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MÉDECINS SANS FRONTIÈRES' HEALTH INTERVENTIONS AND MATERNAL, NEWBORN, AND CHILD HEALTH OUTCOMES IN MAIDUGURI METROPOLITAN COUNCIL, BORNO STATE, NIGERIA

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ABSTRACT
This study examined the contribution of Médecins Sans Frontières' health interventions to maternal, newborn, and child health in Maiduguri Metropolitan Council, Borno State, where conflict, displacement, poverty, insecurity, and weak health infrastructure continue to limit access to essential services. The study used a qualitative research design supported by secondary quantitative programme data. Data were collected through desk-based review of MSF and humanitarian reports, five key informant interviews, and two focus group discussions with mothers and pregnant women. Qualitative data were analysed using content analysis, while programme figures were used descriptively to support interpretation. Findings showed that MSF's interventions included emergency obstetric and newborn care, support to basic maternal health facilities, paediatric treatment, nutrition services, mobile clinics, referral support, and community health education. Programme data showed high service utilisation, including more than 45,000 outpatient consultations for children under five, over 8,000 deliveries, a 20% increase in antenatal care attendance, and mobile clinic use accounting for about 35% of maternal, newborn, and child health consultations. More than 3,000 severely malnourished children were also admitted, with a reported recovery rate of 85%. Interview and focus group findings suggested that MSF improved access to care, reduced financial barriers, encouraged facility-based care, and supported earlier treatment seeking among women and caregivers. However, long waiting times, low postnatal care uptake, insecurity-related service fluctuations, and sustainability concerns remained challenges. The study concludes that MSF has contributed meaningfully to service access, utilisation, and selected health outcomes, but stronger follow-up, referral tracking, outreach, monitoring, and health system integration are needed.

Keywords: Médecins Sans Frontières; Maternal, Newborn and Child Health; Humanitarian Health Interventions; Maiduguri Metropolitan Council

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Introduction

Maternal, newborn, and child health remains a major public health concern in Nigeria, particularly in areas affected by conflict, displacement, poverty, and weak health systems. Although global efforts have contributed to reductions in maternal and child mortality, the burden remains disproportionately high in low-income countries, especially in sub-Saharan Africa and Southern Asia (World Health Organization et al., 2025; United Nations Interagency Group for Child Mortality Estimation, 2025). Nigeria continues to reflect this uneven progress, with recent estimates placing the maternal mortality ratio at 993 deaths per 100,000 live births in 2023, while under-five mortality remains estimated at 116 deaths per 1,000 live births (World Health Organization et al., 2025; United Nations Interagency Group for Child Mortality Estimation, 2025). These indicators show the continuing vulnerability of women and children, especially in settings where access to skilled care remains limited.

Borno State in northeastern Nigeria presents one of the most difficult contexts for maternal, newborn, and child health service delivery. Prolonged armed conflict linked to insurgency has resulted in population displacement, disruption of livelihoods, destruction of health infrastructure, and reduced access to essential health services (United Nations Office for the Coordination of Humanitarian Affairs, 2025). Maiduguri Metropolitan Council, as the capital of Borno State, has become a major centre for internally displaced persons, returnees, and humanitarian response activities. The International Organisation for Migration and humanitarian reports indicate that Borno State hosts over 1.8 million internally displaced persons, with Maiduguri receiving a substantial proportion because of its relative stability and concentration of services (International Organisation for Migration, 2023; United Nations Office for the Coordination of Humanitarian Affairs, 2025).

Despite the scale of humanitarian health interventions in Maiduguri Metropolitan Council, there is limited empirical evidence on how far these interventions have improved maternal, newborn, and child health outcomes. In particular, the effectiveness of Médecins Sans Frontières' programmes in improving antenatal care utilisation, skilled birth attendance, facility delivery, neonatal survival, immunisation uptake, and treatment outcomes for childhood illnesses has not been sufficiently evaluated through systematic academic research. This gap is important because humanitarian programmes are often assessed through internal reports and service delivery figures, while less attention is given to independent evaluation of their measurable contribution to health outcomes in fragile settings.

The need for such evaluation is further strengthened by the poor maternal and child health indicators recorded in Borno State. The Nigeria Demographic and Health Survey 2023 to 2024 reports that only 34% of women in Borno State receive antenatal care from a skilled provider, while approximately 28% deliver in health facilities, both of which are below national averages (Federal Ministry of Health and Social Welfare of Nigeria, National Population Commission [NPC], & ICF, 2024). These figures suggest that many pregnant women and newborns remain outside the reach of formal health services, increasing the risk of preventable complications, maternal deaths, neonatal deaths, and poor child survival outcomes.

In response to the humanitarian and health crisis, Médecins Sans Frontières has provided essential health services in Borno State, including Maiduguri, since 2014. Its interventions have included maternal and newborn care, emergency obstetric services, treatment of childhood illnesses, management of severe acute malnutrition, immunisation support, mobile clinics, and community outreach programmes (Médecins Sans Frontières, 2024). These services are particularly important in a context where public health facilities are overstretched and where

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displaced populations often face financial, geographical, and security-related barriers to accessing care.

However, the continued burden of maternal, newborn, and child morbidity and mortality in Maiduguri Metropolitan Council raises the need to examine the actual effectiveness of these interventions beyond their availability or coverage. A systematic evaluation of Médecins Sans Frontières' contribution to maternal, newborn, and child health outcomes will provide evidence on what has worked, where gaps remain, and how humanitarian health programmes can be strengthened. Such evidence is necessary for improving programme design, guiding donor investment, supporting health policy decisions, and strengthening service delivery in conflict-affected settings.

Statement of the problem

Despite the presence of humanitarian health interventions in Maiduguri Metropolitan Council, maternal, newborn, and child health outcomes remain a major concern. Conflict-affected settings such as northeastern Nigeria continue to experience disruptions in essential health service delivery, particularly in relation to maternal, newborn, and child health services (World Health Organization, 2022). In response to these challenges, Médecins Sans Frontières has provided emergency obstetric care, newborn services, paediatric care, nutrition support, mobile clinic services, and community-based health interventions in Borno State, including Maiduguri (Médecins Sans Frontières, 2024).

However, the extent to which these interventions have contributed to measurable improvements in maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council remains insufficiently established. Available evidence on MSF activities in the area is largely descriptive and programme-based, focusing mainly on service provision, emergency response, and coverage of vulnerable populations (Médecins Sans Frontières, 2024). There is limited empirical evidence showing whether these interventions have significantly improved outcomes such as antenatal care utilisation, skilled birth attendance, facility delivery, neonatal survival, immunisation uptake, treatment of childhood illnesses, and reduction in nutrition-related complications.

