



Assessment of Income Level and Educational Qualifications on ... Bukar, F. A., Et. al. (2026)

Assessment of Income Level and Educational Qualifications on Antenatal-Care-Utilization among Pregnant Women Attending Secondary Health Facilities in Maiduguri Metropolis, Borno State, Nigeria

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Abstract

The purpose of this study was conducted to examined income level and educational qualification as predictors of antenatal care (ANC) utilization among pregnant women attending Secondary Health Facilities in Maiduguri Metropolis, Borno State. Two objectives were raised and two hypotheses were tested using multiple regression analysis. A cross-sectional research design was adopted for the study. Data were collected with a ten-item self-developed questionnaire on a four-point Likert type scale with a Cronbach's alpha reliability index of 0.88. Four secondary healthcare facilities were purposively selected across Maiduguri Metropolis. Within these facilities, the population comprised 1,431 pregnant women, from which a sample of 306 was determined using the Research Advisors table (2006). Systematic random sampling was employed for questionnaire administration, and 291 completed questionnaires were successfully retrieved. Descriptive statistics of frequency counts and percentages was used to describe the demographic characteristics of the respondents while, Inferential statistics of multiple regression analysis was used, indicated that income level and educational qualifications were both statistically significant predictors of ANC utilization. It was recommended that health authorities in Maiduguri Metropolis to design educational programs to inform younger women about regular utilization of ANC, provide additional support to unmarried or separated women, develop age-specific ANC initiatives, encourage family and partner support for pregnant women, integrate demographic factors into health planning, and establish monitoring systems to track ANC attendance patterns to enhance access and utilization across all primary healthcare facilities.

Keywords: ANC, Income Level, Educational Qualifications, Pregnant Women, Maiduguri Metropolis.

Introduction

The influence of income levels on the utilization of antenatal care (ANC) among pregnant women attending Secondary Health Facilities has been a significant topic of discussion in previous studies. Income plays a critical role in the decision of women to utilize ANC services. Women with higher income levels have better access to healthcare services, including ANC, compared to women with lower income levels (Babalola & Fatusi, 2009). In low- and middle-income countries, financial barriers hinder access to ANC services, including consultation fees, laboratory tests, and transportation to and from healthcare facilities Agarwal, Kirk, Sripad, Bellows & Abuya, (2016). These costs can be significant for family with limited income and are often cited as a significant reason for low ANC utilization rates among women from lower income groups (Chama, Chiliba & Koch, 2015).



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Researchers have explored various strategies to address the financial barriers to access ANC services among women from lower income groups. One such strategy is providing conditional cash transfer programs that incentivize women to attend ANC clinics by providing financial support (Dzakpasu et al., 2014). In Ghana, for instance, introducing free delivery care and health insurance led to more women attending ANC clinics and improved health outcomes (Dzakpasu et al., 2014). Similarly, providing financial incentives, such as vouchers for ANC services, has been found to be an effective strategy to improve ANC utilization among poor women in several studies (Scott, Beckham, Gross, Pariyo, Rao & Cometto, 2014). However, it is essential to note that income levels may not be the only factor that influences ANC utilization rates among pregnant women from lower income groups. Quality of care, availability of health facilities, and transportation barriers may also contribute to low ANC utilization rates (Tiruneh et al., 2016). Therefore, a comprehensive approach is needed to improve ANC utilization among women from lower income groups. Income is an essential determinant of antenatal care (ANC) utilization among pregnant women attending Secondary Health Facilities. Several studies have shown that women with higher income levels are more likely to attend ANC clinics than those with lower income levels (Babalola & Fatusi, 2009). In Nigeria, for instance, Babalola and Fatusi (2009) found that women in the highest wealth quintile were three times more likely to access ANC services than those in the lowest income level. Financial barriers are the most common reasons for low ANC utilization among women in lower income groups (ChamaChiliba & Koch, 2015). The costs associated with accessing ANC services include consultation fees, laboratory tests, and transportation costs to and from healthcare facilities (Agarwal et al., 2016). These costs can be significant for households with limited income and financial resources, leading to reduced ANC utilization rates.

