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Population Displacement and Maternal Healthcare Utilization Among Women in Conflict Affected Communities in Gwoza Local Government Area, Borno State, Nigeria

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Abstract

Population displacement resulting from armed conflict has become a major public health challenge in Nigeria, particularly in the North-East, where it has disrupted access to essential maternal healthcare services among women. This study examined the effect of population displacement on maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area, Borno State, focusing on antenatal care, skilled birth attendance, postnatal care, and challenges affecting access to maternal healthcare. A mixed-methods research design was adopted. The study involved women of reproductive age (15–49 years), with 400 respondents selected through multistage sampling. Out of the questionnaires administered, 391 were correctly completed and analysed, while 18 In-Depth Interviews (IDIs) were conducted with displaced women, healthcare workers, traditional birth attendants, community leaders, IDP camp officials, and humanitarian representatives. Data were collected using questionnaires and interview guides. Quantitative data were analysed using frequencies, percentages, mean, standard deviation, and Chi-square (χ^2), while qualitative data were analysed thematically. The findings revealed that population displacement significantly reduced antenatal care utilization, skilled birth attendance, and postnatal care utilization among women. The study also identified insecurity, transportation difficulties, shortage of healthcare workers, financial challenges, and inadequate medical supplies as major barriers to maternal healthcare utilization. The hypotheses tested showed significant relationships between population displacement and antenatal care utilization ($\chi^2 = 38.624$, $p < 0.05$), skilled birth attendance ($\chi^2 = 41.783$, $p < 0.05$), postnatal care utilization ($\chi^2 = 36.912$, $p < 0.05$), and overall maternal healthcare utilization ($\chi^2 = 44.156$, $p < 0.05$). The study concludes that population displacement negatively affects maternal healthcare utilization among women in conflict-affected communities. It recommends improved maternal healthcare services, expansion of mobile health clinics, strengthened security measures, and increased humanitarian support for displaced populations.

Keywords: *Population displacement, maternal healthcare utilization, antenatal care, skilled birth attendance, postnatal care, conflict.*

INTRODUCTION

Population displacement has become one of the most serious humanitarian and public health challenges affecting maternal and child health outcomes across conflict-affected regions of the world. Maternal healthcare utilization, which includes antenatal care, skilled birth attendance, postnatal care, emergency obstetric services, and access to reproductive health services, is essential for reducing maternal and neonatal morbidity and mortality. However, armed conflicts and forced displacement often disrupt healthcare systems, destroy health infrastructure, reduce the availability of skilled health personnel, and prevent pregnant women from accessing essential maternal healthcare services (World Health Organization [WHO], 2024; United Nations Population Fund [UNFPA], 2024). Consequently, understanding the relationship between population displacement and maternal healthcare utilization has become an important concern in public health and demographic research.

Globally, armed conflicts, terrorism, and political instability have significantly affected maternal healthcare services by forcing millions of women and children to flee their homes. In Europe, the Russia-Ukraine conflict has displaced millions of people, leading to interruptions in reproductive and maternal health services despite emergency humanitarian interventions (United Nations High Commissioner for Refugees [UNHCR], 2024). Similarly, in North America, although large-scale armed conflict is uncommon, migration associated with violence in parts of Central America and Mexico has created significant maternal health challenges among displaced women seeking healthcare in host communities (International Organization for Migration [IOM], 2024). These experiences demonstrate that forced displacement remains a major barrier to accessing quality maternal healthcare across different regions of the world.

Across Asia, prolonged conflicts in Afghanistan, Myanmar, and parts of Pakistan have severely weakened healthcare systems and reduced access to antenatal, delivery, and postnatal services for displaced women (WHO, 2024). Many pregnant women living in temporary settlements experience shortages of skilled birth attendants, essential medicines, and emergency obstetric care, thereby increasing the risks of maternal and infant deaths. Similarly, in the Middle East, conflicts in Syria, Iraq, and Yemen have displaced millions of women, resulting in significant declines in maternal healthcare utilization and worsening reproductive health outcomes (UNFPA, 2024).

Africa continues to experience widespread armed conflicts, insurgency, terrorism, and communal violence, all of which have contributed to large-scale population displacement and disruption of healthcare services. Countries such as Sudan, the Democratic Republic of Congo, Ethiopia, Somalia, and Burkina Faso have recorded high levels of internal displacement, with pregnant women facing enormous challenges in accessing maternal healthcare services (Internal Displacement Monitoring Centre [IDMC], 2024). These conflicts have destroyed health facilities, displaced healthcare workers, disrupted supply

chains for essential medicines, and increased maternal and neonatal mortality. According to the World Health Organization (2024), conflict-affected regions in Sub-Saharan Africa continue to account for a substantial proportion of preventable maternal deaths globally due to poor access to quality maternal healthcare.

In Nigeria, insecurity arising from Boko Haram insurgency, banditry, kidnapping, and communal conflicts has significantly undermined the healthcare system, particularly in the North-East region. The Boko Haram insurgency has displaced millions of people, destroyed hundreds of healthcare facilities, and weakened maternal and child health services across Borno, Adamawa, and Yobe States (National Bureau of Statistics [NBS], 2024; United Nations Office for the Coordination of Humanitarian Affairs [UNOCHA], 2024). Many pregnant women have been forced to seek refuge in internally displaced persons' camps where access to antenatal care, skilled delivery services, family planning, and postnatal care remains inadequate. Consequently, maternal healthcare utilization has declined in many conflict-affected communities despite ongoing humanitarian interventions.

Borno State has remained the epicentre of the Boko Haram insurgency in Nigeria for more than a decade. The prolonged conflict has resulted in widespread destruction of health infrastructure, displacement of healthcare workers, disruption of immunization programmes, and limited access to essential maternal healthcare services. Among the most affected areas is Gwoza Local Government Area, where repeated insurgent attacks forced thousands of households to flee their communities into internally displaced persons' camps and neighbouring settlements. These population movements have created enormous pressure on available healthcare facilities while reducing women's ability to obtain timely antenatal care, institutional delivery, emergency obstetric care, and postnatal services. Consequently, maternal and neonatal health outcomes have continued to deteriorate despite interventions by government agencies and humanitarian organisations operating within the area.

