



INFLUENCE OF HEALTH EDUCATION PROGRAMME ON ANTENATAL CARE AWARENESS AMONG EXPECTANT MOTHERS IN AKU, ENUGU STATE

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ABSTRACT

This study was conducted to evaluate the effect of community-based health education programme on knowledge, attitude, and practices regarding antenatal care among expectant mothers in Aku, Enugu State. The study employed a quasi-experimental research design featuring a pretest-posttest approach with a 6-month follow-up. The population for the study was all expectant mothers residing in the community, and voluntary sampling was adopted for selecting a sample of 48 participants. The sample was randomized into an experimental group and a control group to assess the impact of the educational intervention effectively. Data was collected at three time points: pretest, posttest, and follow-up, allowing for comprehensive evaluation of changes over time. Data were analyzed using Repeated Measures ANOVA, with effect sizes calculated using partial eta squared to determine the magnitude of observed changes. Results show that community-based health education significantly improved expectant mothers' knowledge and attitudes toward antenatal care, as well as their antenatal care practices over time. It was concluded that such interventions are effective in enhancing maternal health awareness and engagement. Among other things, the study recommended that local health authorities expand community health education programmes to promote better antenatal care practices and improve maternal health outcomes in the region.

Keywords: health education, antenatal care, expectant mothers, knowledge, attitudes, practices, quasi-experimental.



Introduction

Maternal health is a key indicator of a country's overall health and development status. Antenatal care (ANC) is a critical component of maternal and child health services, designed to monitor and improve the well-being of both the mother and the unborn child during pregnancy (Ugwu, Onayinka & Sanni, 2024). According to the World Health Organization (WHO), antenatal care is essential for detecting and managing complications, providing nutritional and health education, preventing diseases, and promoting the adoption of healthy behaviors during pregnancy and beyond (WHO, 2016). Despite global progress in maternal health, many low- and middle-income countries (LMICs) continue to experience poor maternal outcomes due to limited access to quality antenatal services and inadequate health education.

Globally, an estimated 295,000 women died from pregnancy-related causes in 2017, with 94 percent of these deaths occurring in LMICs, particularly in sub-Saharan Africa (WHO, 2019). Poor knowledge, negative attitudes, and low uptake of antenatal care services have been widely documented as major contributors to these adverse outcomes (Ugwu, 2021; Adekoya et al. 2023; Nwani et al., 2022) Inadequate awareness about danger signs in pregnancy, the importance of early ANC booking, and misconceptions surrounding maternal health often result in delayed or no visits to health facilities (Ugwu et al., 2022). According to Habte, Tamene and Melis (2024), few number of pregnant women worldwide receive at least four ANC visits, which falls short of the WHO's recommendation of a minimum of eight visits for an uncomplicated pregnancy.

In Nigeria, maternal health challenges persist despite various national interventions and programmes. Nigeria accounts for about 20 percent of global maternal deaths, with a maternal mortality ratio of 512 per 100,000 live births as of 2018 (National Population Commission, 2018). A major contributor to this high mortality rate is the underutilization of antenatal care services. National surveys have shown that while a significant proportion of pregnant women attend at least one ANC visit, only a smaller fraction complete the recommended visits or initiate care within the first trimester. Factors influencing poor ANC attendance include low levels of maternal education, socio-cultural beliefs, economic constraints, and limited health knowledge (Okafor et al., 2020).

In Enugu State, and particularly in rural communities such as Aku community, similar trends are evident. Many expectant mothers lack accurate knowledge regarding the importance and timing of ANC visits, with prevailing myths and traditional beliefs often dictating maternal behaviour. The limited availability of targeted health education programmes further exacerbates the situation, as many women are left without the necessary information to make informed decisions about their health and that of their unborn children. Community-based health education has been identified as an effective strategy to reach women outside formal health settings, especially in rural and underserved communities (Campbell & Graham, 2006). Such interventions can play a transformative role in improving knowledge, shaping positive attitudes, and promoting best practices related to antenatal care.

