas 3.0%, while the North-West had the lowest in rural areas 2.7%. Nationally, 69% of mothers in Nigeria received iron supplements, 70% had tetanus injections, and 16% received medicines for intestinal parasites, with urban residents having higher proportions across all ANC components (Adewuyi et al., 2024). Other factors included being employed, being married, having access to the media, being wealthy, having a history of abortions, leading a household as a woman, and possessing a high level of community education (Chilot et al., 2023; Wulandari, Laksono & Rohmah, 2021). ANC completeness was influenced by a partner, education level, socioeconomic, parity, and health insurance, according to a prior study (Laksono et al., 2020) it may also influence ANC in expectant mothers who work (Denny et al., 2022).

An estimated 88.4 million people in Nigeria live in extreme poverty. The 2022 Multidimensional Poverty Index Survey revealed that 63% of people in Nigeria (133 million people) were multidimensionally poor and cooked using dung and wood rather than more environmentally friendly energy (Sasu, 2023). High levels of inequality, corruption, and unemployment in Nigeria are some of the problems that hinder the transformation of economic growth and significant poverty alleviation (Aderounmu et al., 2021; Olasode et al., 2022). High deprivation is also seen nationally in sanitation, food insecurity, housing, and time to access health services. Compliance with WHO guidelines regarding the minimum number of ANC contacts in Nigeria remains poor. About 25% of women in Nigeria have no ANC contact (Fagbamigbe, Olaseinde & Setlhare, 2021). The percentage of women in Nigeria who are considered to have no financial, partial financial, and complete financial autonomy is 63.1%, 32.0%, and 4.9% respectively (Ilori et al., 2022). The overall prevalence of women of childbearing age in Nigeria who experience delays in ANC visits is 74.8%. The majority of insufficient ANC visits was 46.7% (El-Khatib et al., 2020). The main reasons for the use of non-ANC among women in the reproductive age group in Oshogbo, Southwest Nigeria, are the high cost of treatment, long waiting times at clinics, long distances to clinics, and unsatisfactory service quality (Idowu et al., 2022). The study examined the socioeconomic differences in completing ANC in Nigeria according to the background.

2. RESEARCH METHOD

This research is a type of secondary data research that uses data from the 2018 Nigerian Demographic and Health Survey. This data was analyzed to examine socio-economic differences in completing ANC in Nigeria. The research analyzed secondary data from the 2018 Nigeria Demographic and Health Survey (NDHS). The national survey is carried out by the Federal Ministry of Health (FMoH) in partnership with the National Population Commission (NPC) and the National Bureau of Statistics (NBS). The data was aggregated utilizing interviews with household and individual instruments using multistage and stratified random samples, and the survey was conducted between August 14 - December 29, 2018 (National Population Commission (NPC) [Nigeria] and ICF, 2019).

Inner City Fund (ICF) gives financial support and technical help for nationwide demographic and health surveys through The DHS Program, supported by the United States Agency for International Development (USAID). Other institutions and organizations that contributed to the study's success through technical or financial assistance included the Global Fund, the Bill and Melinda Gates Foundation (BMGF), the United Nations Population Fund (UNFPA), and the World Health Organization (WHO) (National Population Commission (NPC) [Nigeria] and ICF, 2019).

The 2018 Nigeria Demographic and Health Survey (NDHS) employed a stratified, two-stage cluster sampling design to ensure national representativeness. The sampling frame was based on the 2006 National Population and Housing Census (NPHC). In the first stage, 1,400 enumeration areas (EAs) were selected with probability proportional to size, stratified by urban and rural areas across Nigeria's 36 states and the Federal Capital Territory (FCT). In the second stage, a fixed number of 30 households were systematically selected from each EA, resulting in a total sample size of approximately 42,000 households (National Population Commission (NPC) [Nigeria] and ICF, 2019). This sampling methodology was designed to provide reliable estimates at the national, zonal, and state levels, as well as for urban and rural areas. For more detailed information on the sampling procedures, you can refer to the official 2018 NDHS report (National Population Commission (NPC) [Nigeria] and ICF, 2019).

The study utilized secondary data from the Nigerian Demographic and Health Survey (NDHS). Specifically, it included women aged 15 to 49 years who had given birth within five years before the survey. The NDHS data were collected through cross-sectional surveys, which

are part of a nationally representative sample, gathering information on sociodemographic characteristics and maternal health practices. These data are available for public. The cross-sectional study's weighted sample contained 21,792 respondents.