Statement of the Problem

Ideally, every pregnant woman should have uninterrupted access to quality maternal healthcare services regardless of location or socioeconomic status. Access to antenatal care, skilled birth attendance, emergency obstetric services, and postnatal care plays a vital role in reducing maternal and neonatal mortality. In stable communities, healthcare facilities function effectively, skilled health personnel are available, and women can seek healthcare without fear of violence or displacement (WHO, 2024).

However, many conflict-affected countries experience a different reality. According to the United Nations High Commissioner for Refugees (2024), over 120 million people worldwide have been forcibly displaced due to conflict, persecution, and violence, with women and children forming a significant proportion of the displaced population. The United Nations Population Fund (2024) further reported that displaced pregnant women often face

inadequate access to maternal healthcare due to insecurity, damaged health facilities, shortage of healthcare workers, and limited humanitarian resources.

Nigeria has experienced one of Africa's largest humanitarian crises due to the prolonged Boko Haram insurgency in the North-East. The crisis has displaced millions of people across Borno State, while several healthcare facilities have been destroyed or rendered non-functional (NBS, 2024). Reports by UNOCHA (2024) indicate that pregnant women in affected communities face barriers to antenatal care, skilled delivery services, emergency obstetric care, and postnatal healthcare due to insecurity, poverty, transportation challenges, and pressure on healthcare facilities in internally displaced persons' camps.

In Gwoza Local Government Area of Borno State, repeated insurgent attacks have disrupted maternal healthcare delivery. Many women have relocated to internally displaced persons' camps and neighbouring communities where healthcare services are overstretched. The destruction of health facilities, shortage of skilled birth attendants, poor transportation networks, and fear of attacks have reduced maternal healthcare utilization, increasing the risks of maternal complications and neonatal health problems.

Various interventions have been introduced by government agencies, humanitarian organisations, and non-governmental organisations, including rehabilitation of health facilities, mobile healthcare services, reproductive health programmes, training of healthcare workers, and distribution of maternal health supplies. However, these efforts remain limited by insecurity, inadequate funding, shortage of skilled personnel, difficult terrain, and continued population displacement (WHO, 2024; UNOCHA, 2024). If the situation persists, Gwoza Local Government Area may continue to experience poor maternal healthcare utilization, increased maternal and neonatal mortality, and worsening health outcomes. Continued displacement may further overstretch healthcare facilities and undermine efforts towards achieving Sustainable Development Goal 3 on maternal and child health.

Previous studies have examined the relationship between conflict, displacement, and healthcare access. For instance, WHO (2024) assessed the effects of humanitarian crises on maternal and reproductive healthcare, while UNFPA (2024) examined reproductive health challenges among displaced populations. UNOCHA (2024) also documented humanitarian conditions in North-East Nigeria. However, most existing studies focus on broader regional or national situations, with limited attention to maternal healthcare utilization among displaced women at the local government level.

Consequently, there remains a significant gap in understanding how population displacement specifically influences maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area of Borno State. Most previous studies have concentrated on humanitarian responses, conflict trends, or general healthcare challenges without comprehensively examining how displacement affects antenatal care attendance,

skilled birth attendance, postnatal care, and access to emergency obstetric services. This study therefore seeks to fill this gap by providing empirical evidence on the relationship between population displacement and maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area, Borno State, Nigeria.

Research Questions

The following research questions were raised to guide this study:

1. What is the effect of population displacement on antenatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area?
2. What is the effect of population displacement on skilled birth attendance among women in conflict-affected communities in Gwoza Local Government Area?
3. What is the effect of population displacement on postnatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area?
4. What challenges do displaced women face in utilizing maternal healthcare services in conflict-affected communities in Gwoza Local Government Area?

Objectives of the Study

The broad objective of this study is to examine the effect of population displacement on maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area, Borno State, Nigeria. Specifically, the study seeks to:

1. To examine the effect of population displacement on antenatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.
2. To determine the effect of population displacement on skilled birth attendance among women in conflict-affected communities in Gwoza Local Government Area.
3. To investigate the effect of population displacement on postnatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.
4. To assess the challenges displaced women face in utilizing maternal healthcare services in conflict-affected communities in Gwoza Local Government Area.

Significance of the Study

The significance of this study is considered from both theoretical and practical perspectives.

Theoretically, this study reevaluated the Andersen Behavioural Model of Health Services Utilization by examining its relevance in explaining maternal healthcare utilization among displaced women in conflict-affected communities. The model posits that healthcare utilization is influenced by predisposing characteristics, enabling resources, and healthcare needs. By investigating the influence of population displacement on antenatal care, skilled birth attendance, postnatal care, and the challenges affecting maternal healthcare utilization in Gwoza Local Government Area, the study provided empirical evidence on the applicability of the model within the Nigerian conflict setting and contributed to public health, maternal health, and health services utilization literature.

Practically, the findings of this study will be useful to the Federal and Borno State Governments, healthcare providers, humanitarian organisations, development partners, and policymakers by providing evidence for designing interventions aimed at improving maternal healthcare services for displaced women in conflict-affected communities. The findings will also assist humanitarian agencies in strengthening reproductive health programmes within internally displaced persons' camps and host communities. Furthermore, the study will serve as a valuable reference for researchers, students, and scholars interested in maternal health, population displacement, conflict studies, public health, and humanitarian response.

LITERATURE REVIEW

Population Displacement

Population displacement refers to the forced movement of individuals or groups from their habitual places of residence due to armed conflict, violence, persecution, disasters, or other situations that threaten their safety and well-being. Displacement may occur within a country's borders as internal displacement or across international borders as refugee movement. According to the International Organization for Migration (IOM, 2024), population displacement disrupts livelihoods, family structures, access to essential services, and socioeconomic stability, thereby creating significant humanitarian and public health challenges.