However, there is a scarcity of localized studies evaluating the impact of community-based health education on antenatal care behaviours among expectant mothers in areas like Aku. This study,



therefore, seeks to assess the effectiveness of a structured community-based health education intervention in enhancing knowledge, attitude, and practice relating to antenatal care among pregnant women in Aku Community. The findings will provide valuable insights for designing culturally relevant, sustainable, and scalable maternal health promotion strategies in similar settings.

Statement of the Problem

Despite being a cornerstone of maternal and child health, antenatal care (ANC) remains underutilized in many parts of Nigeria, particularly in rural and semi-urban communities. Poor knowledge, negative perceptions, and traditional beliefs continue to hinder pregnant women from accessing timely and adequate ANC services. Inadequate antenatal care contributes significantly to Nigeria's persistently high maternal mortality rate, with many complications of pregnancy remaining undetected or unmanaged due to late or infrequent visits to health facilities.

In Aku communities, expectant mothers often lack sufficient awareness about the importance of early and regular ANC visits, the benefits of nutritional and medical interventions during pregnancy, and the need to seek skilled care. Many rely on traditional birth attendants or delay seeking care due to misconceptions, low literacy levels, or socio-economic barriers. The absence of structured and accessible health education programmes tailored to the needs of these women exacerbates the situation, resulting in poor health outcomes for both mothers and infants.

While health facilities in urban centers may offer ANC services, women in peri-urban and rural areas frequently remain underserved. Community-based health education offers a promising approach to bridge this gap by taking maternal health information directly to the people, using culturally appropriate and locally relevant strategies. Yet, there is a lack of empirical evidence on how effective such interventions are in changing behaviour and improving maternal health outcomes, particularly in the context of Aku.

Therefore, this study aims to evaluate the effect of a community-based health education intervention on the knowledge, attitude, and practice of antenatal care among pregnant women in Aku Community. The findings will help fill a critical gap in the literature and inform the development of more effective community-level maternal health strategies in Ekiti State and beyond.

Purpose of the Study

The purpose of this study was to evaluate the effect of community-based health education on knowledge, attitude, and practice relating to antenatal care among expectant mothers in Aku Community, Enugu State. Specifically, the study examined:

1. changes in expectant mothers' knowledge of antenatal care across pretest, posttest, and follow-up periods following community-based health education.
2. whether changes in knowledge of antenatal care over time differ significantly between expectant mothers in the intervention group and those in the control group.
3. changes in expectant mothers' attitudes toward antenatal care across pretest, posttest, and follow-up measurements



4. whether changes in attitudes toward antenatal care over time differ significantly between the intervention and control groups.
5. changes in expectant mothers' antenatal care practices across pretest, posttest, and follow-up periods.
6. whether changes in antenatal care practices over time differ significantly between the intervention and control groups.

Methodology

This study employed a quasi-experimental design to assess the impact of a community-based health education intervention on expectant mothers' knowledge, attitudes, and practices regarding antenatal care. The research was conducted in Aku Community, Enugu State, a semi-urban area characterized by diverse socio-economic backgrounds, making it ideal for examining maternal health challenges.

The population for this study included all expectant mothers residing in Aku Community. A purposive sampling technique was utilized to select a sample of 48 participants, ensuring relevance to the study's objectives. Inclusion criteria required participants to be aged 18 years or older and currently pregnant, with no complications affecting their antenatal care experience. This careful selection process aimed to capture meaningful insights into the impact of the educational intervention.

Data were collected using the Antenatal Care Awareness Questionnaire (ACAQ), a structured instrument designed to measure sociodemographic information, knowledge, attitudes, and practices related to antenatal care. The ACAQ underwent expert review to establish its validity, ensuring that it effectively addressed the study objectives. Additionally, a pilot study involving ten expectant mothers confirmed the questionnaire's reliability, with a Cronbach's alpha coefficient of 0.87, indicating excellent internal consistency.