The study used the completed ANC as an outcome variable; furthermore, the study refer to the 2016 WHO recommendations for ANC; the suggested minimum number of ANC contacts is eight. Nigeria has used the WHO standard, namely a minimum of eight ANC visits during pregnancy (World Health Organizaton, 2016). The research split the completed ANC into no (uncompleted) and yes (completed).

The study employed socioeconomic status as an exposure variable. The study utilized the wealth quintile of a household's possessions to determine its socioeconomic level. The number and variety of controls, such as televisions, bicycles, or vehicles, and dwelling elements, such as access to drinking water, restroom facilities, and the materials used to construct the first floor, were used to grade households. In the study, the score was computed using principal component analysis. The five categories representing 20% of the population were divided into national wealth quintiles by averaging the household scores for each household member (Wulandari et al., 2019; Wulandari et al., 2022). The study split socioeconomic status into the poorest, poorer, middle, richer, and richest according to their socioeconomic level.

The study classified socioeconomic status into five categories: the poorest (those living below the poverty line with minimal access to resources), poorer (those slightly above the poverty line but with limited access to education and health), middle (households with average income and moderate access to services), richer (households with higher income and better living standards), and the richest (those with the highest income, access to premium services, and higher education levels). These classifications align with standards like those used by the World Bank for income segmentation and development studies (Fagbamigbe et al., 2021).

The study looked at seven control variables: residence type, age group, religion, marital status, education level, employment status, and parity. There are two types of residence: urban and rural. The age groups in the study were 15-19, 20-24, 25-29, 30-34, 35-39, 40-45, and 45-49. Religions include Catholicism, other Christian denominations, Islam, traditionalists, and others. Meanwhile, marital status is divided into three categories: never married, married, and divorced/widowed. Education level, on the other hand, covers no education, primary, secondary, and higher education. The study classified employment as either jobless or employed. Furthermore, parity was defined as the number of live births. Parity is divided into primiparous (one), multiparous (two to four), and grand multiparous (four or more).

The chi-squared test was used to do a bivariate analysis at the start of the investigation. The collinearity test was utilized in the second inquiry phase to determine no significant relationship between the independent variables. We completed the method with a binary logistic regression test. The adjusted odds ratios (AOR) for the study were provided with 95% confidence intervals (CI). In addition, we used IBM SPSS 26 for statistical analysis. The significance standard is $p < 0.05$.

3. RESULTS AND DISCUSSION

Table 1. Characteristics of research variables socioeconomic factors in completing ANC.

Demographic Characteristics		**f**	**%**
Completed Antenatal Care	No	17.368	79.7
	Yes	4.424	20.3
Socioeconomic	Poorest	5.025	23.1
	Poorer	4.905	22.5
	Middle	4.586	21.0
	Richer	4.025	18.5
	Richest	3.251	14.9
Residence	Urban	7.710	35.4

Demographic Characteristics		f	%
	Rural	14.082	64.6
Age group	15-19	1.193	5.5
	20 - 24	4.206	19.3
	25 - 29	5.617	25.8
	30 - 34	4.650	21.4
	35 - 39	3.622	16.6
	40 - 44	1.774	8.1
	45-49	710	3.3
Religion	Catholic	1.892	8.7
	Other Cristian	7.037	32.3
	Islam	12.687	58.2
	Traditionalist	72	0.3
	Other	104	0.5
Marital status	Never Married	605	2.8
	Married	20.419	93.7
	Divorced/Widowed	768	3.5
Education Level	No Education	9.527	43.7
	Primary	3.410	15.6
	Secondary	7.064	32.4
	Higher	1.791	8.2
Employment status	Unemployed	6.977	32.0
	Employed	14.815	68.0
Parity	Primiparous	3.715	17.0
	Multiparous	10.011	45.9
	Grand Multiparous	8.066	37.0

Table 1 explains that the majority of respondents have implemented ANC completely. The largest percentage according to socio-economic status is in the poorest group. Most of the respondents live in rural areas. Based on age, the largest group is in the 25- 29 year age range. More than half of the respondents are Muslim. Almost all respondents are married. Based on education level, the largest group is no school. More than half of the respondents are employed. The largest group based on parity status of respondents is the multiparous group.

Table 2. The results of bivariate analysis relationship between socioeconomic and completing ANC (n=21.792).