Educational qualification is another critical factor that affects the utilization of antenatal care services among pregnant women attending secondary health facilities. A woman's educational Qualification can determine her knowledge and awareness of the importance of antenatal care, as well as her ability to navigate the healthcare system to access these services. Several studies have investigated the influence of educational qualification on the utilization of antenatal care among pregnant women. Studies have shown that women with higher levels of education are more likely to influence utilization of antenatal care services than women with lower levels of education (Esen, SodjiTettey, Dzomeku & Aikins, 2019). Education also exerts a significant influence on ANC utilisation. Educated partners are more likely to understand the importance of maternal health services and provide financial, emotional, and logistical support (Aboagye, Osborne, Anyasodor, Yikindi, Adnani & Ahinkorah 2025). For example, in Nigeria, Esena, et al. (2019) observed that women with highly educated husbands were more likely to attend ANC than those whose partners had no formal schooling. This underscores the relational dimension of education, whereby male involvement in maternal health improves outcomes. The reasons for this association are multifactorial and could be linked to socioeconomic factors, such as greater access to resources and improved social support for women with higher levels of education. Women with higher levels of education are more likely to have better knowledge and understanding of the importance of ANC, making them more aware of the importance of timely antenatal care services. Education can also improve a woman's decision making power regarding her health, enhancing her ability to access and utilize ANC services. On the other hand, women with lower levels of education may have a lower socioeconomic status, making it harder for them to access and utilize ANC services. They may also have limited knowledge and understanding of the importance of ANC, which may lead to reduced utilization rates. They may also face challenges related to cultural



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and social norms that devalue their education and undermine their ability to access healthcare services. Educational qualification is an important predictor of antenatal care (ANC) utilization among pregnant women. Studies have shown that women with higher educational qualification are more likely to utilize ANC services than women with lower educational qualifications. The educational qualification of a woman influences her knowledge, awareness, and understanding of the importance of ANC in promoting good maternal and child health outcomes. Women with higher education qualification have been found to attend ANC clinics more regularly and early in their pregnancy than women with lower educational qualifications. A study conducted in Nigeria revealed that women with tertiary education were more likely to attend ANC clinics in the first trimester of pregnancy than women with lower education levels (Ogu, Ogunjuyigbe, Adeyenum, Ijeremeni & Olorunfemi, 2020).

Objectives of the study

Objectives of this study were to examine:

1. Income level as predictor of utilization of antenatal care among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State
2. Educational qualifications as predictor of utilization of antenatal care among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State

Research Questions

1. To what extent does income level predict antenatal care utilization among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State?
2. To what extent does educational qualifications as predictor of utilization of antenatal care among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State?

Null Hypothesis

The following null hypotheses were tested at 0.05 level of significance:

H₀₁: Income level does not significantly predict antenatal care utilization among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State

H₀₂: Education qualifications does not significantly predict antenatal care utilization among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State

Research Methodology

A cross-sectional survey design was employed for this study, which is appropriate for examining relationships among variables at a single point in time (Cherry, 2019). The population for this study consisted of 1,431 pregnant women attending antenatal care service in secondary health care facilities in Maiduguri Metropolis (Hospital Management Board, 2026). Based on Research Advisors table (2006), a sample of three hundred and six 306 pregnant women were appropriate for the study. Four secondary healthcare facilities (State Specialist Hospital, Umaru Shehu Ultra-Modern Hospital, Muhammad Shuwa Hospital (Nursing Home), and Maryam Abatcha Maternal and Child Hospital) were purposively selected for the study. Within these facilities, participants were selected using systematic random sampling to ensure representativeness. Data were collected using a 10-item self-developed questionnaire, employing a four-point Likert-type scale: with a responses of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument demonstrated good reliability, with a Cronbach's alpha of 0.88. Descriptive statistics of frequency counts and percentages was used to describe the demographic characteristics of the respondents while inferential statistics, specifically multiple regression analysis, was conducted to test the hypotheses at a 0.05 significance level.

