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Beyond the doctor's office: a longitudinal study mapping women's experiences of the maternal healthcare journey as a pathway to reducing maternal mortality in Nigeria

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ABSTRACT

Objectives Nigeria has one of the highest maternal mortality burdens globally. Improving maternal outcomes requires a better understanding of how women experience care across pregnancy, childbirth and the postnatal period. This study explored women's maternal healthcare experiences across the perinatal continuum in Nigeria, with a focus on how challenges emerge and interact over time.

Design Longitudinal qualitative study using patient journey mapping.

Setting Public primary, secondary and tertiary healthcare facilities in Abuja, Nigeria.

Participants 12 pregnant women were purposively sampled. Each woman participated in two rounds of in-depth interviews: once in late pregnancy and again 2–6 weeks postpartum. All participants completed both interview rounds.

Methods Data were collected through 24 semistructured in-depth interviews conducted longitudinally to capture changes in women's experiences before and after childbirth. Interview guides were informed by existing maternal health frameworks. Transcripts were analysed using reflexive thematic analysis and organised across five stages of the maternal healthcare journey: Awareness, Consideration, Access, Treatment and Recovery.

Findings This study introduces a five-stage framework: Awareness, Consideration, Access, Treatment and Recovery, to comprehensively explore maternal healthcare experiences. The findings reveal systemic inefficiencies at every stage of the pregnancy journey, from limited awareness of pregnancy test kits to unreliable booking systems and inadequate postpartum mental health support. This study highlights how early-stage barriers cascade into later phases, unlike traditional research that focuses only on clinical interactions. This study emphasises the importance of maternal care accessibility and recovery support, moving beyond a treatment-centric lens.

Conclusion This study presents a transformative framework for understanding maternal healthcare as a continuum of interconnected experiences. The research offers actionable insights to enhance maternal health outcomes through stage-specific strategies. The globally adaptable framework provides policymakers and healthcare practitioners with a roadmap to improve maternal healthcare systems in Nigeria and beyond. This holistic approach lays the foundation for reducing maternal mortality while ensuring equitable care for all.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The longitudinal qualitative design captured women's experiences at two critical time points, late pregnancy and early postpartum, allowing exploration of changes across the care continuum.
⇒ A patient journey mapping analytical approach was used to organise these experiences across stages of care, highlighting how challenges were interconnected.
⇒ Maximum variation sampling enabled inclusion of women from diverse backgrounds and facility types within the public health system.
⇒ Findings reflect the experiences of women who accessed facility-based care and do not capture the perspectives of women who never entered the formal health system.

INTRODUCTION

The birth of a child is often a time of joy and celebration. However, for many women, particularly in low- and middle-income countries (LMICs) like Nigeria, this experience is marred by significant challenges.[1] In 2023, an estimated 260 000 women globally died from pregnancy-related complications, with approximately 92% of these deaths occurring in LMICs. Alarmingly, Nigeria alone accounts for 28% of global maternal deaths.[1 2] Although maternal mortality is a tragic outcome, it is the end of the spectrum of poor pregnancy outcomes, representing the tip of the iceberg of adverse maternal outcomes.[3] For every reported maternal death in sub-Saharan

Africa, there are at least five maternal near-miss cases.[4] Between 2005 and 2015, Nigeria experienced over 900 000 maternal near-miss cases.[5] To reduce maternal death rates in Nigeria, deliveries should occur in facilities, where service providers can effectively manage obstetrical complications that may arise during childbirth.[1] There are three levels of healthcare delivery in Nigeria: primary, secondary and tertiary.[6] Around 26% of institutional deliveries occur in public or government health facilities, while 13% occur in private facilities, which makes up the national 39% skilled birth attendance (from public and private facilities) in Nigeria.[7]

Inaccessibility to maternal healthcare contributes to poor pregnancy outcomes in Nigeria. Where pregnancy care is accessible, it is often of poor quality.[5] Several national and international interventions have been implemented in Nigeria to improve maternal healthcare quality, access and utilisation, such as training more health workers, increasing funding for maternal health programmes and establishing health initiatives.[8] These include the National Strategic Health Development Plan, the Midwives Service Scheme and the Saving One Million Lives Program.[8–10] More recently, the government announced plans to introduce free emergency caesarean sections for disadvantaged women to address financial barriers to critical maternal care.[11] However, despite these efforts, poor pregnancy outcomes in Nigeria persist, indicating the need for more impactful and sustained solutions.[12]