This evidence gap creates a major challenge for health planning, humanitarian programming, and donor decision making in fragile settings. Without a clear evaluation of MSF's contribution, policymakers, public health authorities, donors, and humanitarian organisations may find it difficult to identify the most effective components of the intervention, determine areas requiring improvement, and decide how similar programmes can be scaled or adapted in other conflict-affected contexts. Evidence-based evaluation is therefore necessary for strengthening accountability, improving programme design, and supporting maternal, newborn, and child health service delivery in humanitarian settings (World Health Organization, 2022; United Nations Office for the Coordination of Humanitarian Affairs, 2025).

Therefore, the problem addressed in this study is the insufficient empirical evidence on the contribution of Médecins Sans Frontières' health interventions to maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council, Borno State. The study is guided by the following research question: What is the contribution of Médecins Sans Frontières' health interventions to improving maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council, Borno State?

Objectives of the study

The primary objective of this paper is to assess the contributions of Médecins Sans Frontières' health interventions in maternal, newborn, and child health in Maiduguri Metropolitan Council, Borno State. Specific objectives were to:

i identify and describe the key health interventions implemented by MSF in MNCH in Maiduguri;
ii evaluate the coverage and utilization of MSF's MNCH services among women of reproductive age, pregnant women, newborns, and children in Maiduguri Metropolitan Council; and
iii determine the contribution of Médecins Sans Frontières' interventions to selected maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council.

Literature review

Conceptual framework

This section clarifies the major concepts that guide the study. Rather than treating maternal, newborn, and child health as separate and isolated areas, the study views them as interconnected components of a continuum of care. This continuum begins before pregnancy, extends through pregnancy and childbirth, continues into the postnatal period, and includes the survival, growth, and development of children under five. In humanitarian settings such as Maiduguri Metropolitan Council, this continuum is often disrupted by conflict, displacement, poverty, insecurity, shortage of health workers, and limited access to functional health facilities. Therefore, the key concepts are discussed in relation to how they apply to Médecins Sans Frontières' maternal, newborn, and child health interventions in Maiduguri.

Maternal health

Maternal health is commonly defined as the health and well-being of women during pregnancy, childbirth, and the postnatal period. The World Health Organization (2021) explains maternal health in relation to the prevention and management of complications that may occur before, during, and after childbirth. This definition places emphasis on clinical services such as antenatal care, skilled birth attendance, emergency obstetric care, and postnatal care. Similarly, the United Nations Population Fund and World Health Organization (2020) view maternal health in emergency settings as a lifesaving component of reproductive health, particularly through the Minimum Initial Service Package, which prioritises safe delivery, emergency obstetric care, prevention of maternal death, and access to referral services.

While these definitions are useful, they do not fully capture the complexity of maternal health in conflict-affected settings. In stable health systems, maternal health services may focus mainly on routine antenatal visits, institutional delivery, and postnatal follow-up. However, in humanitarian settings such as Maiduguri, maternal health must also be understood in terms of access, safety, continuity of care, emergency response, and survival. Women affected by displacement may face financial barriers, insecurity, poor transportation, overcrowded facilities, and limited access to skilled birth attendants. Therefore, in this study, maternal health refers to the availability, utilisation, and outcomes of services provided to women during pregnancy, childbirth, and the postnatal period, especially within the context of MSF's emergency obstetric and maternal health interventions in Maiduguri Metropolitan Council.

Newborn health

Newborn health refers to the health and survival of infants during the first 28 days of life. The World Health Organization (2021) identifies this period as the most vulnerable stage of child survival because many neonatal deaths occur shortly after birth and are often linked to

prematurity, birth asphyxia, neonatal infections, and complications during delivery. UNICEF (2023) also emphasises that newborn survival depends not only on care given to the baby after birth, but also on the quality of maternal care during pregnancy and childbirth. This shows that newborn health cannot be separated from maternal health because the survival of the newborn is strongly influenced by the health of the mother and the quality of delivery care.

In humanitarian settings, newborn health becomes even more fragile because access to skilled delivery, clean birth practices, resuscitation, thermal care, breastfeeding support, and treatment of neonatal infections may be limited. For this study, newborn health is understood as the survival, protection, and early care of infants within the first month of life, particularly through MSF-supported interventions such as emergency obstetric and newborn care, safe delivery services, neonatal infection management, and early postnatal care. This definition is important because the study is not only concerned with whether newborn services exist, but also with whether MSF interventions have contributed to improved newborn outcomes in Maiduguri Metropolitan Council.

Child health

Child health refers to the physical well-being, survival, nutrition, growth, and development of children beyond the neonatal period, especially children under five years of age. UNICEF (2023) explains child health in relation to the prevention and treatment of major causes of childhood illness and death, including malaria, pneumonia, diarrhoea, vaccine-preventable diseases, and malnutrition. The World Health Organization (2021) similarly links child health to integrated interventions such as immunisation, nutrition support, growth monitoring, treatment of common childhood illnesses, and access to essential medicines.

These definitions show that child health is broader than the absence of disease. It includes preventive, curative, and nutritional interventions that protect children from avoidable illness and death. In conflict-affected areas, however, child health risks are intensified by displacement, food insecurity, poor sanitation, overcrowding, poor immunisation coverage, and weakened primary healthcare services. In this study, child health refers to the health status and service needs of children under five in Maiduguri Metropolitan Council, particularly in relation to MSF-supported services such as paediatric care, immunisation support, treatment of childhood illnesses, and management of severe acute malnutrition.

Maternal, newborn, and child health

Maternal, newborn, and child health refers to a combined field of public health that focuses on improving the survival and well-being of women, newborns, and children through an integrated package of preventive, promotive, curative, and emergency services. The World Health Organization (2021) conceptualises MNCH as a continuum of care that connects antenatal care, skilled delivery, emergency obstetric care, newborn care, postnatal care, immunisation, nutrition, and treatment of childhood illnesses. UNICEF (2023) also presents MNCH as a life course concern, where poor maternal care can affect newborn survival, and poor newborn care can increase the risk of child morbidity and mortality.

For this study, MNCH is understood as an integrated service area rather than three separate health categories. This is because the health of mothers, newborns, and children is closely connected. For example, poor antenatal care may increase the risk of unsafe delivery; unsafe delivery may increase the risk of newborn complications, and poor postnatal care may affect both the mother and the child. In Maiduguri Metropolitan Council, this relationship is even more important because conflict and displacement affect all stages of care. Therefore, the study examines MSF's interventions across the MNCH continuum, including maternal care, newborn

care, paediatric services, nutrition support, immunisation-related activities, and management of common childhood illnesses.

Health interventions

Health interventions are organised actions, services, or programmes designed to prevent illness, treat disease, reduce complications, and improve health outcomes. The World Health Organization (2022) describes health interventions in fragile and conflict-affected settings as actions that must respond not only to routine healthcare needs but also to emergency conditions created by insecurity, displacement, health system disruption, and limited access to services. In general, public health literature, health interventions may include prevention, diagnosis, treatment, rehabilitation, health promotion, outreach, surveillance, and capacity building.