Demographic Characteristics		Socioeconomic					p-value
		Poorest (n=5.025)	Poore (n=4.905)	Middle (n=4.586)	Richer (n=4.025)	Richest (n=3251)	
Completed Antenatal Care	No	95.8%	92.0%	81.9%	67.3%	47.5%	0.000
	Yes	4.2%	8.0%	18.1%	32.7%	52.5%	
Residence	Urban	8.2%	14.6%	38.0%	67.3%	83.4%	0.000
	Rural	91.8%	85.4%	62.0%	32.7%	16.6%	
Age group	15-19	7.7%	8.0%	6.0%	3.6%	1.1%	0.000
	20 - 24	21.7%	23.1%	20.6%	18.2%	10.7%	
	25 - 29	24.0%	24.9%	26.4%	28.6%	26.2%	
	30 - 34	18.5%	19.2%	20.6%	22.7%	29.7%	
	35 - 39	15.3%	13.9%	15.8%	16.8%	21.8%	

Demographic Characteristics		Socioeconomic					p-value
		Poorest (n=5.025)	Poore (n=4.905)	Middle (n=4.586)	Richer (n=4.025)	Richest (n=3251)	
	40 - 44	8.4%	7.7%	7.6%	7.0%	8.5%	
	45-49	4.4%	3.2%	3.0%	3.1%	2.0%	
Religion	Catholic	4.6%	6.3%	9.0%	10.5%	13.3%	0.000
	Other Cristian	11.0%	19.6%	31.6%	40.6%	51.1%	
	Islam	84.0%	73.2%	58.9%	48.4%	35.1%	
	Traditionalist	0.4%	0.8%	0.3%	0.1%	0.1%	
	other	0.0%	0.1%	0.2%	0.3%	0.4%	
Marital status	Never Married	1.2%	2.2%	2.9%	3.1%	2.5%	0.000
	Married	96.2%	94.4%	92.9%	92.6%	94.6%	
	Divorced/Widowed	2.6%	3.4%	4.2%	4.3%	2.9%	
Education Level	No Education	83.5%	65.8%	39.0%	17.1%	4.5%	0.000
	Primary	10.3%	17.2%	21.8%	17.2%	7.9%	
	Secondary	6.1%	16.3%	35.7%	56.9%	51.7%	
	Higher	0.2%	0.7%	3.5%	8.8%	35.8%	
Employment status	Unemployed	42.0%	35.7%	28.4%	27.1%	22.1%	0.000
	Employed	58.0%	64.3%	71.6%	72.9%	77.9%	
Parity	Primiparous	13.6%	16.0%	16.4%	19.3%	21.6%	0.000
	Multiparous	38.4%	41.8%	44.8%	49.2%	59.1%	
	Grand Multiparous	48.0%	42.2%	38.8%	31.4%	19.3%	

Table 2 shows that the results indicated that 21.6% of Nigerians completed ANC. Table 1 displays the bivariate analysis results. Women who did not complete ANC dominated the poorest group. Regarding residence type, women in rural areas in Nigeria dominated the poorest group. Based on age group, women aged 25–29 had the highest proportion in the poorest group.

Regarding religion, Table 1 shows that Muslim women (Islam) dominated the poorest group in Nigeria. In terms of marital status, married women dominated all socioeconomic levels. Furthermore, based on education level, women without education dominated the poorest group. Table 1 also showed that employed women had a higher proportion in all socioeconomic groups. Conversely, grand multiparous women had the highest proportion in the poorest group regarding parity.

A collinearity test was incorporated in the second stage of the investigation. The test results demonstrate that the independent variables have little to no association. The tolerance value for each factor is greater than or equal to 0.10. Furthermore, each variable's variance inflation factor is smaller than 10.00. The results show that the regression model is not multicollinear.

Table 2 informs the binary logistic regression results of the completed ANC in Nigeria. Based on socioeconomic status, the poorer are 1.316 times more likely than the most impoverished to perform completed ANC (AOR 1.316; 95% CI 1.316-1.317). The middle is 1.994 times more likely to achieve completed ANC than the poorest (AOR 1.994; 95% CI 1.993-1.994). Meanwhile, the richer is 2.808 times more likely than the poorest to achieve completed ANC (AOR 2.808; 95% CI 2.807-2.808). Moreover, the richest are 4.112 times more likely to perform completed ANC than the poorest in Nigeria.

Furthermore, Table 2 informs seven control variables significantly related to completed ANC in Nigeria. Women in urban areas are 1.832 times more likely to achieve completed ANC

than those in rural areas (AOR 1.832; 95% CI 1.831-1.832). Regarding age groups, all groups are more likely than 15-19 to perform completed ANC. According to religion, other Christians are 1.381 times more likely than Catholics (AOR 1.381; 95% CI 1.381-1.382); conversely, other religions are less likely than Catholics to achieve completed ANC.