For maternal healthcare to be universal in Nigeria, there is a need to refocus on service delivery through an integrated, people-centred lens that enhances patient experiences, reduces maternal mortality and ensures no one is left behind.[13] Understanding these experiences helps evaluate the quality of care provided and supports the delivery of better pregnancy care.[1 14] One way to gain insight into the patient experience is by researching the patient journey.[15] Patient journey mapping, also known as healthcare process mapping, is a novel approach to healthcare which visually assesses the interaction between the patient and the healthcare system.[16 17] It highlights gaps in patient care experience, providing an opportunity to redesign the patient care pathway and improve clinical experiences such that emphasis is placed on areas most valued by patients.[15 17 18] Although patient journey mapping has been used to understand patients' experiences in burn care,[19] palliative care,[20] non-communicable diseases[17] and pre-eclampsia,[16] there is scant literature investigating its application to maternal healthcare, especially in LMIC. This study explores women's experiences with the maternal healthcare system in Nigeria and identifies strategies to improve maternity care. Using the patient journey mapping tool, this study examines the step-by-step process of women's experiences, extending beyond the confines of clinical settings to uncover the root causes of maternal health challenges in Nigeria. This comprehensive approach enables the identification of tailored, stage-specific solutions that address underlying issues, rather than surface-level remedies. These insights could ultimately enhance healthcare quality and provide better solutions to reducing maternal mortality, the end of the spectrum of adverse pregnancy outcomes.

To the best of our knowledge, this is the first study to apply a patients' journey mapping approach to study women's experiences with maternity healthcare in the Nigerian context. While the study focuses on Nigeria, its findings have broader implications. They offer valuable insights that can inform policy and improve health responsiveness in other contexts, including developed countries. This ensures that women receive satisfactory and patient-centred maternity care, irrespective of their background.

METHODS

Study design

This longitudinal study employed both retrospective and prospective research approaches to explore women's experiences with maternal healthcare as they progress through their pregnancy and childbirth. At each interview round, women described their ongoing experiences as they progressed through pregnancy, childbirth and the postpartum period (prospective accounts). They also reflected on earlier stages of the maternal healthcare journey, including pregnancy recognition, decision-making and previous interactions with the health system (retrospective accounts). The patient journey mapping collected primary data through in-depth interviews (IDIs).

Study participants

The study includes 12 purposively sampled women in their third trimester of pregnancy who were registered at a public health facility: either primary, secondary or tertiary in Nigeria. Given that this was an exploratory study, a sample size calculation was not appropriate; instead, the sample size was determined by data saturation, based on the anticipated information power of the participants.[21] In other words, data saturation determined the sample size.[22]

Recruitment methods

The patients were recruited from three public health facilities in Nigeria: Garki Village Primary Health Clinic Garki, Abuja (primary health facility), Wuse General Hospital (secondary health facility) and National Hospital Abuja (tertiary health facility). This selection was made to ensure diverse perspectives from different healthcare levels. The study inclusion criteria are pregnant women in the third trimester, those registered at any of the study maternal health facilities and those able to give informed consent. Women living with disabilities were also considered to ensure inclusivity and to better understand their maternity experiences.

Potential participants were first briefed by the principal investigator on the study's purpose and provided with a

participant information sheet. Participants were given at least 24 hours to decide whether to participate and given the opportunity to ask questions about the research. Consent forms were given to those who agreed to participate. For participants unable to read, the consent form was read aloud and explained, and their consent was marked with their initials on the subject signature line.

Data collection

A semistructured interview guide was developed based on existing literature.[16–18 23 24] The guide was piloted with four participants and then revised to ensure it properly answered the research questions and that the participants understood the interview questions well. The IDIs were conducted in English or Nigerian Pidgin, depending on the participant's language preference. Interviews were conducted in quiet, private locations within the health facility and at a mutually agreed time. The interviews were audio-recorded with participant consent.

Two interviews were conducted with each participant. The first occurred during the last trimester of pregnancy; and the second, a follow-up interview, was conducted between 2 and 6 weeks after the end of pregnancy, regardless of the pregnancy outcome or eventual place of birth (eg, home, private clinic or referral hospital). This approach provided a comprehensive view of the participants' maternity experiences.

Between the first and second interviews, participants were contacted approximately once every 2 weeks via phone to follow-up on their pregnancy progression and confirm their availability for the follow-up interview. The follow-up interview was conducted in person at the facility where recruitment was done or via telephone for those who delivered at home or in a different healthcare setting. Each interview lasted approximately 30–45 min. The study spanned 5 months, from recruitment to completion of data collection. At the end of the study, participants were compensated with airtime for their mobile phones.

Data analysis

This study employed a combination of inductive and deductive approaches for data analysis.[21] Themes were initially derived inductively from participants' narratives to ensure they were firmly grounded in the data. Subsequently, the pregnancy journey framework was applied deductively, to organise and contextualise these themes, providing a structured understanding of women's maternal health experiences across different stages. This dual approach balanced capturing participants' lived experiences with situating them within an established theoretical framework. Data analysis was conducted using NVivo and MS Excel.