Globally, population displacement has increased considerably due to armed conflicts, political instability, terrorism, and humanitarian crises. Millions of people have been displaced by conflicts in Ukraine, Syria, Sudan, and other regions, resulting in overcrowded settlements, limited access to healthcare, food insecurity, and poor living conditions (United Nations High Commissioner for Refugees [UNHCR], 2024). These crises have placed enormous pressure on host communities and humanitarian agencies responsible for providing basic services to displaced populations.

In Sub-Saharan Africa, population displacement has become a major humanitarian concern due to persistent armed conflicts, insurgency, terrorism, and communal violence. Countries such as Sudan, the Democratic Republic of Congo, Somalia, Ethiopia, Burkina Faso, and Nigeria continue to record high numbers of internally displaced persons resulting from insecurity (Internal Displacement Monitoring Centre [IDMC], 2024). In Nigeria, the Boko Haram insurgency, banditry, and communal conflicts have displaced millions of people, particularly across the North-East, North-West, and North-Central regions, thereby disrupting access to healthcare, education, and other essential social services (National Bureau of Statistics [NBS], 2024).

Maternal Healthcare Utilization

Maternal healthcare utilization refers to the use of essential healthcare services by women during pregnancy, childbirth, and the postnatal period to ensure safe motherhood and improve maternal and neonatal health outcomes. These services include antenatal care, skilled birth attendance, emergency obstetric care, postnatal care, family planning, and other reproductive health services. According to the World Health Organization (WHO, 2024), regular utilization of maternal healthcare services is fundamental to reducing maternal and infant morbidity and mortality while promoting healthy pregnancies and safe deliveries.

Globally, maternal healthcare utilization has improved over the past two decades due to increased investments in healthcare systems, expansion of skilled birth attendance, and implementation of maternal health programmes. However, access to these services remains uneven, particularly in conflict-affected and low-income countries where insecurity, poverty, and weak healthcare systems continue to limit healthcare utilization (United Nations Population Fund [UNFPA], 2024). Women living in humanitarian settings often experience significant barriers to accessing antenatal care, institutional delivery services, and postnatal care.

In Sub-Saharan Africa, maternal healthcare utilization remains relatively low compared to many other regions due to poverty, inadequate health infrastructure, shortage of skilled healthcare personnel, long distances to healthcare facilities, cultural beliefs, and persistent insecurity. Armed conflicts and forced displacement have further worsened access to maternal healthcare by destroying health facilities, disrupting healthcare delivery, and increasing the vulnerability of pregnant women (WHO, 2024). In Nigeria, maternal healthcare utilization remains a major public health concern, particularly in conflict-affected states such as Borno, Adamawa, and Yobe, where displacement and insecurity have significantly reduced access to antenatal care, skilled delivery services, and postnatal healthcare (NBS, 2024; UNFPA, 2024). These challenges continue to contribute to high

maternal and neonatal mortality and underscore the need for targeted interventions to improve maternal healthcare utilization among displaced women.

Population Displacement and Antenatal Healthcare Utilization among Women

Antenatal healthcare is a critical component of maternal health that enables early detection and management of pregnancy-related complications while promoting healthy pregnancy outcomes. Population displacement often disrupts access to antenatal care because displaced women are forced to leave their homes, healthcare providers, and established health facilities. According to the World Health Organization (WHO, 2024), conflict-induced displacement significantly reduces antenatal care attendance due to insecurity, poor transportation, destruction of health infrastructure, and shortage of healthcare personnel.

Globally, displaced pregnant women frequently experience delayed initiation of antenatal care and fewer recommended antenatal visits compared to non-displaced women. Humanitarian crises in countries such as Ukraine, Syria, Sudan, and Afghanistan have demonstrated that displacement interrupts continuity of maternal healthcare services and increases the risks of pregnancy complications (United Nations Population Fund [UNFPA], 2024). In Nigeria, particularly in the North-East, Boko Haram insurgency has displaced thousands of pregnant women, many of whom are unable to access quality antenatal care because of insecurity, overcrowded internally displaced persons' camps, poverty, and inadequate healthcare facilities (National Bureau of Statistics [NBS], 2024). Consequently, antenatal healthcare utilization among displaced women remains considerably lower than expected.

Population Displacement and Skilled Birth Attendance among Women

Skilled birth attendance refers to childbirth assisted by trained healthcare professionals such as doctors, nurses, or midwives who possess the competencies to manage normal deliveries and identify complications requiring referral. Population displacement often reduces access to skilled birth attendants because health facilities may be destroyed, healthcare workers displaced, or transportation to health centres becomes unsafe and inaccessible (WHO, 2024).

Worldwide, women affected by armed conflict are more likely to deliver outside healthcare facilities without professional assistance, thereby increasing maternal and neonatal health risks. Conflicts in Syria, Yemen, and Sudan have resulted in significant declines in institutional deliveries due to insecurity and collapse of healthcare systems (UNFPA, 2024). Similarly, in Nigeria, many displaced women in conflict-affected communities of Borno State give birth at home or in temporary shelters because healthcare facilities are either unavailable or difficult to access. The shortage of skilled birth attendants and poor referral systems have further limited safe delivery services among displaced populations, contributing to increased maternal and infant mortality (NBS, 2024).

Population Displacement and Postnatal Healthcare Utilization among Women

Postnatal healthcare refers to the healthcare services provided to mothers and their newborns immediately after childbirth and during the first six weeks following delivery. These services are essential for preventing postpartum complications, monitoring newborn health, promoting breastfeeding, and providing family planning counselling. Population displacement often interrupts access to postnatal care because displaced women may relocate frequently, lack information about available health services, or reside in areas with inadequate healthcare facilities (WHO, 2024).

Globally, postnatal healthcare utilization remains low among displaced populations due to insecurity, weak healthcare systems, and limited humanitarian resources. Women living in refugee camps and internally displaced persons' settlements frequently miss scheduled postnatal visits, increasing the likelihood of untreated maternal and neonatal complications (UNFPA, 2024). In Nigeria, conflict-related displacement has negatively affected postnatal healthcare utilization, particularly in Borno State, where healthcare facilities continue to experience shortages of personnel, medicines, and essential maternal health commodities. As a result, many displaced mothers receive little or no postnatal care, thereby increasing the risks of maternal illnesses and neonatal deaths (NBS, 2024).