However, for this study, the concept of health interventions is narrowed to the humanitarian medical services provided or supported by Médecins Sans Frontières in Maiduguri Metropolitan Council. These include emergency obstetric care, maternal health services, newborn care, paediatric treatment, nutrition programmes, mobile clinics, referral support, community outreach, and treatment of common childhood illnesses. This study therefore does not use the term health interventions in a broad or abstract sense. It specifically refers to MSF's structured MNCH-related activities aimed at improving access to care and reducing preventable illness and death among women, newborns, and children in Maiduguri.

MNCH interventions in conflict-affected settings

MNCH interventions in conflict-affected settings are shaped by the disruption of normal health systems. Conflict often leads to the destruction of health facilities, shortage of skilled health workers, population displacement, insecurity, interruption of immunisation services, poor referral systems, and reduced availability of medicines and supplies. The World Health Organization (2022) notes that fragile and conflict-affected settings experience persistent interruptions in essential health service delivery, with women and children often among the most affected groups. In northeastern Nigeria, the humanitarian crisis has weakened access to essential services and increased dependence on humanitarian actors for lifesaving healthcare (United Nations Office for the Coordination of Humanitarian Affairs, 2025).

The Minimum Initial Service Package also highlights the importance of prioritising reproductive, maternal, and newborn health services during emergencies, especially safe delivery, emergency obstetric care, referral systems, prevention of maternal and newborn deaths, and protection of vulnerable populations (United Nations Population Fund & World Health Organization, 2020). This perspective is relevant to the present study because MSF's work in Maiduguri is located within a humanitarian response context, where interventions are expected to address urgent health needs while also supporting continuity of care for affected populations.

In Maiduguri Metropolitan Council, Médecins Sans Frontières has contributed to MNCH service delivery through maternal care, emergency obstetric services, paediatric care, nutrition support, and mobile outreach programmes (Médecins Sans Frontières, 2024). However, the central concern of this study is not merely to describe the existence of these services. Rather, the study examines how these interventions have contributed to coverage, utilisation, and selected MNCH outcomes among women, newborns, and children in Maiduguri Metropolitan Council. This makes the conceptual framework important because it connects the major concepts of maternal health, newborn health, child health, and humanitarian health interventions to the specific focus of the study.

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Empirical review

Empirical studies on maternal, newborn, and child health interventions in settings affected by conflict show that armed conflict weakens access to care, disrupts health systems, and increases dependence on humanitarian organisations. Across the literature, there is broad agreement that insecurity, displacement, shortage of skilled health workers, destruction of health facilities, poor referral systems, food insecurity, and inadequate funding negatively affect maternal and child health outcomes. However, the studies differ in the extent to which they show the direct contribution of humanitarian organisations to measurable health outcomes. While some studies focus mainly on service delivery and access barriers, others highlight the need for stronger evaluation of intervention effectiveness.

Munyuzangabo et al. (2021), in a systematic review of maternal and newborn health interventions in settings affected by conflict in low- and middle-income countries, found that most interventions focused on antenatal care, skilled birth attendance, emergency obstetric and newborn care, and postnatal care. The study showed that many services were delivered through hospitals, clinics, public health systems, and humanitarian organisations. However, the review also found that evidence on effectiveness was limited because many studies were descriptive and did not include strong outcome measurement. This finding is important to the present study because it shows that while MNCH interventions are commonly provided in humanitarian settings, their actual impact is often not clearly evaluated.

Rodo et al. (2022) examined the effect of COVID-19 on maternal, newborn, and child health and nutrition in fragile settings and settings affected by conflict. The study found that funding for MNCH and nutrition services was often reduced or redirected to pandemic response, leading to disruptions in antenatal care, skilled delivery, immunisation, nutrition programmes, and child health services. The study also noted that some programmes were adapted through digital health tools, community-based service delivery, and task shifting. However, these adaptations were not consistently evaluated. This supports Munyuzangabo et al. (2021), as both studies show that humanitarian interventions often continue during crises, but their effectiveness is not always measured with sufficient empirical evidence.

Tappis et al. (2020), in a study of reproductive, maternal, newborn, and child health service delivery in Yemen, found that humanitarian actors played a major role in sustaining services through health facilities, mobile clinics, outreach teams, and community health volunteers. The study showed that service delivery varied depending on security conditions, humanitarian access, availability of trained health workers, and the strength of local health systems. This study is relevant because MSF also uses facility-based and outreach approaches in crisis settings. However, the Yemen study focused more on service delivery processes than on the measurable contribution of a specific organisation to MNCH outcomes.

Sami et al. (2020) studied maternal and child health service delivery in conflict-affected areas of South Sudan. The study found that displacement, insecurity, weak infrastructure, health worker shortages, and dependence on humanitarian agencies affected the coverage and utilisation of MNCH services. Although humanitarian organisations helped sustain care in affected communities, coverage remained uneven. This agrees with Tappis et al. (2020), as both studies show that the presence of humanitarian actors can improve service availability. However, both studies also suggest that availability alone does not guarantee utilisation or improved outcomes. This is relevant to Maiduguri because MSF's presence does not automatically prove impact; its contribution must be empirically assessed.

Altare et al. (2020), in a mixed-methods study of North and South Kivu in the Democratic Republic of Congo, found that reproductive, maternal, newborn, child, and adolescent health services continued in some areas affected by conflict because of support from non-governmental organisations and United Nations agencies. The study is useful because it shows that conflict does not always completely stop health service delivery. Instead, the effect of conflict depends on the intensity of violence, local health system capacity, humanitarian access, and long-term external support. This contrasts with studies that present conflict mainly as a total barrier to care. The implication is that humanitarian interventions may reduce the negative effects of conflict, but their contribution needs to be studied in each specific context.

Chukwuma and Ekhator Mobayode (2019) examined the effect of the Boko Haram insurgency on maternal healthcare utilisation in Nigeria. Using Nigerian Demographic and Health Survey data and conflict event data, the study found that exposure to Boko Haram violence reduced antenatal care use, facility delivery, and skilled birth attendance. This study is particularly relevant because it provides Nigeria-specific evidence on how insurgency affects maternal health service utilisation. However, it does not examine how humanitarian organisations respond to these disruptions or whether their interventions improve maternal and child health outcomes. Therefore, it explains the effect of conflict but does not address the specific contribution of organisations such as MSF.