Study rigor

Several measures were implemented to ensure the study's trustworthiness, focusing on credibility and transferability. First, participants were given the opportunity to review their responses by revisiting their answers step-by-step. This process allowed them to confirm the accuracy of the information they provided and ensure their experiences were represented accurately, without influence from the researcher's own perspectives.

Second, the patient journey pregnancy framework used in this study was grounded in existing evidence from previous research,[15–20] reinforcing its credibility. Lastly, a second qualitative researcher reviewed the transcripts and cross-analysed the codes to further ensure trustworthiness. These steps collectively supported transparency, dependability and the study's replicability, enhancing its overall rigour.

Ethical considerations

To ensure anonymity and protect participant confidentiality, all data were recorded using an encrypted digital recorder for enhanced security. During transcription, real names, place names and personally identifiable information were replaced with pseudonyms, such as unique ID numbers for participants. Health facility names were also anonymised using letters (eg, X Facility, Y Hospital). The principal investigator personally transcribed the data and reviewed the transcripts to ensure accuracy and consistency while maintaining confidentiality.

Patient and public involvement

Patients and the public were not involved in the design of this study. Women participated as research participants, including pilot interviews that informed minor refinements to the interview guide as part of standard qualitative research practice.

RESULTS

Participant characteristics

The participants represented diverse sociodemographic characteristics (table 1). Ages ranged from 20 to 39 years, and parity varied from nulliparous to multiparous.

Table 1 Sociodemographic characteristics of study participants

Participant ID	Age (years)	Parity	Healthcare facility level
P01	30–34	3	Primary
P02	30–34	3	Primary
P03	20–24	0	Primary
P04	35–39	3	Primary
P05	25–29	0	Secondary
P06	20–24	0	Secondary
P07	35–39	2	Secondary
P08	30–34	2	Tertiary
P09	30–34	1	Tertiary
P10	25–29	1	Tertiary
P11	35–39	0	Tertiary
P12	30–34	1	Tertiary

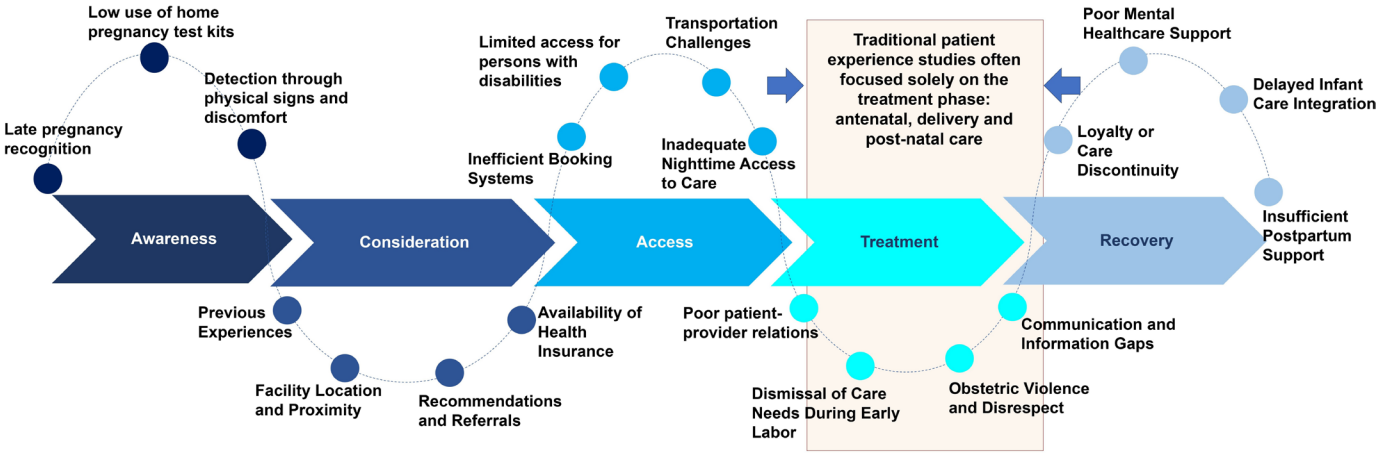

Figure 1 Conceptual illustration of five interconnected stages of women's maternal healthcare experiences, namely: Awareness, Consideration, Access, Treatment and Recovery, highlighting key activities and challenges across the pregnancy journey.

Participants accessed maternity care across primary, secondary and tertiary healthcare facilities, reflecting experiences across different levels of the Nigerian health system. In addition, the sample reflected variation in educational attainment and employment status, indicating socio-economic diversity within the study population; these characteristics are described in aggregate to preserve participant anonymity.

