



Reasons for delay in reaching healthcare with severe abortion-related morbidities: Qualitative results from women in the fragile context of Jigawa state, Nigeria (AMoCo)

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ABSTRACT

Maternal near-miss events are a key measure of maternal health; abortion-related complications are one source of near-miss events. To understand the pathway to care of women with severe abortion-related events in a fragile context, we conducted in-depth semi-structured interviews with women who obtained treatment at a referral hospital in Jigawa State, Nigeria, in 2020–2021 (n = 61). We used the Three Delays Model (Thaddeus & Maine, 1994) to examine impediments in reaching care.

The first delay (from the onset of symptoms of the pregnancy loss to the decision to seek care) was characterized by the duration of time it took to recognize the pregnancy and pregnancy loss in addition to religious beliefs that it is the will of a higher power that she lost the pregnancy. *The second delay* (from the decision to seek care to arriving at a place that could provide adequate care for her complication, i.e. the study site); was due to lack of money, lack of passable roads and transport, use of traditional healers, challenges being seen by providers at lower-level facilities, referrals not being facilitated and misdirection by healthcare providers. *The third delay* was not present in our results. No respondent said she knowingly interfered with the pregnancy; understanding why these pregnancy losses resulted in near-miss complications is critical to reducing maternal morbidity and mortality in Northern Nigeria. Addressing health literacy as well as social and financial barriers holds the potential to get women to care sooner and avert these near-miss or potentially life-threatening events.

1. Introduction

Abortion-related complications are one of the five main causes of maternal mortality worldwide (Graham et al., 2016; Say et al., 2014). Most abortion-related deaths are likely the result of unsafe induced abortions, especially in contexts with restrictive abortion laws (Grimes et al., 2006). Data from low- and middle-income countries with restrictive abortion laws show that up to 91% of women presenting at a

health facility with complications related to an ongoing or recent abortion interfered with the pregnancy (Benson, Andersen, & Samandari, 2011; Rees et al., 1997). Unsafe abortion is easily preventable but neglected; between 2007 and 2017, maternal deaths from unsafe abortion showed one of the smallest declines in cause-specific maternal mortality from direct complications (Roth et al., 2018). Understanding severe morbidity provides insights into how to reduce abortion-related maternal mortality.

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¹ At the time the study was conducted.

Ninety-seven percent of unsafe abortions and deaths happen in low- and middle-income countries (Grimes et al., 2006). Nigerian women accounted for 23% of all global maternal deaths in 2017 (WHO et al., 2019); between 2005 and 2015, approximately 600,000 maternal deaths and 900,000 maternal near-miss cases² occurred in the country (Oladapo et al., 2016). In Northern Nigeria, induced abortion is legally permitted only to save a woman's life (Center for Reproductive Rights, 2017). Nigeria as a country ranks 16th in the 2022 Fragile State Index (Fund for Peace, 2022); if northern Nigeria were classified separately from the country as a whole, it would rank even higher.

Jigawa State, located in northern Nigeria, is home to displaced people from the conflicts involving Boko Haram, the Islamic State in West Africa Province, and different communal militia in the neighboring states of Yobe, Katsina and Borno. Most of the state's residents are ethnically Hausa or Fulani; some of the Fulani are nomadic. The largely rural population is almost all Muslim and is governed by Sharia law. According to the 2019 Demography and Health Survey, 18% of women of reproductive age in the state are literate, 45% are in a polygamous marriage, the median age at first birth is 18, the total fertility rate is 7.1 and the contraceptive prevalence rate for modern methods hovers around 1% (National Population Commission - NPC & ICF, 2019). Women of reproductive age in Jigawa State have some of the worst nutritional status indicators in Nigeria. Indeed, Jigawa is the state with the second highest proportion of women with a height below 145 cm (3.5%) and the second highest proportion of women with a Body Mass Index below 18.5 (30.4%). In addition, 65.4% of the women of reproductive age in Jigawa have anemia; it's the state with the highest proportion of women of reproductive age with severe anemia (4.2%) (National Population Commission - NPC & ICF, 2019). These indicators demonstrate that women in Jigawa are bearing children while their own health is often precarious.