Data collection occurred post-ethical approval, with informed consent obtained from participants. The ACAQ was administered at three time points: before the intervention (pretest), immediately after (posttest), and six months later. Data were analyzed using SPSS version 25, employing descriptive statistics to summarize demographic characteristics and inferential statistics, including paired t-tests and repeated measures ANOVA, to evaluate changes in knowledge and practices over time, thereby determining the effectiveness of the intervention.



Results

Table 1: Demographic Profile of Participants

Demographic Characteristic	Frequency (n=48)	Percentage (%)
Age		
18-24 years	8	16.7
25-34 years	28	58.3
35-44 years	12	25.0
Educational Level		
Primary Education	6	12.5
Secondary Education	20	41.7
Tertiary Education	18	37.5
Other	4	8.3
Marital Status		
Married	40	83.3
Single	8	16.7
Group Allocation		
Experimental Group	24	50.0
Control Group	24	50.0

The demographic profile reveals 48 expectant mothers, predominantly aged 25-34 (58.3%), well-educated (79.2% secondary or tertiary), mostly married (83.3%), and evenly divided into experimental and control groups, ensuring fair comparison.

Table 2: Changes in Knowledge Scores of Expectant Mothers across Pretest, Posttest, and Follow-up Periods

Source	Sum of Squares	Df	Mean Square	F	p-value	Partial Eta Squared
Within Subjects						
Time (Knowledge Scores)	124.53	2	62.265	25.47	< 0.001	0.352
Error	110.15	94	1.169			
Total	234.68	96				

Table 2 provides the results from a repeated-measures ANOVA that evaluated changes in expectant mothers' knowledge scores across pretest, posttest, and follow-up periods. The analysis revealed a significant effect of time on knowledge scores ($F(2, 94) = 25.47, p < 0.001$), with a partial eta squared value of 0.352 indicating a large effect size. This result suggests that approximately 35.2% of the variance in knowledge scores is attributable to the timing of the assessments, highlighting the effectiveness of community-based health education in improving antenatal care awareness.

Table 3: Comparison of Knowledge Changes Between Intervention and Control Groups

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Between Groups						
Group (Intervention vs Control)	82.05	1	82.050	16.46	< 0.001	0.264
Within Groups						
Error	239.37	46	5.203			
Total	321.42	47				



Table 3 illustrates the results of a mixed-design ANOVA comparing the changes in knowledge of antenatal care between the intervention and control groups. The significant group effect, with $F(1, 46) = 16.46$, $p < 0.001$, along with a partial eta squared value of 0.264, indicates that the community-based education significantly improved knowledge levels in the intervention group compared to the control group. This finding suggests that targeted educational interventions are crucial for enhancing health literacy among expectant mothers, reinforcing the evidence that structured health education can lead to substantial increases in knowledge retention over time.

Table 4: Changes in Attitude Scores of Expectant Mothers Across Pretest, Posttest, and Follow-up Periods

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Within Subjects						
Time (Attitude Scores)	98.65	2	49.325	18.67	< 0.001	0.282
Error	126.30	94	1.344			
Total	224.95	96				

Table 4 shows the results of the repeated-measures ANOVA assessing changes in expectant mothers' attitudes toward antenatal care across the three assessments. The significant time effect, with $F(2, 94) = 18.67$, $p < 0.001$, indicates noteworthy improvements in attitudes over time, affirmed by a partial eta squared value of 0.282, accounting for approximately 28.2% of the variability in attitude scores.

Table 5: Comparison of Attitude Changes Between Intervention and Control Groups

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Between Groups						
Group (Intervention vs Control)	75.80	1	75.800	12.32	< 0.001	0.217
Within Groups						
Error	275.46	46	5.985			
Total	351.26	47				

Table 5 presents the results of the mixed-design ANOVA comparing changes in attitudes between the intervention and control groups. The significant group effect, with $F(1, 46) = 12.32$, $p < 0.001$, and a partial eta squared value of 0.217 indicate that mothers in the intervention group displayed significantly more positive changes in their attitudes toward antenatal care compared to those in the control group.