One participant reported living with a known mobility impairment. This was a physical disability that made walking difficult, attributed to complications from her first childbirth. It affected her urinary tract and subsequently her mobility. She also expressed experiencing long-term mental health challenges, including depression, following the loss of her first baby immediately after birth.

A FIVE-STAGE FRAMEWORK OF MATERNAL HEALTHCARE EXPERIENCES

Thematic analysis identified five major themes representing key stages of the pregnancy journey: Awareness, Consideration, Access, Treatment and Recovery. These themes provide a structure for understanding the multifaceted interactions between women and the healthcare system throughout their pregnancy journey, encompassing both clinical and non-clinical dimensions (figure 1). Each stage is characterised by key activities and interactions that influence maternal healthcare experiences and outcomes.

Awareness stage

This is the stage where the need for pregnancy care arose. Within this theme, three key subthemes emerged: physical signs and symptoms, pregnancy confirmation methods and late pregnancy detection (figure 1 and online supplemental table S1).

Physical discomfort and symptoms

Many women first suspected they were pregnant based on bodily changes such as fatigue, nausea, fever and missed menstrual periods. Several women initially attributed the symptoms to other health issues such as malaria.

Pregnancy confirmation method

Once pregnancy was suspected, most women relied on hospital-administered tests for confirmation. Although medical confirmation was generally accessible, some participants faced challenges detecting their pregnancies earlier. For instance, a woman remained unaware of her pregnancy for a while due to continued menstrual bleeding and only discovered it when she visited the hospital for an unrelated illness (online supplemental table S1).

This highlights the limitations of relying solely on physical symptoms for detecting pregnancy and suggests the need for more accessible and available confirmation methods, such as home pregnancy test kits.

Late pregnancy detection

Several participants discovered their pregnancy late, delaying the initiation of antenatal care. Factors influencing late pregnancy detection included lack of awareness, financial barriers and lack of access to timely healthcare.

Consideration stage

This stage involved women weighing their options and deciding where to seek pregnancy care after doing personal research to evaluate the best available maternity healthcare options. Several key subthemes emerged as factors influencing decisions, including previous experiences, facility location and proximity, availability of health insurance, recommendations and referrals, and perceived quality of care and specialised services (figure 1 and online supplemental table S1).

Previous experiences

Women's choice of a healthcare facility was strongly influenced by their previous experiences, whether positive or negative. Those who had satisfactory care at a facility were more likely to return, citing trust in the quality of services received. Conversely, women who encountered negative experiences at a previous facility often sought alternatives where they believed they would receive better care.

Facility location and proximity

The location of a healthcare facility plays a major role in the decision-making process. Women often choose facilities based on proximity to home or a supportive network, such as family members and friends.

Availability of health insurance

Financial factors such as the National Health Insurance Scheme availability also influence women's decision-making regarding maternity health. Many women chose facilities that were affiliated with their health insurance provider to reduce out-of-pocket costs.

Recommendations and referrals

The choice of facilities for pregnancy care was influenced by recommendations from family and friends or by referrals from health professionals. For women with special health needs, professional referrals to higher-level care facilities were common.

Perceived quality of care and specialised services

The availability of quality, specialised maternal care was also a factor in women's health facility choices. Women often prioritised hospitals with a good reputation, especially regarding advanced care in case of complications. Some were even willing to travel long distances to access specialised care that they felt would ensure safer pregnancies and deliveries.

Access stage

This is the stage where the women directly contact the healthcare facility. Emerging subthemes in this stage include inefficient booking systems, administrative and technical challenges, transportation and distance concerns, inadequate nighttime access to care and limited access for persons with disabilities (figure 1 and online supplemental table S1).

Inefficient booking systems

Inefficient booking systems can prevent women from accessing timely care. Women reported difficulties in reaching healthcare providers or confirming appointments, which can be particularly challenging when urgent care is needed.

Administrative and technical overlaps at the entry point

These often create delays and affect access to care. These delays can be frustrating and sometimes discourage women from seeking further healthcare. In some cases, technical issues can lead to healthcare discontinuity, especially when women feel their needs are not being met quickly.

Transportation and distance concerns

Transportation costs and long distances pose significant barriers to accessing care. Women often face financial and logistical challenges when regularly visiting healthcare facilities. These challenges were particularly pronounced for those needing to reach health facilities early in the morning.

Inadequate nighttime access to care

For many women, labour starting at night limits access to health facilities due to the lack of available care during nighttime hours. This gap can have serious implications for maternal and neonatal health.

Limited access for persons living with disabilities

Limited access to disability-inclusive maternal healthcare was identified as a challenge. Barriers in support services for women with disabilities point to the need for more inclusive healthcare in Nigeria.