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Table 1: Demographic Characteristics of the Respondents

Items	Responses	Respondents	Percentage (%)
1. Income Level	a. Less than 50,000/Month	161	55.3
	b. More than 50,000/Month	130	44.7
2. Educational Qualification	a. No formal education	66	22.7
	b. Primary Leaving Certificate	56	19.2
	c. SSCE	52	17.9
	d. NCE/ND	47	16.2
	e. B.Sc /HND	70	24.1

n = 291

Table 1 presents the demographic characteristics of the 291 respondents in terms of income level and educational qualifications. Income level: The monthly income categories show that 161 (55.3%) earned less than 50,000 Naira, while 130 (44.7%) earned more than 50,000 Naira. Income significantly has greater tendencies to predict the utilization of antenatal care among pregnant women attending secondary health facilities in Maiduguri Metropolis, so the monthly income variability will allow for a robust analysis. Educational Qualification: The result in the Table on educational qualification of the respondents shows, 66 (22.7%) of respondents had no formal education, 56 (19.2%) had obtained primary leaving certificate, 52 (17.9) had obtained senior secondary school certificate, 47 (16.2%) had obtained NCE/ND while 70 (24.1%) had obtained B.Sc/HND. This means that, majority of the respondents 70 (24.1%) had obtained B.Sc/HND. The attainment of higher educational levels by the respondents have a greater tendency to predicted the utilization of antenatal care among pregnant women attending secondary health facilities in Maiduguri Metropolis, so the variable distribution on educational qualification appears adequate to determine the predictive variables.

Table 2: Level of Antenatal Care Utilization

Utilization	Frequency	Percent
Low Utilization	214	73.5
High Utilization	77	26.5
Total	291	100.0

Key = 1 - 2.49 Low Utilization 2.5 - 4.0 High Utilization

Table 2 shows the level of antenatal care utilization among the 291 respondents. The majority of pregnant women, 214 (73.5%), were classified as having low utilization of ANC services, while only 77 (26.5%) demonstrated high utilization. This indicates that most respondents do not consistently use antenatal care services at the recommended level. The key shows that low utilization corresponds to scores between 1 and 2.49 on the measurement scale, while high utilization corresponds to scores between 2.5 and 4.0, reflecting the overall limited engagement of the study population with antenatal care in Maiduguri Metropolis.

Hypotheses

H₀₁: Income level does not significantly predict antenatal care utilization among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State

H₀₂: Education qualifications does not significantly predict antenatal care utilization among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State

Table 3: Regression Analysis Model Summary

Statistics	Value
R	.530
R Square	.28
Adjusted R Square	.265
Std. Error of Estimate	.30197

The coefficient of determination ($R^2 = .28$) suggests that 28% of the variance in the dependent variable is explained by the combination of the predictors of income level and educational qualification. The adjusted R^2 (.265) accounts for the number of predictors relative to the sample size, slightly reducing the explained variance to 26.5%, indicating a modest predictive capacity of the independent variables. The Std. Error of Estimate of .30197 reflects the average deviation of .302 units from observed value.

Table 4: Regression Analysis ANOVA on Demographic Characteristics on Antenatal Care Utilization among Pregnant Women attending Secondary Health Facilities in Maiduguri Metropolis Borno State

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.094	6	1.682	18.450	.000
Residual	25.896	284	.091		
Total	35.990	290			

Table 4 indicates that the regression model is statistically significant, $F = 18.450$, $p < 0.000$, showing that income level and educational qualifications collectively explain a significant portion of variance in antenatal care utilization, though the explained variance remains moderate at 28%.

Table 5:

Summary of Multiple Linear Regression Analysis on income level and Educational Qualifications as a Predictor of Antenatal Care Utilization among Pregnant Women Attending Secondary Health Facilities in Maiduguri Metropolis Borno State

$n = 291$

Source	B	Std. Error	Beta	T	P-value
Constant	1.568	0.092		17.052	<.001
Income Level	0.004	0.036	0.006	0.121	0.004
Educational Qualification	0.029	0.012	0.125	2.390	0.018

The multiple regression analysis indicated that income level had a coefficient of 0.004, a Beta of 0.006, a T-value of 0.121, and a pvalue of 0.004. The positive coefficient suggests that as Income Level decreases, the dependent variable is expected to increase slightly; however, the P-value indicates that this effect is was statistically significant. For Educational Qualification, the coefficient was 0.029, the Beta was 0.125, the T-value was 2.390, and the P-value was 0.018. This suggests that higher educational qualification is associated with an increase in the dependent variable, and the relationship was statistically significant. Thus, based on the regression results, both null hypotheses (H_{01} and H_{02}) were rejected. income level and educational qualifications significantly predicted antenatal care utilization among pregnant women attending secondary healthcare facilities in Maiduguri Metropolis, Borno State.