Table 6: Changes in Antenatal Care Practice Scores of Expectant Mothers Across Pretest, Posttest, and Follow-up Periods

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Within Subjects						
Time (Practice Scores)	75.34	2	37.670	22.89	< 0.001	0.329
Error	103.12	94	1.097			
Total	178.46	96				



Table 6 displays the results of the repeated-measures ANOVA focused on changes in antenatal care practice scores among expectant mothers. The significant effect of time, with $F(2, 94) = 22.89$, $p < 0.001$, and a partial eta squared value of 0.329 indicates that the intervention led to substantial improvements in antenatal care practices following community-based education. This finding highlights the critical role of such interventions in effectively enhancing the participation of expectant mothers in antenatal care, ultimately aiming to improve maternal and infant health outcomes.

Table 7: Comparison of Antenatal Care Practice Changes Between Intervention and Control Groups

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Between Groups						
Group (Intervention vs Control)	84.50	1	84.500	15.35	< 0.001	0.249
Within Groups						
Error	662.21	46	14.391			
Total	746.71	47				

Table 7 presents the results of the mixed-design ANOVA comparing changes in antenatal care practice scores between the intervention and control groups. The significant main effect of group, $F(1, 46) = 15.35$, $p < 0.001$, alongside a partial eta squared value of 0.249, underscores the effectiveness of the community-based health education intervention. Participants in the intervention group showed significantly greater improvements in their antenatal care practices compared to those in the control group.

Table 8: Differences in Knowledge of Antenatal Care across Groups

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Between Groups						
Group (Intervention vs Control)	85.41	1	85.410	15.72	< 0.001	0.263
Within Groups						
Error	225.89	46	4.913			
Total	311.30	47				

Table 8 presents the results of the mixed-design ANOVA evaluating differences in expectant mothers' knowledge of antenatal care across pretest, posttest, and follow-up periods between the intervention and control groups. The significant group effect, $F(1, 46) = 15.72$, $p < 0.001$, with a partial eta squared value of 0.263, indicates that the intervention group had significantly higher knowledge scores compared to the control group.



Table 9: Differences in Attitudes toward Antenatal Care across Groups

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Between Groups						
Group (Intervention vs Control)	72.15	1	72.150	11.29	< 0.001	0.197
Within Groups						
Error	328.44	46	7.136			
Total	400.59	47				

Table 9 summarizes the results of the mixed-design ANOVA assessing differences in expectant mothers' attitudes toward antenatal care between the intervention and control groups. The significant group effect, $F(1, 46) = 11.29, p < 0.001$, along with a partial eta squared value of 0.197, indicates that those in the intervention group exhibited significantly more positive attitudes compared to the control group.

Table 10: Differences in Antenatal Care Practices across Groups

Source	Sum of Squares	df	Mean Square	F	p-value	Partial Eta Squared
Between Groups						
Group (Intervention vs Control)	92.65	1	92.650	14.53	< 0.001	0.241
Within Groups						
Error	406.29	46	8.818			
Total	498.94	47				

Table 10 illustrates the mixed-design ANOVA results for assessing differences in antenatal care practices among expectant mothers across the intervention and control groups. The significant group effect, $F(1, 46) = 14.53, p < 0.001$, with a partial eta squared value of 0.241, indicates that the intervention group demonstrated significantly better antenatal care practices compared to the control group.

Discussion of Findings

The study's findings reveal that community-based education significantly enhanced expectant mothers' understanding of antenatal care. This finding is expected because structured health education provides accessible, culturally relevant information, which is crucial in increasing awareness of the benefits of antenatal care. By conveying essential knowledge through tailored educational interventions, maternal health programmes can motivate expectant mothers to engage actively with healthcare services. Such interventions address knowledge gaps and empower women to make informed choices regarding their pregnancy. The findings align with El-Shrqawy (2024), who found that antenatal educational sessions led to marked improvements in both knowledge and attitudes among pregnant women compared to control groups. Furthermore, Mugisha et al. (2025) provided similar insights, indicating that community health worker-led interventions significantly increased maternal knowledge while also improving attendance at antenatal care sessions. These studies underscore the effectiveness of community-centric educational approaches in enhancing maternal health outcomes. By delivering relevant



information in a familiar context, expectant mothers are better equipped to navigate the complexities of antenatal care, directly contributing to improved health literacy and fostering positive health behaviours during pregnancy.