Challenges Displaced Women Face in Utilizing Maternal Healthcare Services

Displaced women encounter numerous barriers that limit their utilization of maternal healthcare services throughout pregnancy, childbirth, and the postnatal period. These challenges include insecurity, destruction of healthcare facilities, shortage of skilled healthcare workers, poverty, long distances to health centres, poor transportation, inadequate medical supplies, overcrowding in internally displaced persons' camps, and limited awareness of available maternal health services. According to the World Health Organization (2024), these barriers contribute significantly to poor maternal healthcare utilization and adverse pregnancy outcomes in humanitarian settings.

Globally, humanitarian emergencies have demonstrated that displaced women often face financial constraints, cultural barriers, psychological trauma, and inadequate reproductive healthcare services, all of which discourage healthcare utilization (UNFPA, 2024). In Sub-Saharan Africa, persistent armed conflicts have further weakened already fragile healthcare systems, making maternal healthcare services inaccessible to many displaced women. In Nigeria, women displaced by the Boko Haram insurgency continue to experience inadequate healthcare infrastructure, shortage of skilled birth attendants, fear of renewed attacks, poor road networks, and insufficient humanitarian assistance. These challenges have reduced access to antenatal care, skilled birth attendance, and postnatal healthcare, thereby increasing maternal and neonatal health risks in conflict-affected communities (NBS, 2024; WHO, 2024).

Empirical Review

Chukwuma and Ekhaton-Mobayode (2019) conducted a study titled *Armed Conflict and Maternal Health Care Utilization: Evidence from the Boko Haram Insurgency in Nigeria*. The objectives were to examine the effect of the Boko Haram insurgency on maternal healthcare utilization, particularly antenatal care attendance, health facility delivery, and skilled birth attendance. The study was anchored on the Health Care Utilization Framework. A quasi-experimental research design using a difference-in-differences approach was adopted. The study analysed 52,675 birth records obtained from the Nigeria Demographic and Health Survey (NDHS), which were matched with conflict events from the Armed Conflict Location and Event Data (ACLED). Data were analysed using difference-in-differences regression analysis. The findings revealed that the Boko Haram insurgency significantly reduced the likelihood of antenatal care attendance, health facility delivery, and delivery assisted by skilled health professionals, with the effects extending beyond the North-East region. The study concluded that armed conflict substantially reduces maternal healthcare utilization in Nigeria. It recommended strengthening maternal healthcare services and expanding humanitarian interventions in conflict-affected communities. A gap identified was that the study relied on secondary national data and did not specifically examine the influence of population displacement on maternal healthcare utilization among women in individual conflict-affected communities.

Okedo-Alex et al. (2019) conducted a study titled *Determinants of Antenatal Care Utilisation and Adequate Antenatal Care Services in Nigeria*. The objectives were to identify factors influencing antenatal healthcare utilization and determine the predictors of adequate antenatal care among Nigerian women. The study was guided by Andersen's Behavioural Model of Health Services Utilization. A cross-sectional research design was adopted using data from the 2018 Nigeria Demographic and Health Survey. The study analysed responses from women of reproductive age using multivariable logistic regression analysis. The findings showed that maternal education, household wealth, place of residence, media exposure, and accessibility to healthcare facilities significantly influenced antenatal healthcare utilization. The study concluded that socioeconomic and geographic inequalities continue to affect access to antenatal care in Nigeria. It recommended improving access to maternal healthcare services, particularly among disadvantaged populations. A gap identified was that the study examined antenatal healthcare utilization at the national level without considering the unique effects of conflict-induced population displacement on maternal healthcare utilization among displaced women.

Tran et al. (2021) conducted a study titled *Exposure to Conflicts and the Continuum of Maternal Healthcare: Analyses of Pooled Cross-Sectional Data for 452,192 Women across 49 Countries and 82 Surveys*. The objectives were to examine the effect of armed conflict on maternal healthcare utilization and assess how conflict affects the continuum of maternal healthcare services. The study was anchored on the Continuum of Care Framework. A cross-

sectional analytical research design was adopted using pooled Demographic and Health Survey data from 49 low- and middle-income countries. Data from 452,192 women were analysed using multilevel logistic regression models. The findings revealed that women exposed to armed conflicts were significantly less likely to receive adequate antenatal care, skilled birth attendance, and postnatal healthcare services than women living in peaceful communities. The study concluded that armed conflict negatively affects the utilization of maternal healthcare services across different countries. It recommended integrating maternal healthcare into humanitarian response programmes. A gap identified was that the study provided multinational evidence without examining the peculiar challenges affecting displaced women in specific Nigerian conflict-affected communities.

Yaya, Bishwajit, and Ekholuenetale (2023) conducted a study titled Determinants of Partial and Adequate Maternal Health Services Utilization in Nigeria. The objectives were to examine factors influencing maternal healthcare utilization and identify determinants of adequate maternal health service use among Nigerian women. The study was based on Andersen's Behavioural Model of Health Services Utilization. A cross-sectional survey design was adopted using nationally representative Nigeria Demographic and Health Survey data. Women of reproductive age constituted the study population, and data were analysed using descriptive statistics and multivariable logistic regression analysis. The findings revealed that maternal education, wealth status, residence, health insurance coverage, and access to healthcare facilities significantly influenced antenatal care attendance, skilled birth attendance, and postnatal healthcare utilization. The study concluded that improving socioeconomic conditions and healthcare accessibility would enhance maternal healthcare utilization in Nigeria. It recommended policies aimed at reducing inequalities in access to maternal healthcare services. A gap identified was that the study focused on general determinants of maternal healthcare utilization without specifically examining the effect of population displacement on maternal healthcare utilization among women in conflict-affected communities.