Tyndall et al. (2020) examined the relationship between armed conflict and reproductive, maternal, newborn, and child health and nutrition status and services in northeastern Nigeria. The study used a mixed-methods case study design, combining interviews with government officials, United Nations agencies, and non-governmental organisations with quantitative analysis of publicly available survey data. The findings showed that Borno, Adamawa, and Yobe States had poor RMNCH indicators before the escalation of the conflict, but international humanitarian assistance contributed to improvements in some service coverage indicators after 2016. However, the study also identified persistent barriers such as insecurity, limited access to affected populations, shortage of health workers, weak financing, and uncertainty about the sustainability of gains after humanitarian organisations withdraw. This study is highly relevant because it focuses specifically on northeastern Nigeria and recognises the role of humanitarian actors in improving maternal and child health services. However, it does not isolate or evaluate the specific contribution of Médecins Sans Frontières to MNCH outcomes in Maiduguri Metropolitan Council, which leaves a gap that the present study seeks to address.

Iwu et al. (2024) examined maternal and newborn health prioritisation in Yobe State, northeastern Nigeria. The study found that maternal and newborn health had received attention through free services, facility renovation, training of midwives, and deployment of skilled providers. However, implementation was affected by funding gaps, political changes, weak policy dissemination, a shortage of health workers, and sociocultural barriers. Although the study focused on Yobe State rather than Borno State, it is relevant because both states are located in the conflict-affected northeastern region. The study shows that service provision alone is not enough; implementation strength, sustainability, and integration into the wider health system are also important.

From these studies, three major issues can be identified. First, the literature agrees that conflict weakens maternal, newborn, and child health service delivery through insecurity, displacement, health system disruption, and reduced access to skilled care. Second, humanitarian organisations play an important role in sustaining MNCH services through emergency obstetric care, newborn services, paediatric care, nutrition support, mobile clinics, community outreach,

and referral systems. Third, many studies describe the availability and delivery of interventions, but fewer studies provide strong empirical evidence on their measurable contribution to health outcomes.

The main gap in the literature is therefore not simply that MNCH problems exist in settings affected by conflict. Rather, the gap is that limited empirical evidence exists on the specific contribution of Médecins Sans Frontières' MNCH interventions to measurable maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council. Existing studies either focus on broader conflict settings, other countries, general maternal healthcare utilisation, or health system challenges without directly evaluating MSF's interventions across the full MNCH continuum. This study addresses this gap by examining the coverage, utilisation, and contribution of MSF's MNCH interventions to selected maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council, Borno State.

Theoretical framework

This study is grounded in the Theory of Change framework. Theory of Change explains how a programme is expected to achieve its intended results by linking inputs, activities, outputs, outcomes, and long-term impact. In this study, the framework is used to show how Médecins Sans Frontières' maternal, newborn, and child health interventions are expected to contribute to improved health outcomes in Maiduguri Metropolitan Council, Borno State. Although Theory of Change is not attributed to a single founder, it is widely used in programme planning and evaluation because it helps researchers examine the pathway through which interventions produce change and the assumptions that support or limit such change (Weiss, 1995; Connell & Kubisch, 1998).

The framework is appropriate for this study because MSF's interventions operate in a fragile humanitarian setting where health outcomes are influenced by insecurity, displacement, poverty, weak public health infrastructure, shortage of skilled health workers, and limited access to essential services. Therefore, it is not enough to describe the services provided by MSF. It is also necessary to examine whether the services reach the intended population, whether they are utilised, and whether they contribute to selected maternal, newborn, and child health outcomes.

In applying the Theory of Change to this study, MSF's resources, health personnel, medical supplies, facilities, mobile clinics, referral systems, and community outreach structures represent the inputs. These inputs support activities such as emergency obstetric care, antenatal and postnatal services, newborn care, paediatric treatment, immunisation support, nutrition services, and health education. The immediate outputs include increased availability of MNCH services, increased consultations, improved outreach coverage, and increased treatment of women, newborns, and children. These outputs are expected to lead to outcomes such as improved utilisation of antenatal care, skilled birth attendance, postnatal care, newborn care, childhood illness management, and nutrition services. The long-term expected impact is improved maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council.

The framework also helps the study to identify the assumptions that may influence the success of MSF's interventions. These assumptions include community acceptance of MSF services, availability of skilled health workers, functional referral systems, steady supply of medicines and equipment, accessibility of health facilities, and a level of security that allows humanitarian operations to continue. Where these assumptions are weakened, the expected outcomes may not be fully achieved. Therefore, the Theory of Change provides a useful guide for examining both the contribution of MSF's interventions and the contextual factors that shape their effectiveness in Maiduguri.

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Materials and methods

Research design

This study adopted a qualitative research design supported by secondary quantitative programme data. The qualitative component involved key informant interviews, focus group discussions, and desk-based document review. The secondary quantitative component involved the extraction and interpretation of numerical data from MSF reports and other humanitarian health documents, including figures on outpatient consultations, deliveries, antenatal care attendance, mobile clinic utilisation, nutrition admissions, recovery rates, and facility-based neonatal outcomes.

This design was considered appropriate because the study sought to examine the contribution of Médecins Sans Frontières' maternal, newborn, and child health interventions in Maiduguri Metropolitan Council. The qualitative data helped to explain the experiences, perceptions, and contextual realities of health workers, programme actors, community representatives, and beneficiaries. The secondary quantitative data provided supporting evidence on service coverage, utilisation, and selected MNCH indicators reported in programme and humanitarian documents.

Study population

The study population comprised individuals and groups with direct knowledge of, involvement in, or experience with MSF's maternal, newborn, and child health interventions in Maiduguri Metropolitan Council. These included MSF programme staff, health professionals, government health officials, community representatives, local non-governmental organisation partners, mothers, pregnant women, and other beneficiaries of MNCH services. The key informants included individuals who were knowledgeable about the planning, implementation, monitoring, or coordination of MSF's MNCH interventions. The focus group participants were selected from women and mothers who had used or had knowledge of MSF-supported maternal and child health services in Maiduguri.

Sample size

The study used five key informant interviews and two focus group discussions. The key informant interviews were conducted with the following categories of participants: one MSF Programme Coordinator, one Community Leader, one State Ministry of Health Official, one MSF Medical Doctor, and one Local NGO Partner. These participants were selected because of their direct involvement in or informed knowledge of MNCH service delivery and humanitarian health response in Maiduguri Metropolitan Council.

Two focus group discussions were conducted. The first FGD consisted of eight mothers who had accessed MSF-supported maternal and child health services, while the second FGD consisted of eight pregnant women who had used or were currently using MSF-supported antenatal and related MNCH services. This gave a total of sixteen FGD participants.

Sampling technique

Purposive sampling was used to select key informants because the study required participants with specialised knowledge of MSF's MNCH interventions and the humanitarian health context in Maiduguri. The key informants were selected based on their roles in programme coordination, clinical service delivery, government health oversight, community representation, and local humanitarian partnership.