Treatment stage

This is the point where maternity medical care is given to the woman at the health facility. Emerging themes in this stage include patient–provider relations, dismissal of care needs during early labour, perceived unethical practices with blood donations, obstetric violence and disrespect, delayed arrival of health workers, systemic inadequacies and communication and information gaps (figure 1 and online supplemental table S1).

Patient–provider relations

Women expressed mixed experiences with healthcare providers. Some, particularly primary care users, reported positive interactions with the providers, while others felt dissatisfied with treatment. In some cases, women felt the services lacked empathy and that providers failed to listen or communicate effectively, leaving them feeling ignored.

Dismissal of care needs during early labour

Several women reported feeling neglected and unsupported by healthcare providers during the early stages of labour, particularly when expressing pain or seeking assistance. Despite experiencing contractions, some patients were repeatedly sent home, thereby leading to home birth without professional assistance, putting both mother and child at risk. Others who remained at the hospital still faced delays in intervention, sometimes resulting in complications, such as severe vaginal tears due to unsupervised pushing during delivery.

Perceived unethical practices with blood donations

Some health facilities require women to bring matching blood donors or pay for blood ahead of delivery, in case of potential complications. However, many women reported that when the blood was not used, they were not refunded, which they perceived as exploitative. This practice could

discourage them from donating or bringing donors in the future.

Obstetric violence and disrespect

Women reported experiencing abuse and maltreatment during childbirth. This hostile behaviour of healthcare providers, especially when they shouted at or intimidated patients, contributed to fear and anxiety among women during delivery.

Delayed arrival of health workers

Delays in the arrival of health workers were also noted, causing frustration for patients who had to wait long hours beyond their scheduled appointment time.

Systemic inadequacies

A recurring theme was systemic issues, such as misdiagnosis, lost test results and incorrect patient records, which many participants reported as sources of confusion and errors in care delivery. Another major concern is the overreliance on student doctors in most facilities, which many women have expressed compromised the quality of care received.

Communication and information gaps

Participants noted a lack of information provided about their treatments and procedures, highlighting the need for better communication and patient autonomy.

Recovery stage

This stage represents the experiences of women who are discharged from health facilities. Key subthemes include inadequate postnatal education, reliance on external sources for postpartum support, delayed infant care integration, poor attention to maternal mental health and emotional well-being and loyalty or care discontinuity (figure 1 and online supplemental table S1).

Limited postnatal care education

While many mothers received guidance on baby care, postpartum support for life after leaving the hospital for mothers themselves is insufficient. Women reported various postpartum challenges, including inadequate guidance on managing conditions such as breast engorgement. The lack of education on these issues left many feeling unprepared for the physical demands of the postnatal period.

Reliance on external sources or prior knowledge for postpartum support

In some cases, women were left to rely on prior knowledge or external sources for postpartum support, particularly in areas such as family planning and physical recovery. This was particularly true for family planning decisions and managing physical complications, such as episiotomy healing.

Delayed infant care integration

Some women expressed concerns about delays in integrating infant health checks into the mother's recovery process, prolonging hospital stays.

Poor attention to maternal mental health and emotional well-being

Many women reported struggling with postnatal mental health issues such as postpartum depression. Some highlighted that mental health is frequently neglected, with little to no structured support available during the postpartum period. They shared experiences of feeling dismissed or stigmatised when seeking postnatal mental health assistance.

Furthermore, women who had stillbirths emphasised the absence of emotional support and follow-up care, compounding their distress.

Loyalty or care discontinuity

In the recovery stage, women reflect on their overall maternity care experiences, which can influence their loyalty to formal healthcare or lead to care discontinuity. Some negative experiences, such as provider impatience or unnecessary episiotomies, led women to consider alternative options for future deliveries. A participant who unexpectedly delivered at home found the compassionate approach of a midwife preferable to her past hospital experiences and decided she would choose home birth next time.

COMPOUNDING CHALLENGES ACROSS MATERNAL CARE STAGES

The study also reveals the interconnectedness of the different stages of the maternal care journey, showing how experiences in one stage can transform and influence the next. Challenges encountered in one phase often create a ripple effect, extending into other stages and compounding difficulties.

Awareness and consideration

Delayed recognition of pregnancy (awareness stage) can significantly impact healthcare decision-making (consideration stage). For example, a woman living with a disability shared how her delayed pregnancy recognition affected her healthcare journey.

> I initially did not know I was pregnant. I first noticed some minor illnesses like fever and malaria and treated it. Then after several months, a local midwife came to examine me at home and discovered that I am pregnant. My first appearance at a formal health facility was when my pregnancy was around 8 months.—P03

This delayed awareness hindered timely formal healthcare consideration options, ultimately leading to a late initiation of antenatal care.

Access and treatment

Accessibility challenges can also develop into other maternal health issues in the treatment phase. A

participant shared how she delivered at home due to the difficulty of reaching the facility in the middle of the night.