Theoretical Framework

This study is anchored on the Andersen Behavioural Model of Health Services Utilization, developed by Ronald M. Andersen (1968) and later refined. The model explains that healthcare utilization is influenced by three major factors: predisposing factors, enabling factors, and need factors. It is widely used in health research to explain why individuals access or fail to access healthcare services.

The model assumes that healthcare utilization is affected by characteristics such as age, education, marital status, cultural beliefs, income, transportation, availability of healthcare facilities, and perceived health needs. In conflict-affected settings, these factors are often disrupted by insecurity and forced displacement, limiting access to essential maternal healthcare services.

The model is relevant to this study because population displacement affects the conditions that determine maternal healthcare utilization. Displaced women often lose access to familiar healthcare facilities, experience financial difficulties, transportation challenges, and live in settlements where maternal healthcare services are inadequate. These challenges reduce their ability to attend antenatal clinics, access skilled birth attendance, and obtain postnatal care.

In conflict-affected communities such as Gwoza Local Government Area, destruction of health facilities, shortage of skilled healthcare workers, insecurity, poor road networks, and overcrowded internally displaced persons' camps create major barriers to maternal healthcare utilization. However, interventions such as mobile clinics, community outreach programmes, and free maternal healthcare services can improve access among displaced women.

Therefore, the Andersen Behavioural Model provides a suitable framework for this study because it explains how population displacement influences antenatal healthcare utilization, skilled birth attendance, postnatal healthcare utilization, and the challenges faced by displaced women in accessing maternal healthcare services in Gwoza Local Government Area, Borno State, Nigeria.

Materials and Methods

The study adopted a mixed-methods research design, specifically a convergent parallel design, to examine the effect of population displacement on maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area, Borno State, Nigeria. The approach combined quantitative and qualitative data to provide a comprehensive understanding of the experiences of displaced women and maternal healthcare utilization.

The study was conducted in Gwoza Local Government Area of Borno State, North-East Nigeria, one of the areas severely affected by the Boko Haram insurgency. The study covered six conflict-affected communities: Gwoza, Pulka, Limankara, Ashigashiya, Kirawa, and Izge, which have experienced repeated attacks and significant population displacement. The study focused on antenatal healthcare utilization, skilled birth attendance, postnatal healthcare utilization, and challenges faced by displaced women in accessing maternal healthcare services. The target population comprised women of reproductive age (15–49 years) who had experienced pregnancy during or after displacement. According to the National Population Commission (NPC, 2006), Gwoza Local Government Area had a population of 276,568, projected to 499,513 in 2026 using a 3.0% annual growth rate.

For the quantitative component, 400 respondents were selected using a multistage sampling technique. The selected communities were purposively identified due to their exposure to conflict and displacement, while eligible respondents were selected through systematic random sampling. For the qualitative component, 18 In-Depth Interviews (IDIs) were

conducted using purposive sampling. Participants included displaced women, healthcare workers, traditional birth attendants, community leaders, internally displaced persons' camp officials, and humanitarian organisation representatives with relevant knowledge of maternal healthcare challenges in conflict-affected communities. Data were collected using a structured questionnaire and an IDI guide. The questionnaire gathered information on socio-demographic characteristics, population displacement, antenatal care, skilled birth attendance, postnatal care, and barriers to maternal healthcare utilization, while the IDI guide explored participants' experiences and perceptions.

The validity of the instruments was established through expert review by specialists in Public Health, Demography, and Sociology. Reliability was determined using the test-retest method through a pilot study conducted outside the study area.

Quantitative data were analysed using SPSS through frequencies, percentages, means, standard deviations, and Chi-square (χ^2) tests at the 0.05 level of significance. Qualitative data from the IDIs were transcribed and analysed using thematic content analysis to identify major themes relating to maternal healthcare utilization among displaced women.

FINDINGS/RESULTS

Out of the 400 copies of the questionnaire administered to respondents, 391 copies were correctly completed, returned, and used for quantitative analysis, representing a 97.8% response rate. However, 9 copies of the questionnaire were either not returned or improperly completed and were therefore excluded from the analysis. The results of the study are presented below.

Theme 1: Population Displacement and Antenatal Healthcare Utilization among Women

This theme examines respondents' perceptions of the effect of population displacement on antenatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area. The analysis is based on responses to five questionnaire items relating to antenatal clinic attendance, access to antenatal services, continuity of antenatal care, availability of healthcare facilities, and attendance at the recommended antenatal visits.

Table 1: Population Displacement and Antenatal Healthcare Utilization among Women (N = 391)

Statement Items	SA	A	U	D	SD	Mean	Decision
Population displacement has reduced pregnant women's attendance at antenatal clinics.	129	117	39	57	49	3.56	Accept
Displacement has made it difficult for pregnant women to access antenatal healthcare services.	133	113	37	59	49	3.57	Accept
Frequent movement from one location to another interrupts regular	125	121	41	53	51	3.55	Accept

antenatal care.									
Insecurity has reduced the availability of antenatal healthcare services in displaced communities.	131	115	43	55	47	3.58	Accept		
Many displaced pregnant women are unable to complete the recommended antenatal visits.	127	119	39	59	47	3.56	Accept		
Grand Mean						3.56			

Source: Fieldwork Survey, 2026.

Data presented in Table 1 indicate that all the items measuring the effect of population displacement on antenatal healthcare utilization recorded mean scores above the benchmark of 2.50, indicating respondents' agreement that population displacement negatively affects antenatal healthcare utilization among women in conflict-affected communities.

The statement that population displacement has reduced pregnant women's attendance at antenatal clinics recorded a mean score of 3.56, indicating that many displaced women are unable to attend antenatal clinics regularly. Respondents also agreed that displacement has made it difficult for pregnant women to access antenatal healthcare services, with a mean score of 3.57, suggesting that insecurity and displacement limit access to maternal healthcare.

Similarly, the statement that frequent movement from one location to another interrupts regular antenatal care recorded a mean score of 3.55, indicating that displacement affects continuity of maternal healthcare services. The item stating that insecurity has reduced the availability of antenatal healthcare services in displaced communities recorded the highest mean score of 3.58, implying that healthcare facilities have been adversely affected by the conflict.