Purposive sampling was also used to select focus group and discussion participants. Mothers and pregnant women were included because they were direct or potential beneficiaries of MSF-supported MNCH services. Where necessary, community-based contacts and health

facility entry points were used to identify eligible participants who had relevant experience with MSF services.

Sources of Data

The study used both primary and secondary sources of data. Primary data were collected through key informant interviews and focus group discussions. Secondary data were obtained from MSF reports, government publications, and documents from humanitarian and international organisations such as UNICEF, WHO, and other relevant agencies involved in maternal, newborn, and child health programming in northeastern Nigeria.

The secondary documents provided information on MSF's intervention activities, service coverage, utilisation patterns, nutrition outcomes, neonatal care, paediatric treatment, and broader humanitarian health conditions in Borno State. These documents also supplied quantitative programme figures that were used to support and interpret the qualitative findings.

Inclusion and exclusion criteria for documents

Documents were included if they were published from 2022 onward, focused on maternal, newborn, and child health in Borno State or northeastern Nigeria, and contained information relevant to MSF interventions or the wider humanitarian health response. MSF activity reports, epidemiological surveillance reports, UNICEF situation reports, WHO publications, government health documents, and relevant NGO reports were considered eligible for inclusion.

Documents were excluded if they did not address maternal, newborn, and child health, did not relate to Borno State or northeastern Nigeria, had no relevance to humanitarian health response, or lacked credible institutional authorship. Opinion-based materials, unverifiable online sources, and documents without clear publication details were also excluded.

Data collection instruments

Three main instruments were used for data collection. The first was a key informant interview guide, which contained open-ended questions on MSF's MNCH interventions, service delivery strategies, coverage, utilisation, challenges, outcomes, and sustainability. The second was a focus group discussion guide, which explored beneficiaries' experiences with MSF services, perceived changes in access to care, barriers to utilisation, satisfaction with services, and observed changes in maternal and child health outcomes. The third was a document review checklist, which was used to extract relevant information from MSF reports, government publications, and humanitarian agency documents.

The interview and FGD guides were designed to allow participants to express their views freely while ensuring that the discussion remained focused on the objectives of the study. The document review checklist helped to organise information on intervention type, target population, service coverage, utilisation figures, reported outcomes, and implementation challenges.

Method of data collection

Key informant interviews were conducted with selected programme, clinical, government, community, and NGO stakeholders. Each interview focused on the participant's knowledge of MSF's MNCH interventions, the perceived effectiveness of the interventions, service delivery challenges, community acceptance, and observed changes in maternal, newborn, and child health service utilisation.

Focus group discussions were conducted with mothers and pregnant women. The discussions explored participants' experiences with MSF-supported services, including antenatal care, facility delivery, child health services, mobile clinics, nutrition support, immunisation-

related services, and health education. Participants were encouraged to discuss both positive experiences and challenges, including long waiting times, distance, security concerns, and barriers to postnatal follow-up.

The desk-based review was conducted by identifying, screening, and extracting relevant information from MSF reports and other credible documents. Particular attention was given to reported figures such as outpatient consultations, number of deliveries, antenatal care attendance, mobile clinic utilisation, admissions for severe acute malnutrition, recovery rates, and neonatal mortality within MSF-supported facilities.

Method of data analysis

Qualitative data from key informant interviews and focus group discussions were analysed using qualitative content analysis. The responses were read repeatedly to identify recurring ideas, patterns, and meanings. Codes were developed from the data and grouped into broader themes based on the study objectives. The major themes included types of MSF MNCH interventions, service coverage and utilisation, access to care, community acceptance, perceived health outcomes, operational challenges, and sustainability concerns.

The secondary quantitative data extracted from reports were analysed descriptively. Figures such as outpatient consultations, number of deliveries, antenatal care increase, mobile clinic utilisation, nutrition admissions, recovery rates, and neonatal mortality rates were not treated as primary survey data generated by the researcher. Rather, they were used as secondary programme indicators to support and contextualise the qualitative findings. The study therefore used these figures to strengthen interpretation, not to claim direct causal impact.

Triangulation was used by comparing findings from three sources: MSF and humanitarian reports, key informant interviews, and focus group discussions. Where the three sources supported one another, the findings were considered stronger. Where differences or contradictions occurred, they were assessed critically in relation to the source of the data, the context of reporting, and the limitations of programme-based evidence.

Trustworthiness of the study

The credibility of the study was strengthened through triangulation of data from multiple sources. Interview responses, focus group discussion data, and documentary evidence were compared to determine areas of agreement and divergence. The use of participants from different categories also helped to capture different perspectives, including programme, clinical, government, community, partner, and beneficiary views.

Dependability was enhanced by using structured interviews and focus group guides to maintain consistency across data collection. Confirmability was supported by grounding the analysis in participants' responses and documentary evidence rather than relying solely on the researcher's assumptions. Transferability was supported by providing an adequate description of the study area, humanitarian context, data sources, and categories of participants, so that readers can judge the relevance of the findings to similar conflict-affected settings.

Ethical considerations

Ethical approval was obtained from the Kashim Ibrahim University ethics committee. Permission was also sought from relevant authorities and gatekeepers before data collection. Participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw at any stage without penalty. Informed consent was obtained from all participants before interviews and focus group discussions were conducted.

Confidentiality and anonymity were maintained by not using participants' personal names in the report. Instead, participants were identified by category, such as MSF Programme

Coordinator, State Ministry of Health Official, Community Leader, Local NGO Partner, Mothers, and Pregnant Women. Data collected from participants were used only for the study. Care was also taken to avoid exposing participants to emotional distress, insecurity, or any form of risk during the research process.

Limitations of the method

The study had some methodological limitations. First, the secondary quantitative data were obtained from programme and humanitarian reports rather than from independently collected primary quantitative data. As a result, the study could describe reported service coverage and outcomes, but it could not independently verify all numerical indicators. Second, because the study relied mainly on qualitative interviews, focus group discussions, and document review, it could not establish direct statistical causality between MSF interventions and improved MNCH outcomes.

Third, the use of purposive sampling means that the findings reflect the views of selected knowledgeable stakeholders and beneficiaries, rather than the views of all women, children, health workers, or residents in Maiduguri Metropolitan Council. Fourth, insecurity and humanitarian access constraints may have affected the range of participants and communities included in the study. Finally, some findings were based on reported experiences and perceptions, which may be influenced by recall bias, personal expectations, or gratitude toward free health services.

Despite these limitations, the combination of key informant interviews, focus group discussions, document review, and secondary quantitative programme data provided a broad and context-sensitive understanding of MSF's contribution to maternal, newborn, and child health in Maiduguri Metropolitan Council.