> I gave birth in the house. The reason is because I was in labour in the middle of the night before we got there…I think around 4 am, I had delivered.—P02

Accessing healthcare facilities was challenging, which impacted her delivery experience. This shows how limitations in the access stage can have a significant effect on care delivery.

Treatment and recovery

Gaps during the treatment phase can lead to complications that extend into the recovery stage. One participant shared how inconsistent care and changes in healthcare providers led to poor management during recovery after a caesarean section:

> So, after that, the second week, I went to the hospital, the doctor I met looked at the site of the operation and said I can start having my bath which I did. He now asked me to return back after two weeks. So, returning back after two weeks, the next doctor I saw said, "Ah! Who asked you to start having your bath when the…this thing has not healed?". He said that the thing is not okay for me to start having my bath, and he said the face of the site wasn't good. After that I started having pus…pus started coming out.—P10

Another participant, a first-time mother, highlighted the impact of a communication gap during the treatment phase, which resulted in pain and discomfort in the recovery phase, long after leaving the hospital. She expressed feeling neglected by healthcare providers, mainly because they failed to provide guidance on managing her vaginal tear. This lack of support led to prolonged pain and psychological distress postdelivery.

> You know I had tear, and I don't have any experience about the tear, instead of the midwife to sit me down about the tear, and tell me what and what I am supposed to do, she didn't even attend to me…the tear that occur during childbirth was so painful. I was feeling uncomfortable, I can't sit, I can't do anything. Ah…It was really, really so painful. So, that is what makes me cry every time. When I think about that I always cry.—P05

DISCUSSION

This study applies a patient journey mapping approach to examine women's maternal healthcare experiences across pregnancy, childbirth and the postnatal period in Nigeria. The study organises women's narratives across five stages: Awareness, Consideration, Access, Treatment and Recovery, to highlight often overlooked dimensions of maternal healthcare experiences beyond direct clinical encounters. Rather than viewing maternal care as a series of isolated events, the findings show how women's experiences unfold and interconnect across the continuum of care. It demonstrates how difficulties in one stage can affect later stages, ultimately influencing overall outcomes, which include maternal survival. These findings have important implications for enhancing maternal healthcare systems, providing a framework for reducing poor pregnancy outcomes and maternal death rates in Nigeria and similar contexts.

Methodological contribution: moving beyond treatment-centric approaches

This study employs patient journey mapping, which moves beyond traditional treatment-centric approaches to assess the full spectrum of interactions between patients and the healthcare system. Several maternity experience studies often focus narrowly on the treatment stage, emphasising a woman's direct interaction with the healthcare facility environment.[23–25] This study, however, takes a broader perspective, revealing that women's experiences with maternity care extend far beyond the clinical premises. The findings indicate that critical aspects of the maternity journey, such as awareness, consideration, access and recovery, are shaped by factors outside direct contact with the leading healthcare providers. Neglecting these broader dimensions not only risks underestimating the complexity of women's maternity care experiences but also limits the development of holistic interventions that address the full range of their needs.

This methodological innovation not only enriches our understanding of maternal health journeys but also offers a framework that can be adapted and applied to similar contexts globally. For instance, the study shows that a major problem in the awareness stage is the low use and knowledge of home pregnancy test kits. This finding aligns with a study in Uganda, which reported low awareness and utilisation of home pregnancy test kits among women, stressing the need for targeted education and resource distribution.[26] Reliance on hospital-administered tests could be a hindrance to timely pregnancy detection, especially for women with limited access to health facilities.[26] While hospital-administered pregnancy confirmation tests are good, they should complement other quicker home-based testing methods.

Similarly, at the access stage, unreliable booking systems significantly impact timely, informed decision-making, as women often face difficulties contacting health facilities to obtain essential information before their visits. Such gaps can lead to delays in seeking care, unnecessary visits or late management of complications that could be life-threatening. Like many other developing countries, Nigeria still uses manual systems, requiring patients to visit the health facilities to book and adjust appointment schedules.[27] This not only wastes patients' time but also undermines the efficiency of healthcare delivery.[27] To achieve optimal maternal healthcare delivery, e-health technologies must be promoted, especially in pregnancy care in Nigeria. The emergence of mental and emotional

health issues highlights a critical gap in Nigeria's maternal healthcare system. Addressing this gap requires structured mental health interventions integrated into postnatal care. This aligns with findings from a study in Western Nigeria, which reported a postpartum depression prevalence of 52.3%, reinforcing the urgency of integrating mental healthcare into Nigeria's maternal health system to ensure comprehensive postnatal support.[28]