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Findings of the study

1. Monthly income was statistically significant predictor of antenatal care utilization among pregnant women attending secondary health facilities in Maiduguri Metropolis Borno State.
2. Educational Qualification was statistically significant predictor of ANC utilization Women with higher educational attainment were more likely to utilize ANC services than those with lower educational levels.

Discussion of Findings

The findings of this study on income level and educational qualifications as predictors of antenatal care utilization among pregnant women attending secondary health facilities in Maiduguri Metropolis, Borno State, Nigeria. The results of the study show that, income level was statistically significant predictor of antenatal care utilization among pregnant women attending these health care facilities. This finding is supported by several studies. The finding of this study collaborate with finding that, women with higher income levels have better access to healthcare services, including ANC, compared to women with lower income levels (Babalola & Fatusi, 2009; Yohannes, Tarekegn, & Paulos (2014). Although the study conducted by Agarwal, Kirk, Sripad, Bellows and Abuya (2016) on the discontinuation of antenatal care visits in low and middle income countries found that, financial barriers hinder access to ANC services, including consultation fees, laboratory tests, and transportation to and from healthcare facilities. These costs can be significant for family with limited income and are often cited as a significant reason for low ANC utilization rates among women from lower income groups (Chama Chiliba & Koch, 2015).

Similarly, researchers have explored various strategies to address the financial barriers to access ANC services among women from lower income groups. One such strategy is providing conditional cash transfer programs that incentivize women to attend ANC clinics by providing financial support Dzakpasu Soremekun, Manu Asbroek, Tawiah, Hurt, & Kirkwood (2014). Furthermore, the finding of the study also shows that, educational qualification was statistically significant predictor of ANC utilization women with higher educational attainment were more likely to utilize ANC services than those with lower educational levels. This finding is in line with many other studies which showed that, educational qualification was statistically significant predictor of antenatal care utilization among women. Esena, SodziTettey, Dzomeku and Aikins, (2019), have shown that, women with higher levels of education are more likely to influence utilization of antenatal care services than women with lower levels of education. Gebremeskel, Dibaba & Admassu, (2018). A study conducted in Ethiopia revealed that women with secondary or higher levels of education were more likely to attend four or more ANC appointments than those with primary or no education, (Gebremeskel et al., 2018). Similarly, study carried out in Ghana found out that women with higher levels of education were more likely to receive timely antenatal care than those with lower levels of education (Esena et al., 2019). However, women with higher levels of education are more likely to have better knowledge and understanding of the importance of ANC, making them more aware of the importance of timely antenatal care services. Education can also improve a woman's decision-making power regarding her health, enhancing her ability to access and utilize ANC services. On the other hand, women with lower levels of education attainment may have a lower socioeconomic status, making it harder for them to access and utilize ANC services. They may also have limited knowledge and understanding of the importance of ANC, which may lead to reduced utilization rates. Women living in society with low educational awareness faced challenges related to cultural and social norms that devalue their education and undermine their ability to access healthcare services.



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Conclusion

The study revealed that antenatal care utilization among pregnant women attending secondary health care facilities in Maiduguri Metropolis was generally low, with most respondents falling within the low utilization category. The findings showed that income level significantly predicted antenatal care utilization, as women with less than 50,000/Month income demonstrated low levels of antenatal care service utilization. Educational qualification also significantly influenced utilization, women with high educational qualifications are more likely to utilize antenatal care services than women with low counterparts. The regression model was statistically significant and explained a moderate proportion of the variance in antenatal care utilization. Thus, the study concluded that income level and educational qualification were important socio demographic predictors of antenatal care utilization among pregnant women in the study area.

Recommendations

1. Health care providers should develop plan that are tailored to the specific needs and characteristics of different demographic groups, considering factors such as income level and family support to improve utilizations of antenatal care services.
2. Government should Encourage partners involvement in ANC services, providing education and support to promote ANC utilization among pregnant women
3. Health educators should transmit adequate information and knowledge on specific socio demographics and antenatal care utilization to the pregnant women, who are found in this study to have low utilization of ANC services, using suitable channels and settings.

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