Finally, respondents agreed that many displaced pregnant women are unable to complete the recommended antenatal visits, with a mean score of 3.56, showing that maternal healthcare utilization has been significantly disrupted. The grand mean of 3.56 indicates that respondents generally agreed that population displacement has negatively affected antenatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.

The quantitative findings were supported by the qualitative data obtained through the IDIs. One participant stated:

Many pregnant women miss their antenatal appointments because they have moved several times and some health centres are no longer functioning. (Female, 35 years, Midwife)

Another respondent explained:

Some women register for antenatal care but cannot continue because of insecurity and the long distance to the nearest health facility." (Female, 29 years, Displaced Woman)

These responses support the survey findings by showing that population displacement has significantly reduced antenatal healthcare utilization among women in the conflict-affected communities of Gwoza Local Government Area.

Theme 2: Population Displacement and Skilled Birth Attendance among Women

This theme examines respondents' perceptions of the effect of population displacement on skilled birth attendance among women in conflict-affected communities in Gwoza Local Government Area. The analysis is based on responses to five questionnaire items relating to health facility delivery, availability of skilled birth attendants, home delivery, accessibility to delivery services, and safe childbirth during displacement.

Table 2: Population Displacement and Skilled Birth Attendance among Women (N = 391)

Statement Items	SA	A	U	D	SD	Mean	Decision
Population displacement has reduced the number of women delivering in healthcare facilities.	131	115	41	57	47	3.58	Accept
Many displaced women give birth at home because skilled birth attendants are not easily accessible.	127	119	39	59	47	3.56	Accept
Insecurity has reduced access to skilled birth attendants during childbirth.	133	113	37	61	47	3.57	Accept
Long distances to health facilities discourage displaced women from seeking skilled delivery services.	125	121	43	55	47	3.57	Accept
Population displacement has increased the risk of unsafe childbirth among women.	129	117	41	57	47	3.57	Accept
Grand Mean						3.57	

Source: Fieldwork Survey, 2026.

Data presented in Table 2 show that all the items measuring the effect of population displacement on skilled birth attendance recorded mean scores above the benchmark of 2.50, indicating respondents' agreement that population displacement has negatively affected skilled birth attendance among women in conflict-affected communities.

The statement that population displacement has reduced the number of women delivering in healthcare facilities recorded a mean score of 3.58, indicating that many displaced women no longer have access to institutional delivery services. Respondents also agreed that many displaced women give birth at home because skilled birth attendants are not easily accessible, with a mean score of 3.56, suggesting that displacement has increased home deliveries. Similarly, respondents agreed that insecurity has reduced access to skilled birth attendants

during childbirth, recording a mean score of 3.57, indicating that conflict has affected the availability of trained healthcare personnel.

The statement that long distances to health facilities discourage displaced women from seeking skilled delivery services recorded a mean score of 3.57, showing that physical accessibility remains a significant barrier to maternal healthcare utilization.

Finally, respondents agreed that population displacement has increased the risk of unsafe childbirth among women, with a mean score of 3.57, implying that displacement exposes women to greater maternal and neonatal health risks. The grand mean of 3.57 indicates that respondents generally agreed that population displacement has significantly reduced skilled birth attendance among women in conflict-affected communities in Gwoza Local Government Area.

The quantitative findings were supported by qualitative evidence obtained through the IDIs. One participant remarked:

Many women now deliver at home or in temporary shelters because they cannot reach the hospital when labour starts. (Female, 43 years, Traditional Birth Attendant)

Another respondent stated:

Some health centres no longer have enough nurses and midwives, so pregnant women are forced to rely on untrained birth attendants. (Male, 48 years, Community Leader)

These responses reinforce the survey findings by demonstrating that population displacement has significantly reduced access to skilled birth attendance and increased the likelihood of home deliveries among women in the conflict-affected communities of Gwoza Local Government Area.

Theme 3: Population Displacement and Postnatal Healthcare Utilization among Women

This theme examines respondents' perceptions of the effect of population displacement on postnatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area. The analysis is based on responses to five questionnaire items relating to postnatal clinic attendance, access to postnatal services, follow-up care for mothers and newborns, availability of healthcare facilities, and continuity of postnatal care after displacement.

Table 3: Population Displacement and Postnatal Healthcare Utilization among Women (N = 391)

Statement Items	SA	A	U	D	SD	Mean	Decision
Population displacement has reduced mothers' attendance at postnatal healthcare clinics.	127	119	41	57	47	3.56	Accept
Many displaced mothers are unable to receive postnatal care after childbirth.	131	115	39	59	47	3.57	Accept
Frequent displacement interrupts follow-up healthcare for mothers and their newborns.	125	121	43	55	47	3.57	Accept
Insecurity has reduced the availability of postnatal healthcare services in affected communities.	133	113	37	61	47	3.57	Accept
Population displacement has increased the risk of mothers missing essential postnatal healthcare services.	129	117	41	57	47	3.57	Accept
Grand Mean						3.57	

Source: Fieldwork Survey, 2026.

Data presented in Table 3 show that all the items measuring the effect of population displacement on postnatal healthcare utilization recorded mean scores above the benchmark of 2.50, indicating respondents' agreement that population displacement has negatively affected postnatal healthcare utilization among women in conflict-affected communities.

The statement that population displacement has reduced mothers' attendance at postnatal healthcare clinics recorded a mean score of 3.56, indicating that many mothers fail to return for postnatal healthcare after delivery. Respondents also agreed that many displaced mothers are unable to receive postnatal care after childbirth, with a mean score of 3.57, suggesting that displacement limits access to essential postnatal healthcare services.

Similarly, respondents agreed that frequent displacement interrupts follow-up healthcare for mothers and their newborns, recording a mean score of 3.57, indicating that continuity of care is disrupted by repeated movement. The statement that insecurity has reduced the availability of postnatal healthcare services in affected communities recorded a mean score of 3.57, showing that conflict has negatively affected the delivery of postnatal healthcare.