Stage interconnections in maternal healthcare

Another striking finding in this study was the interconnected nature of maternal healthcare experiences. The five-stage pregnancy journey was found to be non-linear, with a dynamic interplay between stages. Challenges in one stage rippled into subsequent stages, compounding systemic maternal healthcare barriers. For instance, delayed pregnancy detection at the awareness stage was found to influence the consideration stage by hindering women's timely healthcare decision-making. This aligns with findings from a study in Madagascar, which showed that free home pregnancy test kits distributed by community health workers helped women in rural areas make earlier and more informed decisions about seeking antenatal care.[29] This highlights the importance of early pregnancy recognition in shaping healthcare decisions, and ultimately reducing the risk of maternal deaths.[26 29] In the USA, late pregnancy recognition has been shown to influence women's decisions to seek abortion care, often restricting their options and access to timely reproductive health services.[30]

Likewise, the access-stage issues highlighted in the study can translate into treatment-stage complications. Late antenatal care initiation is a significant issue highlighted in this study. Antenatal care is the foundation of maternal healthcare, offering opportunities for early detection and management of complications, and building a relationship and trust between women and maternity care providers.[24] Delayed initiation disrupts this foundation, increasing risks across subsequent stages of the maternal healthcare journey.[29 30] For instance, women who access antenatal care late may miss essential screenings and interventions, compounding potential complications during delivery and recovery.[24] This finding is consistent with a study conducted in Ibadan, Nigeria, where nearly half of the participants initiated antenatal care later than the WHO-recommended first trimester.[24] Such delays reflect broader systemic barriers that contribute to Nigeria's high maternal mortality rates. Additionally, this study identified night labour as a pressing concern in the access stage, with cascading effects into the treatment stage. Research indicates that labour onset for both term and preterm births most commonly occurs during the late night or early morning hours (between 21:00 and 06:00) when uterine contractions are strongest due to peak melatonin concentrations.[31] Women who go into labour during these hours face significant challenges, including limited transportation options, safety concerns and inadequate systems to manage nocturnal emergencies.[32] These gaps often led to home births without skilled birth attendants, significantly increasing the risk of maternal and neonatal mortality.[33]

Furthermore, challenges in the treatment phase often extend into the recovery phase, leading to issues such as slow healing, inadequate mental health support and dependence on unreliable external sources for maternal health information. Dismissal of labour pains during the early stages of labour, as reported in this study, may contribute to suboptimal birth management which can increase the risk of complications such as vaginal tears and haemorrhage, both risk factors for maternal death if not adequately managed. Communication gaps during hospital stays left many women, especially first-time mothers with no prior experience, uninformed, forcing them to rely on potentially inaccurate external advice during recovery. Addressing these gaps is crucial for reducing maternal mortality and improving postnatal care quality in Nigeria.[1 2 23]

In addition to being interconnected, women's maternal healthcare journeys were often non-linear. Rather than moving smoothly from one stage to the next, women frequently moved back and forth as new challenges arose. For example, some women who had already attended antenatal care later found themselves reconsidering where or whether to deliver, particularly because of high costs, poor booking systems or uncertainty about available services. In some cases, these challenges led to home births despite earlier engagement with facility-based care. This back-and-forth process shows that women's experiences of maternity care are shaped by ongoing efforts to navigate health system constraints, rather than by a single, straightforward pathway.[32 33] Recognising this non-linearity helps explain why initial contact with services does not always result in continuous or effective care throughout pregnancy and childbirth.

These findings emphasise the urgent need for integrated maternal health interventions that address these stage overlaps and interconnections. By taking a journey-informed perspective, healthcare systems can move beyond surface-level remedies to tackle root causes, enabling the development of tailored, stage-specific solutions. This approach not only improves the efficiency and equity of maternal healthcare delivery but also contributes to reducing maternal mortality by addressing the systemic barriers and preventable complications that often culminate in fatal outcomes.

Stage-specific interventions for systemic improvement

This study provides actionable insights into stage-specific interventions that could significantly improve maternal healthcare outcomes at both individual and systemic levels (table 2).

Focusing on each stage offers healthcare providers and policymakers an evidence-based roadmap for addressing these gaps, ensuring maternal care is tailored to women's needs at every touchpoint. Such targeted interventions can help mitigate challenges that contribute to adverse