Results and discussion

This section presents the findings of the study on Médecins Sans Frontières' (MSF) health interventions in maternal, newborn, and child health (MNCH) in Maiduguri Metropolitan Council, Borno State. The results are derived from a qualitative research methodology, synthesizing insights from a desk-based systematic review of official reports and publications from MSF and other relevant organisations, as well as key informant interview (KII) responses and focus group discussion (FGD) responses from beneficiaries. The findings are organised according to the specific objectives of the study.

Objective 1: Identification and description of key MSF MNCH interventions

Findings from the document review, key informant interviews, and focus group discussions show that MSF's maternal, newborn, and child health interventions in Maiduguri Metropolitan Council were organised around five major service areas: emergency obstetric and newborn care, support to primary maternal health facilities, paediatric and nutrition services, mobile outreach, and community engagement.

Documentary evidence showed that one of MSF's key interventions was the provision of emergency obstetric and newborn care through the Kushari Comprehensive Emergency Obstetric and Newborn Care facility. The facility was reported to provide free care for severe pregnancy-related complications, including pre-eclampsia, postpartum haemorrhage, obstructed labour, and newborn complications (MSF, 2025). This finding suggests that MSF's intervention addressed a critical gap in access to emergency maternal and newborn care in Maiduguri.

The review also showed that MSF supported basic maternal and obstetric facilities that served as entry points for routine maternal and child health services. These facilities provided basic care and referred complicated cases to higher-level services where necessary (MSF, 2025).

This indicates that MSF's approach was not limited to emergency care alone but also included support for routine service delivery and referral linkages.

In addition to maternal and newborn services, MSF provided paediatric and nutrition-related interventions. Reports indicated that MSF supported inpatient feeding centres and nutritional care for severely malnourished children (MSF, 2025). This finding is important because malnutrition remains one of the major threats to child survival in humanitarian settings, and nutrition services form a central part of the MNCH continuum.

The key informant interviews confirmed the findings from the document review. An MSF Programme Coordinator stated, "We have focused on mobile clinics and support to existing health facilities to improve accessibility" (KII 1, MSF Programme Coordinator). This statement shows that MSF's intervention strategy combined fixed health facility support with outreach services to reach populations that may not easily access formal health facilities.

A community leader also explained, "The mobile clinics come closer to our communities, and more women now go for pregnancy checkups" (KII 2, Community Leader). This response suggests that mobile clinics helped reduce distance-related barriers and encouraged the use of antenatal services among women in underserved communities.

The State Ministry of Health Official described MSF as "a crucial partner where the state's capacity is stretched by the crisis" (KII 3, State Ministry of Health Official). This indicates that MSF's interventions were perceived not only as direct service provision but also as support to the wider health system in Maiduguri.

The focus group discussions also showed that beneficiaries valued the accessibility, affordability, and educational aspects of MSF services. One mother stated, "When MSF started its mobile clinic, many of us began going for antenatal check-ups" (FGD 1, Mothers). This response shows that mobile outreach influenced health-seeking behaviour by making services more accessible to women.

Another participant said, "When our children have a fever or cough, we take them there, and they give medicines for free" (FGD 1, Mothers). This statement suggests that MSF's child health services reduced financial barriers to treatment and encouraged early care seeking for common childhood illnesses.

A pregnant woman also explained, "They check my blood pressure, give me vitamins, and tell me what to eat" (FGD 2, Pregnant Women). This response shows that beneficiaries associated MSF services with antenatal monitoring, nutritional counselling, and preventive maternal care.

Health education also emerged as an important part of the intervention. One participant stated, "They teach us about hygiene, breastfeeding, and what to do if the baby is sick" (FGD 2, Pregnant Women). This suggests that MSF's intervention included behaviour change communication, which may improve maternal and child care practices beyond the clinic setting.

Discussion

The findings show that MSF's MNCH interventions in Maiduguri Metropolitan Council were delivered through a combination of facility-based care, mobile outreach, nutrition services, referral support, and community education. The document review identified the formal structure of the interventions, while the KIIs and FGDs showed how these services were experienced by stakeholders and beneficiaries.

A major finding is that mobile clinics were repeatedly identified as important for improving access to care. This was confirmed by programme staff, community representatives, and beneficiaries, suggesting that outreach services helped bridge geographical and security-

related barriers. The findings also show that MSF's services were valued because they were free, closer to communities, and linked to practical health education.

Another important finding is that MSF's interventions were not limited to one part of the MNCH continuum. The services covered emergency obstetric care, antenatal support, newborn care, paediatric treatment, nutrition support, and health education. This integrated approach is important in a humanitarian setting because maternal, newborn, and child health needs are closely connected.

Objective 1 shows that MSF's major MNCH interventions in Maiduguri Metropolitan Council included emergency obstetric and newborn care, support to primary maternal health facilities, paediatric care, nutrition services, mobile clinics, referral linkages, and community-based health education. These findings provide the basis for assessing service coverage, utilisation, and contribution to MNCH outcomes in the subsequent objectives.

Objective 2: Evaluation of coverage and utilization of MSF's MNCH

This objective examined the extent to which MSF's maternal, newborn, and child health services reached and were used by women, newborns, children, internally displaced persons, and underserved host communities in Maiduguri Metropolitan Council. The findings were drawn from MSF programme reports, key informant interviews, and focus group discussions with beneficiaries. Unlike Objective 1, which identified the types of interventions, this section focuses on service reach, attendance, and utilisation patterns.

Coverage and utilisation from programme reports

Evidence from programme reports indicates that MSF's MNCH services reached a large number of women and children in Maiduguri Metropolitan Council. The reports showed that MSF-supported MNCH services recorded high attendance for child health consultations, maternal care, facility-based deliveries, and mobile clinic services. Reported figures included more than 45,000 outpatient consultations for children under five and more than 8,000 deliveries within the reporting period. Antenatal care attendance at MSF-supported facilities also reportedly increased by 20% compared with the previous year, while mobile clinic utilisation accounted for about 35% of all MNCH consultations.

These findings suggest that MSF's services were used by a substantial number of beneficiaries, especially women and children in internally displaced and underserved communities. The high proportion of mobile clinic utilisation shows that outreach services played an important role in expanding access beyond fixed health facilities. However, the report also indicated that postnatal care uptake remained lower than expected, suggesting that follow-up care after delivery was still a weak area in the MNCH service continuum.

Coverage and utilisation from key informant interviews

The key informant interviews supported the findings from the document review. The MSF Programme Coordinator explained that MSF's services had reached areas with high concentrations of internally displaced persons and vulnerable host communities. The respondent noted that utilisation of antenatal care and facility-based delivery had increased over time, although service use sometimes fluctuated due to insecurity and population movement.

This response suggests that MSF's coverage was not static but was shaped by the security and displacement situation in Maiduguri. In other words, while MSF expanded access to MNCH services, utilisation remained sensitive to the wider humanitarian context.