Table 3. The results of binary logistic regression factor socioeconomic and completing ANC (n=21,792).

Variables	Completed Antenatal Care			
	p-value	AOR	95% Confidence Interval	
			Lower Bound	Upper Bound
Socioeconomic				
Poorest	-	-	-	-
Poorer	0.000	1.316	1.316	1.317
Middle	0.000	1.994	1.993	1.994
Richer	0.000	2.808	2.807	2.808
Richest	0.000	4.112	4.112	4.113
Residence				
Urban	0.000	1.831	1.831	1.832
Rural	-	-	-	-
Age				
15 – 19	-	-	-	-
20 – 24	0.000	1.184	1.184	1.184
25 – 29	0.000	1.436	1.435	1.436
30 – 34	0.000	1.878	1.877	1.878
35 – 39	0.000	2.173	2.173	2.174
40 – 44	0.000	2.554	2.554	2.555
45 – 49	0.000	2.015	2.014	2.016
Religion				
Catholic	-	-	-	-
Other Cristian	0.000	1.381	1.381	1.382
Islam	0.000	0.638	0.638	0.639
Traditionalist	0.000	0.471	0.470	0.471
Other	0.000	0.111	0.111	0.112
Marital				
Never married	-	-	-	-
Married	0.000	1.039	1.039	1.040
Divorced/Widowed	0.000	0.814	0.814	0.815
Education				
No education	-	-	-	-
Primary	0.000	2.579	2.579	2.580
Secondary	0.000	3.080	3.080	3.081
Higher	0.000	3.740	3.739	3.740
Employment				
Unemployed	-	-	-	-
Employed	0.000	1.687	1.686	1.687

Variables	Completed Antenatal Care			
	p-value	AOR	95% Confidence Interval	
			Lower Bound	Upper Bound
Parity				
Primiparous	0.000	2.249	2.249	2.250
Multiparous	0.000	1.686	1.686	1.687
Grand multiparous	-	-	-	-

AOR=adjusted odds ratio

Table 2 indicates, based on marital status, married women are 1.039 times more likely than never married to achieve completed ANC (AOR 1.039; 95% CI 1.039-1.040). Meanwhile, divorced/widowed women are 0.814 less likely to perform completed ANC than never married (AOR 0.814; 95% CI 0.814-0.815). Moreover, regarding education level, the higher the education level, the higher the possibility to perform completed ANC in Nigeria.

According to employment status, Table 2 indicates that employed women are 1.687 times more likely than unemployed women to achieve completed ANC (AOR 1.687; 95% CI 1.686-1.687). Furthermore, based on parity, the more children a woman has born alive in Nigeria, the smaller the probability of performing completed ANC.

DISCUSSION

Proportion of Completed ANC in Nigeria

The study found a relationship between socioeconomic status and the completion of at least eight ANC contacts in Nigeria. Specifically, the results revealed a gradual increase in complete ANC contacts among women from the poorest to the wealthiest households. In poorer, middle, more prosperous, and most affluent families, women had a 1.316, 1.994, 2.808 and 4.112times higher probability of completing ANC visits than their counterparts in the poorest families. Previous studies in different settings have reported similar findings in which women with higher socioeconomic status were more likely to have eight or more contacts with ANC and four or more contacts with ANC than those with lower socioeconomic status (Ekholuenetale et al., 2020; Nagdev et al., 2023; Nwosu & Ataguba, 2019; Sharma et al., 2023). A binary logistic regression analysis using data from the 2018 NDHS revealed significant socioeconomic disparities associated with ANC visits in the country. The study found that the wealth of households, the place of residence, age, religion, marital status, level of education and employment status were statistically significantly associated with the visits to the ANC.

Wealth of households Status and ANC Completion

Household wealth had a positive association with the frequency of ANC visits. This study indicated that women of higher-wealth households were likelier to perform a complete ANC than those of lower-wealth homes. Similar findings were reported among studies conducted in Indonesia, Bangladesh, and Nigeria (Denny et al., 2022; Pervin et al., 2021; Sui et al., 2021). The situation could be because women from wealthier families may be more likely to afford the additional expenses associated with attending ANC visits (Fagbamigbe et al., 2021).

These expenses include transportation to healthcare facilities and the cost of medications, which has been highlighted in studies carried out in sub-Saharan Africa and Pakistan (Noh et al., 2019; Sui et al., 2021). Women in wealthier households attend more ANC visits due to better knowledge and increased exposure to the media, which is often related to higher levels of education compared to women in poorer households (Gebeyehu et al., 2022).