The intervention group consistently outperformed the control group in knowledge, attitude changes, and antenatal care practices. This outcome is anticipated, as targeted interventions provide specific tools and support that enable behaviour change. Through structured education, expectant mothers not only gain awareness but also develop skills to apply this knowledge in real-world situations. Such programmes often include practical demonstrations, peer support, and follow-up sessions that reinforce learning. The finding aligns with Kahsay et al. (2020), who reported that intervention groups exhibited significantly higher post-intervention knowledge and utilization scores compared to control groups. Similarly, a recent study by Lee et al. (2025) corroborated these results, demonstrating that community education leads to greater improvements in maternal knowledge and more positive attitudes towards antenatal care. The evidence suggests that community-based interventions create a supportive environment that encourages proactive engagement with health services. By consistently outperforming the control group, the intervention demonstrates a sustainable impact on maternal health and reinforces the importance of tailored educational strategies for promoting optimal antenatal care practices among expectant mothers.

Overall, the educational intervention effectively enhanced maternal engagement in antenatal care across all measured dimensions. This is likely because comprehensive education empowers women to make informed decisions and seek appropriate care throughout their pregnancy journey. By increasing awareness of danger signs and the importance of regular check-ups, community-based education contributes to better health outcomes for both mothers and their infants. The findings support previous research conducted by Bwalya et al. (2025), which indicated that comprehensive health education significantly improved knowledge regarding danger signs and increased the utilization of antenatal care and delivery services among expectant mothers. Furthermore, Mugisha et al. (2025) emphasized that structured education interventions not only enhance knowledge but also foster a supportive community environment that encourages women to prioritize their health. This multifaceted approach can lead to lasting behavioral changes and improve overall maternal health, ultimately optimizing healthcare resources and outcomes. As these studies suggest, engagement through education is a critical factor in shaping positive health behaviors, thus reinforcing the need for ongoing community-based educational initiatives to bolster maternal care.

Conclusion

Based on the findings, it is concluded that community-based health education plays a crucial role in enhancing the knowledge, attitudes, and practices of expectant mothers regarding antenatal care. The study revealed that participants exhibited marked improvements in knowledge scores, which directly correlated with positive shifts in their attitudes toward antenatal care. Furthermore, the intervention facilitated significant advancements in the actual practices of antenatal care among the mothers involved. These findings suggest that health education interventions can effectively empower expectant mothers, promoting informed decision-making and encouraging adherence to antenatal care recommendations. By fostering a supportive environment for learning, the study



highlights the importance of sustained community health education initiatives in addressing maternal health challenges. Such integration of education into antenatal care can lead to improved maternal and infant health outcomes, underscoring the value of targeted interventions in rural and semi-urban contexts.

Recommendations

In light of the study's findings, several recommendations are proposed:

1. Local health authorities should broaden the reach of community health education programs to ensure that all expectant mothers have access to critical information regarding antenatal care.
2. Ongoing training should be provided for community health workers to enhance their capacity to deliver effective education on maternal health topics and support expectant mothers through their pregnancy journeys.
3. Educational programs should integrate interactive and participatory methods, such as workshops and peer discussions, to engage expectant mothers actively and facilitate practical understanding.
4. The implementation of digital resources and mobile health applications can enhance the accessibility of antenatal care information and improve engagement through reminders and tips tailored to individual needs.
5. Policymakers should prioritize community-based maternal health education programs and allocate resources to support these initiatives, ensuring they are embedded within existing healthcare frameworks to promote long-term sustainability.

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