The State Ministry of Health Official also reported that MSF had strengthened MNCH service delivery in areas where government capacity was overstretched. The official observed improvements in reported antenatal attendance and skilled delivery in locations where MSF

operated. This finding indicates that MSF's intervention was perceived by government stakeholders as complementary to the public health system, particularly in underserved areas.

Coverage and utilisation from focus group discussions

The focus group discussions also showed that beneficiaries experienced improved access to MNCH services. Participants particularly linked service utilisation to proximity, free care, and the presence of mobile clinics. One mother stated, "The only problem is that sometimes the queue is very long" (FGD 1, Mothers). This statement suggests that demand for MSF services was high, but that service pressure sometimes affected waiting time and client flow.

A pregnant woman also explained, "This is the first time I am getting regular antenatal care" (FGD 2, Pregnant Women). This response indicates that MSF services may have improved continuity of antenatal care for women who previously had limited or irregular access to maternal health services.

The FGD findings also showed that beneficiaries valued the affordability of services. Since care was provided free of charge, women and caregivers who might otherwise delay treatment because of cost were able to seek care earlier. This suggests that the removal of financial barriers contributed to increased utilisation of MSF-supported services.

Discussion

The findings for Objective 2 show that MSF's MNCH interventions contributed to increased service coverage and utilisation in Maiduguri Metropolitan Council. Programme reports showed high levels of child health consultations, facility-based deliveries, antenatal attendance, and mobile clinic use. These findings were supported by KIIs, which showed that MSF services reached internally displaced persons and underserved host communities, particularly in areas where public health capacity was limited.

The evidence also shows that mobile clinics were central to service utilisation. They helped reduce distance-related barriers and brought services closer to communities affected by displacement and insecurity. This finding is important because access to fixed health facilities is often difficult in conflict-affected settings. By combining fixed facility support with mobile outreach, MSF was able to increase contact between beneficiaries and MNCH services.

However, the findings also reveal some limitations in service utilisation. Long waiting times suggest that demand sometimes exceeded service capacity. Lower postnatal care uptake also indicates that women may still face barriers to follow-up care after delivery. Therefore, while MSF's interventions improved coverage and utilisation, gaps remained in service continuity, especially in postnatal care.

Objective 2 shows that MSF's MNCH services were widely used by women, newborns, children, internally displaced persons, and underserved host communities in Maiduguri Metropolitan Council. The findings suggest improved access to antenatal care, child health consultations, facility-based delivery, and mobile clinic services. However, challenges such as long queues, fluctuating utilisation due to insecurity, and low postnatal care uptake show that coverage gains need to be strengthened through improved follow-up systems and expanded service capacity.

Objective 3: Impact of MSF's interventions on MNCH indicators

This objective examined the reported and perceived contribution of MSF's interventions to selected maternal, newborn, and child health outcomes in Maiduguri Metropolitan Council. The findings were drawn from MSF programme and surveillance reports, key informant interviews, and focus group discussions. Since the study relied on qualitative evidence and

secondary quantitative programme data, the findings are presented as evidence of contribution rather than direct statistical causation.

Findings from programme and surveillance reports

Evidence from MSF's epidemiological surveillance report showed improvements in selected child nutrition and paediatric care indicators. The report indicated that MSF's nutrition programme admitted more than 3,000 children with severe acute malnutrition in Borno State in 2022, with a reported recovery rate of 85% and a case fatality rate below 5% (Médecins Sans Frontières, 2022). This suggests that MSF's nutrition intervention contributed to the effective management of severe acute malnutrition among children reached by the programme.

The report also indicated reduced deaths from common childhood illnesses such as malaria, pneumonia, and diarrhoea among admitted paediatric cases in MSF-supported facilities (Médecins Sans Frontières, 2022). This finding suggests that the availability of paediatric treatment services may have improved the management of preventable childhood illnesses among children who accessed MSF-supported care.

For newborn care, programme data reported a facility-based neonatal mortality rate of 25 deaths per 1,000 live births within MSF-supported facilities (Médecins Sans Frontières, 2022). This figure should be interpreted carefully because it reflects facility-based programme data rather than population-level neonatal mortality. However, it provides useful evidence for understanding outcomes among newborns who received care within MSF-supported services. UNICEF's Situation Analysis of Children in Nigeria provides a broader national child survival context, showing that neonatal mortality remains a major contributor to under-five mortality in Nigeria (United Nations Children's Fund, 2021).

Findings from key informant interviews

Key informant interviews supported the documentary evidence that MSF's interventions contributed to improvements in selected MNCH outcomes. An MSF Medical Doctor stated, "We have observed improvements in severe acute malnutrition recovery and better management of childhood illnesses" (KII 4, MSF Medical Doctor). This response suggests that MSF's clinical services contributed to improved treatment outcomes among children who reached MSF-supported facilities.

The same respondent also noted that timely obstetric care had helped reduce complications during childbirth. This indicates that MSF's emergency obstetric services may have contributed to safer delivery outcomes by improving access to skilled care and emergency response for women with pregnancy related complications.

A Local NGO Partner stated, "Mothers now recognise danger signs earlier and bring sick children to the facility sooner" (KII 5, Local NGO Partner). This statement suggests that MSF's community outreach and health education activities contributed to earlier care seeking for childhood illnesses. Earlier presentation at health facilities is important because delays in seeking care often worsen outcomes for children with malaria, pneumonia, diarrhoea, and malnutrition.

Findings from focus group discussions

The focus group discussions also showed that beneficiaries perceived improvements in child and maternal health outcomes. One mother stated, "Fewer children are dying from malaria and diarrhoea now" (FGD 1, Mothers). This response reflects the perception among beneficiaries that access to prompt treatment contributed to improved child survival in their communities.

Another participant noted, "When our children are sick, we take them quickly to MSF and they get better" (FGD 1, Mothers). This statement suggests that MSF's free and accessible services encouraged earlier treatment seeking, especially for common childhood illnesses.

A participant also stated, "The women are healthier now, and more babies are surviving" (FGD 1, Mothers). This response shows that beneficiaries associated MSF's maternal and newborn services with improved pregnancy and newborn outcomes. Although this is a perception-based statement, it is useful because it reflects how service users experienced the intervention.

The FGD findings also showed that health education contributed to changes in maternal and child care practices. Participants reported improved awareness of breastfeeding, hygiene, immunisation, and danger signs in newborns and children. This suggests that MSF's contribution was not limited to treatment alone but also included preventive and promotive health education.

Discussion

The findings for Objective 3 suggest that MSF's interventions contributed to selected MNCH outcomes in Maiduguri Metropolitan Council, particularly in child nutrition, paediatric illness management, newborn care, maternal care, and health-seeking behaviour. Programme data showed reported improvements in severe acute malnutrition recovery, case management of childhood illnesses, and facility-based newborn outcomes. These findings were supported by KIIs and FGDs, which showed that health workers, NGO partners, and beneficiaries perceived improvements in maternal and child health outcomes.