The place of residence and ANC Completion

Regarding the place of residence, women in urban areas had a higher chance of achieving complete ANC visits than those in rural areas. This result was consistent with other studies

conducted in developing countries (Odusina & Oladele, 2023; Wulandari, Laksono, & Rohmah, 2021). The condition could be attributed to the availability of adequate ANC services concentrated in urban areas; therefore, women in urban areas have better access to healthcare services than women in rural areas (Wulandari, Laksono, & Rohmah, 2021). In addition, women living in urban areas are more likely to have a higher level of education, making them more aware of the importance of completing ANC visits (Gebeyehu et al., 2022). A previous study in Nigeria mentioned that women in urban areas have better access to health information, which influences their decision-making ability to seek ANC services, as opposed to women in rural areas (Odusina & Oladele, 2023).

The demographic characteristics and ANC Completion

Regarding demographic characteristics, the study found age, religion, and marital status were associated with completed ANC in Nigeria. The situation implies a correlation exists between a woman's age and her likelihood of seeking ANC services in Nigeria. The study mentioned above indicated that younger women, namely teenagers, may encounter obstacles while attempting to get ANC. These barriers can be attributed to insufficient awareness, social stigma, and economic limitations, resulting in a decreased likelihood of completing ANC (Olayinka, Joel & Bukola, 2012). When comparing older women, they may be more likely to get and finish ANC due to their increased levels of experience, expertise, and social support (Nnachebe et al., 2023; Olayinka, Joel & Bukola, 2012; Olorunsaiye, Degge, & Lengmang, 2018). Older women may possess a heightened awareness regarding the health concerns associated with childbearing (Ilori et al., 2022; Olorunsaiye, Degge, & Lengmang, 2018). Religion substantially influences the Nigerian community, potentially influencing healthcare decision-making processes. Particular religious views can potentially impact a woman's inclination to pursue ANC. For instance, some religious factions may possess distinct perspectives toward healthcare, pregnancy,

The Parity Status and ANC Completion

Furthermore, based on parity, the more children a woman has born alive in Nigeria, the smaller the probability of performing completed ANC. The condition means that the more children a woman gives birth to in Nigeria, the less likely it is to complete the ANC. The previous study's findings indicate that primigravida women tend to possess a heightened degree of consciousness concerning the significance of ANC. Consequently, they are more inclined to pursue and successfully undergo ANC services. This inclination can be attributed to these women being commonly provided with guidance and education on ANC throughout their initial pregnancy (Okedo-Alex et al., 2019; Zhang et al., 2022). In contrast, women who have had many pregnancies may underestimate the necessity of ANC due to their prior experiences, or they may possess a belief that their previous experiences have equipped them with sufficient knowledge and skills to manage their current pregnancy without seeking ANC (Kumbeni & Apanga, 2021). Individuals in this context may also encounter temporal and resource limitations due to their numerous obligations.

Based on the finding that wealthier women in Nigeria are more likely to complete ANC (Antenatal Care), the clinical implications are very significant in efforts to increase ANC access and completion among women of lower socioeconomic status. These findings indicate the need for policies and interventions that focus on reducing socioeconomic inequalities in maternal health services. Intervention programs that are more affordable and accessible to groups of women with lower socioeconomic status could help increase overall ANC completion rates. Additionally, community-based support and economic empowerment for poor women can be key steps to ensure that more women can access and complete ANC, which in turn can improve maternal and infant health.

The study's best strength is its assessment of massive amounts of data to deliver insights nationally in Nigeria. The study's shortcoming is that it solely focuses on users of maternal health services. Several more research show that the provider side influences ANC visit performance. The situation includes pregnant women's reactions to service innovation and midwives' views as providers of maternal services.

4. CONCLUSION

Based on the results, the study concluded socioeconomic disparities existed in completed ANC in Nigeria. The wealthier the women in Nigeria, the likelier to achieve completed ANC. The results of this study imply that the Nigerian government has a heavy burden to improve the attainment of completed ANC by pregnant women to promote healthy pregnancy and childbirth, thereby reducing the high maternal mortality ratio in the country. With more than half of Nigeria's population being multidimensionally poor, achieving the target of a minimum of eight ANC contacts will be daunting for the Nigerian government. The results of this study also have implications for the increasing role of socioeconomic capabilities in completing ANC in Nigeria. The recommendation from this study is that the Nigerian government needs to increase the involvement of all stakeholders in improving ANC achievements. The government must minimize socioeconomic barriers to accessing ANC services by making access closer, assigning all ANC financing to the state, and improving the quality of ANC services.

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