Table 2 Stage-specific maternal interventions

Pregnancy journey stages	Interventions
Awareness stage	Early pregnancy detection campaigns and the accessibility to effective home pregnancy test kits among sexually active women, especially at rural levels. This will help ensure early recognition of pregnancy and reduce complications later in the pregnancy journey.
Consideration stage	Provide detailed and simplified information about maternity health services and facilities to enable better informed and timely decision-making.
Access stage	Digitalising administrative processes like e-booking systems can significantly reduce delays. Additionally, inclusivity should be a priority for maternal health policymakers. Effort should be made to ensure healthcare is accessible to all women, including those with disabilities. Furthermore, there should be measures to support women who experience labour at night when mobility and access to healthcare facilities may be restricted, such as emergency transport services or on-call community health workers.
Treatment stage	Efforts should be made to ensure patient-driven communication to reduce women's reliance on external untrusted sources for maternal health information. Establishing structured mechanisms for women to provide regular feedback on their care is critical to driving continuous improvements. Furthermore, routine professional development and training for healthcare providers should be prioritised, ensuring they are consistently updated on global standards of care and best practices. This will directly contribute to more effective, patient-centred maternal healthcare delivery.
Recovery stage	Strengthen postnatal care in Nigeria by integrating health education and mental health support into routine maternity services, beginning at discharge and extending into the postnatal period. This includes clear discharge communication and stronger links between facility-based care and community services to address recovery challenges that emerge from earlier stages of the maternal care journey.

pregnancy outcomes, including maternal mortality, ensuring safer and more equitable maternity care.

Global implication and call to action

The insight from this study extends beyond Nigeria, offering a replicable model for understanding and improving maternal healthcare globally. The pregnancy framework developed in this study using patient journey mapping is adaptable to diverse contexts, from rural LMICs to urban high-income settings, making it a valuable tool for global maternal health reform. The innovative use of this tool highlights the importance of viewing maternal healthcare as a continuum of interconnected experiences rather than a series of isolated clinical events. By tackling stage-specific barriers, healthcare systems worldwide can improve maternal care quality and mitigate risks contributing to maternal mortality.

Strengths and limitations

The strength of this study lies primarily in its unique methodology. By employing patient journey mapping, a novel approach in maternal healthcare research, especially in the LMIC setting, the study provides a comprehensive exploration of women's experiences with the healthcare system. This methodology goes beyond the traditional treatment-focused perspective, offering a holistic view of women's interactions with maternal healthcare services. It ensures a complete understanding of the complex factors shaping maternal health outcomes. Another key strength is that the findings align with evidence from previous research, enhancing the credibility of the study and supporting the relevance of the challenges identified. Additionally, the inclusivity of the study's participants with women from across all three levels of healthcare in Nigeria meant that a diverse range of experiences was captured. The recruitment process was designed to reflect diverse socio-economic and demographic backgrounds and included vulnerable groups, such as women living with disabilities. Lastly, the insights generated have the potential to significantly impact policy, practice and research aimed at reducing pregnancy-related deaths, both within Nigeria and other settings.

While this study provides valuable insights into women's experiences with maternal healthcare, a major limitation is its focus on Nigeria. This could limit the generalisability of the findings to other countries, especially those with different health systems and cultural practices. However, the pregnancy structure developed in this study, based on patient journey mapping, offers a flexible model that can be adapted to various settings, including high-income countries. Even though the specific challenges identified are unique to the Nigerian context, the broader pregnancy framework can guide similar research in diverse regions to uncover local challenges and contribute to improving maternal healthcare globally.

CONCLUSION

This study applies a patient journey mapping approach to organise women's maternal healthcare experiences in Nigeria into a five-stage structure. The structure highlights the interconnectedness of each stage, showing how barriers in one stage can ripple into other stages, influencing maternal health outcomes.

The study offers insights into systemic inefficiencies in Nigeria's maternal health system and highlights opportunities for tailored interventions that can enhance healthcare delivery at every touchpoint. By addressing these inefficiencies, this framework contributes to ongoing efforts to reduce maternal mortality, the most severe consequence of poor maternal healthcare.

Future research should explore the effectiveness of interventions aimed at strengthening continuity and responsiveness across the maternal care journey. In particular, studies could examine the cost-effectiveness of strengthening overnight maternity services, including transport and staffing, compared with the health and economic consequences of unattended or home births occurring at night. Policymakers should focus on tackling the stage-specific systemic inefficiencies identified in this study. Medical practitioners and health providers should incorporate patient journey mapping into clinical practice to provide a holistic understanding of women's experiences and ensure improved care quality.

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Ethics approval Ethical approval was obtained from the Imperial College Research Ethics Committee (ICREC reference number 6710640). Approval was also granted by the National Health Research Ethics Committee of Nigeria (NHREC), Federal Ministry of Health Nigeria through the National Hospital Abuja Ethics Committee (Assigned Number: NHA/EC/058/2023). Furthermore, ethics was obtained from the management of the participating health facilities, including the Federal Capital Territory Health Research Ethics Committee, the Health and Human Service Secretariat, Wuse General Hospital and the Abuja Municipal Area Council, Health Department. The study was conducted following the recommendations for physicians involved in research on human subjects adopted by the 18th World Medical Assembly, Helsinki 1964 and later revisions. Participants gave informed consent to participate in the study before taking part.

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