The strongest evidence of contribution was found in the nutrition and paediatric components of MSF's intervention. The reported admission of more than 3,000 severely malnourished children, together with an 85% recovery rate and a case fatality rate below 5%, suggests that MSF's nutrition programme played an important role in managing severe acute malnutrition among children reached by the service. Similarly, beneficiary reports of fewer deaths from malaria and diarrhoea suggest that accessible paediatric care encouraged earlier treatment and may have reduced preventable complications.

The findings also suggest that MSF's maternal and newborn care services contributed to improved service outcomes by supporting skilled delivery, emergency obstetric care, newborn care, and timely referral. However, the evidence should be interpreted cautiously because the study did not use a controlled quantitative design to prove direct causality. The programme figures show reported outcomes among service users, while the KIIs and FGDs provide explanatory evidence on how beneficiaries and stakeholders experienced those outcomes.

Objective 3 shows that MSF's interventions contributed to selected MNCH outcomes by improving access to treatment, supporting emergency maternal and newborn care, managing severe acute malnutrition, treating common childhood illnesses, and strengthening health-seeking behaviour. However, further facility-based and population-based quantitative evaluation would be needed to measure the full magnitude of MSF's impact on maternal, newborn, and child health indicators in Maiduguri Metropolitan Council.

Conclusion

This study examined the contribution of Médecins Sans Frontières' maternal, newborn, and child health interventions in Maiduguri Metropolitan Council, Borno State. The findings show that MSF has filled important service delivery gaps in a context where conflict, displacement, poverty, and weak public health infrastructure continue to restrict access to care. Its support for emergency obstetric and newborn care, mobile clinics, paediatric treatment, nutrition services, referral linkages, and community outreach has improved access to essential services among displaced and underserved populations.

The significance of these findings lies not only in the number of services provided, but in the way MSF's interventions have helped maintain a functional MNCH care pathway in a fragile

humanitarian setting. The evidence suggests that women and children who might otherwise face delayed or unaffordable care have been able to access antenatal services, skilled delivery, child health consultations, nutrition support, and health education. This confirms the relevance of the Theory of Change framework adopted in the study, as the findings show a logical link between MSF's inputs, activities, outputs, and selected maternal, newborn, and child health outcomes.

However, the findings also show that service availability does not automatically translate into complete service coverage or sustained health system improvement. Long waiting times, lower postnatal care uptake, fluctuating service utilisation due to insecurity, and dependence on humanitarian support remain important concerns. Therefore, while MSF's contribution is significant, the long-term value of these interventions will depend on how well they are strengthened, monitored, and integrated into the Borno State health system.

Overall, the study concludes that MSF has made an important contribution to maternal, newborn, and child health service delivery in Maiduguri Metropolitan Council. Its interventions have improved access to care and supported selected health outcomes in a difficult humanitarian context. Nevertheless, stronger postnatal follow-up, better referral continuity, improved data systems, and deeper collaboration with the state health system are needed to sustain and expand these gains.

Recommendations

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

i. MSF should strengthen postnatal care follow-up by introducing a structured postnatal care schedule for mothers and newborns within the first six weeks after delivery. This should include follow-up contacts shortly after delivery, during the first two weeks, and at six weeks to improve early detection of maternal and newborn complications.
ii. MSF should expand mobile clinic coverage in underserved and internally displaced communities within Maiduguri Metropolitan Council. This should include increasing the frequency of mobile clinic visits, assigning adequate health workers to high-demand locations, and ensuring that essential medicines, nutrition supplies, vaccines, and referral materials are consistently available during outreach visits.
iii. MSF should reduce waiting time at high-volume service points by improving patient flow, introducing appointment or triage systems where feasible, and increasing staff deployment during peak clinic periods. This is important because long queues may discourage women and caregivers from returning for follow-up care.
iv. MSF should improve postnatal care uptake through community-based follow-up. Community health workers, traditional birth attendants, and trained community volunteers should be used to trace women after delivery, provide reminders, identify danger signs, and encourage mothers to return for postnatal checks.
v. MSF should strengthen referral linkages between mobile clinics, basic maternal health facilities, and the Kushari Comprehensive Emergency Obstetric and Newborn Care facility. A clear referral tracking system should be used to document referred cases, referral completion, delays, and outcomes.
vi. MSF should deepen collaboration with the Borno State Ministry of Health by gradually transferring selected skills, tools, and service delivery practices to government health workers. This should include joint training, mentorship, shared supervision, and practical capacity building in emergency obstetric care, newborn care, paediatric treatment, nutrition management, and data reporting.

vii. MSF should improve routine monitoring of MNCH outcomes by using standard indicators for antenatal care attendance, skilled delivery, postnatal care uptake, newborn complications, immunisation-related services, severe acute malnutrition recovery, childhood illness treatment, and referral outcomes. These indicators should be reviewed regularly to guide programme improvement.

viii. MSF and the Borno State Ministry of Health should develop a sustainability plan for MNCH services in Maiduguri. This plan should clearly identify which services can be integrated into the public health system, what resources are required, what staff capacity is needed, and how service continuity will be protected if humanitarian funding declines.

ix. Humanitarian actors in Maiduguri should improve coordination through shared service mapping, joint referral systems, and regular review meetings. This will reduce duplication, identify underserved communities, and ensure that women, newborns, and children receive timely and appropriate care.

Limitations of the study

This study had some limitations. First, the study relied on qualitative data and secondary quantitative programme data rather than independently collected primary quantitative data. As a result, the study could assess MSF's reported and perceived contribution to MNCH outcomes, but it could not establish direct statistical causality.

Second, the numerical data used in the study were obtained from programme and humanitarian reports. Although these data are useful for understanding service coverage and reported outcomes, they may not fully represent population-level maternal, newborn, and child health conditions across Maiduguri Metropolitan Council.

Third, the study used purposive sampling for key informant interviews and focus group discussions. This allowed the study to obtain information from knowledgeable stakeholders and beneficiaries, but the findings may not represent the views of all women, caregivers, health workers, or communities in Maiduguri.

Fourth, insecurity and access constraints may have limited the range of communities and participants included in the study. Some affected populations, especially those in hard-to-reach areas, may have different experiences of MSF services that were not fully captured.

Finally, some findings were based on participants' perceptions and recollections. These may have been influenced by personal experiences, recall bias, or appreciation for free humanitarian services. Despite these limitations, the use of document review, KIIs, FGDs, and triangulation strengthened the credibility of the findings and provided a useful understanding of MSF's contribution to MNCH service delivery in Maiduguri Metropolitan Council.

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