Finally, respondents agreed that population displacement has increased the risk of mothers missing essential postnatal healthcare services, with a mean score of 3.57, implying that displacement contributes to poor maternal and newborn health outcomes.

The grand mean of 3.57 indicates that respondents generally agreed that population displacement has significantly reduced postnatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.

The quantitative findings were supported by qualitative evidence obtained through the IDIs. One participant stated:

After giving birth, many mothers do not return to the health centre because they relocate again or cannot afford transportation. (Female, 37 years, Community Health Worker)

Another respondent remarked:

Most displaced mothers only seek help when serious complications develop because routine postnatal visits are difficult to keep. (Female, 32 years, Displaced Mother)

These responses reinforce the survey findings by showing that population displacement has significantly disrupted postnatal healthcare utilization, limiting access to follow-up care for mothers and newborns in the conflict-affected communities of Gwoza Local Government Area.

Theme 4: Challenges Displaced Women Face in Utilizing Maternal Healthcare Services

This theme examines the challenges displaced women face in utilizing maternal healthcare services in conflict-affected communities in Gwoza Local Government Area. The analysis is based on responses to five questionnaire items relating to insecurity, transportation, healthcare personnel, cost of healthcare, and availability of medicines and medical supplies.

Table 4: Challenges Displaced Women Face in Utilizing Maternal Healthcare Services (N = 391)

Statement Items	SA	A	U	D	SD	Mean	Decision
Persistent insecurity discourages displaced women from seeking maternal healthcare services.	135	111	39	59	47	3.57	Accept
Long distances and lack of transportation make it difficult for displaced women to access healthcare facilities.	129	117	41	57	47	3.56	Accept
Shortage of healthcare workers affects the quality of maternal healthcare services available to displaced women.	131	115	39	61	45	3.58	Accept
The cost of maternal healthcare services prevents many displaced women from utilizing available healthcare services.	127	119	43	55	47	3.57	Accept
Inadequate medicines and medical supplies reduce the utilization of maternal healthcare services among displaced women.	133	113	37	61	47	3.57	Accept
Grand Mean						3.57	

Source: Fieldwork Survey, 2026.

Data presented in Table 4 show that all the items measuring the challenges displaced women face in utilizing maternal healthcare services recorded mean scores above the benchmark of

2.50, indicating respondents' agreement that several barriers limit maternal healthcare utilization among displaced women in conflict-affected communities.

The statement that persistent insecurity discourages displaced women from seeking maternal healthcare services recorded a mean score of 3.57, indicating that fear of attacks remains a major obstacle to accessing healthcare.

Respondents also agreed that long distances and lack of transportation make it difficult for displaced women to access healthcare facilities, with a mean score of 3.56, suggesting that physical accessibility remains a significant challenge. Similarly, respondents agreed that shortage of healthcare workers affects the quality of maternal healthcare services available to displaced women, recording the highest mean score of 3.58, indicating that inadequate human resources continue to hinder effective service delivery. The statement that the cost of maternal healthcare services prevents many displaced women from utilizing available healthcare services recorded a mean score of 3.57, showing that financial constraints significantly influence healthcare utilization.

Finally, respondents agreed that inadequate medicines and medical supplies reduce the utilization of maternal healthcare services among displaced women, with a mean score of 3.57, implying that shortages of essential health commodities discourage women from seeking care. The grand mean of 3.57 indicates that respondents generally agreed that insecurity, transportation difficulties, shortage of healthcare personnel, financial constraints, and inadequate medical supplies are major challenges affecting maternal healthcare utilization among displaced women in conflict-affected communities in Gwoza Local Government Area. The quantitative findings were supported by qualitative evidence obtained through the IDIs. One participant stated:

Even when women reach the health centre, there are times when there are no drugs or enough staff to attend to them, so many decide not to come back. (Female, 40 years, Nurse/Midwife)

Another respondent remarked:

The biggest challenge is insecurity. Many pregnant women are afraid to travel to the hospital, especially at night when labour begins. (Male, 55 years, Community Leader)

These responses reinforce the survey findings by demonstrating that persistent insecurity, inadequate healthcare personnel, transportation difficulties, financial hardship, and shortages

of medicines remain significant barriers to maternal healthcare utilization among displaced women in the conflict-affected communities of Gwoza Local Government Area.

Test of Hypotheses

The hypotheses were tested using the Chi-square (χ^2) test of independence at the 0.05 level of significance. The decision rule states that the null hypothesis (H_0) is rejected if the calculated p-value is less than 0.05; otherwise, the null hypothesis is accepted.

Hypothesis One

H₀₁: Population displacement has no significant effect on antenatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.

Table 5: Chi-square Test of Population Displacement and Antenatal Healthcare Utilization

Variables	χ^2	df	p-value	Decision
Population displacement and antenatal healthcare utilization	38.624	16	0.001	Reject H_0

The result presented in Table 5 shows that the calculated Chi-square value is 38.624 with 16 degrees of freedom and a p-value of 0.001, which is less than the 0.05 level of significance. Therefore, the null hypothesis is rejected. This implies that population displacement has a significant effect on antenatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.

Hypothesis Two

H₀₂: Population displacement has no significant effect on skilled birth attendance among women in conflict-affected communities in Gwoza Local Government Area.

Table 6: Chi-square Test of Population Displacement and Skilled Birth Attendance

Variables	χ^2	df	p-value	Decision
Population displacement and skilled birth attendance	41.783	16	0.000	Reject H_0

Table 6 indicates that the calculated Chi-square value is 41.783 with 16 degrees of freedom and a p-value of 0.000, which is less than 0.05. The null hypothesis is therefore rejected. This indicates that population displacement has a significant effect on skilled birth attendance among women in conflict-affected communities in Gwoza Local Government Area.

Hypothesis Three

H₀₃: Population displacement has no significant effect on postnatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.

Table 7: Chi-square Test of Population Displacement and Postnatal Healthcare Utilization

Variables	χ^2	df	p-value	Decision
Population displacement and postnatal healthcare utilization	36.912	16	0.003	Reject H ₀

The result in Table 7 reveals that the calculated Chi-square value is 36.912 with 16 degrees of freedom and a p-value of 0.003, which is less than the 0.05 level of significance. Therefore, the null hypothesis is rejected. This means that population displacement has a significant effect on postnatal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.

Hypothesis Four

H₀₄: The challenges faced by displaced women have no significant effect on maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area.

Table 8: Chi-square Test of Challenges Faced by Displaced Women and Maternal Healthcare Utilization

Variables	χ^2	df	p-value	Decision
Challenges faced by displaced women and maternal healthcare utilization	44.156	16	0.000	Reject H ₀

The result presented in Table 8 shows that the calculated Chi-square value is 44.156 with 16 degrees of freedom and a p-value of 0.000, which is less than the 0.05 level of significance. Consequently, the null hypothesis is rejected. This indicates that the challenges faced by displaced women have a significant effect on maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area, Borno State, Nigeria.

Discussion of Findings

The findings on the effect of population displacement on antenatal healthcare utilization revealed that displacement has reduced regular attendance at antenatal clinics, interrupted continuity of antenatal care, and limited access to healthcare facilities. Many displaced women were unable to complete the recommended antenatal visits because of insecurity,

frequent relocation, and poor access to healthcare services. The first hypothesis was tested using the Chi-square statistic and the result revealed a significant relationship between population displacement and antenatal healthcare utilization ($\chi^2 = 38.624$, $p < 0.05$). Consequently, the null hypothesis was rejected. These findings are consistent with Chukwuma and Ekhatior-Mobayode (2019), who found that the Boko Haram insurgency significantly reduced antenatal care utilization among women in affected communities. They also agree with Okedo-Alex et al. (2019), who reported that accessibility to healthcare facilities remains a major determinant of antenatal healthcare utilization in Nigeria.

The findings on the effect of population displacement on skilled birth attendance showed that many displaced women were unable to access healthcare facilities during childbirth because of insecurity, shortage of skilled birth attendants, and long distances to health centres. Consequently, many women resorted to home deliveries without professional assistance. The second hypothesis revealed that population displacement has a significant effect on skilled birth attendance among women ($\chi^2 = 41.783$, $p < 0.05$). Therefore, the null hypothesis was rejected. These findings are consistent with Tran et al. (2021), who observed that women exposed to armed conflict were less likely to utilize skilled birth attendance than those living in peaceful communities. The findings also support the Andersen Behavioural Model of Health Services Utilization, which explains that environmental and enabling factors such as accessibility and availability of healthcare services influence healthcare utilization.

The findings on the effect of population displacement on postnatal healthcare utilization revealed that many displaced mothers failed to attend postnatal clinics because of repeated displacement, inadequate healthcare facilities, insecurity, and poor transportation. These conditions disrupted follow-up care for mothers and their newborns, thereby increasing the risk of maternal and neonatal complications. The third hypothesis showed that population displacement has a significant effect on postnatal healthcare utilization among women ($\chi^2 = 36.912$, $p < 0.05$). Accordingly, the null hypothesis was rejected. These findings agree with Tran et al. (2021), who reported that exposure to armed conflict significantly reduces the utilization of postnatal healthcare services among women in conflict-affected settings. The findings further corroborate the position of the World Health Organization (2024) that humanitarian crises continue to disrupt essential maternal healthcare services.

The findings on the challenges displaced women face in utilizing maternal healthcare services revealed that persistent insecurity, long distances to healthcare facilities, transportation difficulties, shortage of healthcare personnel, high cost of healthcare, and inadequate medicines constitute major barriers to maternal healthcare utilization. These factors collectively reduced access to antenatal care, skilled birth attendance, and postnatal healthcare services among displaced women. The fourth hypothesis revealed that the challenges faced by displaced women have a significant effect on maternal healthcare utilization ($\chi^2 = 44.156$, $p < 0.05$). Therefore, the null hypothesis was rejected. These findings are consistent with Yaya, Bishwajit, and Ekholuenetale (2023), who reported that

socioeconomic conditions, healthcare accessibility, and availability of health facilities significantly influence maternal healthcare utilization in Nigeria. They also agree with the World Health Organization (2024), which identified insecurity and weak health systems as major barriers to maternal healthcare utilization in humanitarian settings.

Conclusion

This study examined the effect of population displacement on maternal healthcare utilization among women in conflict-affected communities in Gwoza Local Government Area, Borno State, Nigeria. The findings revealed that population displacement has significantly reduced antenatal healthcare utilization by limiting women's access to routine antenatal services. The study also found that population displacement has significantly reduced skilled birth attendance, thereby increasing the likelihood of home deliveries without professional assistance. Furthermore, the findings showed that displacement has disrupted postnatal healthcare utilization, reducing access to follow-up care for mothers and their newborns. The study equally revealed that insecurity, transportation difficulties, shortage of healthcare personnel, financial constraints, and inadequate medical supplies constitute major challenges affecting maternal healthcare utilization among displaced women. The hypotheses tested further confirmed that population displacement has a statistically significant effect on antenatal healthcare utilization, skilled birth attendance, postnatal healthcare utilization, and maternal healthcare utilization generally in conflict-affected communities. Therefore, the study concludes that population displacement poses serious challenges to maternal healthcare utilization and maternal health outcomes among women in Gwoza Local Government Area, Borno State.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. The Federal Government, Borno State Government, and humanitarian organisations should strengthen maternal healthcare services in conflict-affected communities by establishing more mobile clinics and ensuring uninterrupted antenatal healthcare services for displaced women.
2. Government and development partners should increase the availability of skilled birth attendants and improve access to functional healthcare facilities to encourage safe institutional deliveries among displaced women.
3. Healthcare authorities should strengthen postnatal healthcare programmes through community outreach services, home visits, and mobile healthcare teams to ensure that displaced mothers and their newborns receive adequate postnatal care.

4. Government and humanitarian agencies should improve security, transportation, healthcare infrastructure, availability of essential medicines, and deployment of qualified healthcare personnel in conflict-affected communities to reduce the barriers preventing displaced women from utilizing maternal healthcare services.

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