Research about abortion, abortion-related complications and abortion care in humanitarian settings is almost non-existent, and has been identified as a priority need within the humanitarian sexual and reproductive health research community (Safe Abortion Care Sub-Working Group, n.d.). Access to induced abortion and post-abortion care for complications in humanitarian settings is limited, likely resulting in higher rates of more severe complications than elsewhere.

We undertook this study to understand the incidence and experiences of women with abortion-related complications in fragile contexts. Our data collection sites were two referral hospitals, one in the capital city of Bangui, Central Africa Republic (CAR) and the other a rural area in Jigawa State, Nigeria. The results described here are part of the Abortion-related Morbidity and Mortality in Conflict-affected and fragile settings (AMoCo) study, a larger mixed-method study conducted between 2019 and 2021 (Pasquier, Owolabi, Powell, et al., 2023). The AMoCo study examined abortion-related maternal morbidity and mortality via four data collection components: a Knowledge, Attitudes, Practices and Behaviors Survey with medical staff; a medical record review of cases of abortion complications; quantitative interviews conducted with all women who stayed overnight at the health facility who had an abortion complication; and qualitative interviews with women with near-miss or potentially life-threatening complications. This analysis presents results the qualitative interviews from Nigeria.

2. Methods

The study site in Jigawa State is a referral maternity center supported by *Médecins Sans Frontières* covering a catchment area of approximately 510,000 people which has 71 gynecologic and obstetrical beds. We conducted in-depth semi-structured qualitative interviews with women

who arrived at the maternity center with a near-miss or potentially life-threatening induced or spontaneous abortion-related complication and stayed at least one night.

The interviews sought to understand:

- Women's decision-making influencing her pathway to care
- Her experience when she arrived at health facilities
- Direct and indirect health expenditures
- Factors that influenced her choice of where to get care
- The role of the man involved in the pregnancy
- Social support/approbation from others about the pregnancy loss

The interview guide used the framework of Thaddeus and Maine's three delays model to understand women's pathway to care (Thaddeus & Maine, 1994): (1) from the onset of symptoms of the pregnancy loss to the decision to seek care; (2) from the decision to seek care to arriving at a place that could provide adequate care for her complication (i.e. the study site); and (3) from arrival to the facility that could provide adequate care to receiving this care. This framework does not provide clear cut-offs between these various phases, and what belongs in each phase has been interpreted differently in different studies. By defining that the care must be adequate, we are including in the second delay the woman's experiences seeking care from inadequate health facilities. Women do not progress linearly through each of these phases until their complication is treated (Pacagnella, Cecatti, Osis, & Souza, 2012); e.g. inadequate treatment might mean that the woman believes the complications have been treated and it takes time to recognize that additional care must be sought. No matter where the delay is classified, it can provide insight into where attention needs to be paid to reduce barriers to care.

Two experienced qualitative health researchers were trained by study leads; thorough piloting (nine interviews conducted over five weeks) took place before data collection began. During piloting, field procedures and interview guides as well as the Hausa translation continued to be modified. Supervision of the qualitative researchers was continuous by both the site study coordinator as well as members of the international study team.

Interviewers sought respondents from the quantitative survey sample who had experienced an abortion-related near-miss or potentially life-threatening complication and had stayed in the hospital at least one night. Once eligible women were medically stable, they were approached and asked to participate in the qualitative interview. The reasons women gave who declined to participate were because they didn't have time to be interviewed or because a family member didn't feel comfortable with them participating. We could not determine a refusal rate because some eligible respondents simply left the hospital after discharge even though they had been approached about the study and their participation had been requested; we did not interpret that as a refusal. If eligible respondents consented to participate, they were interviewed in a private location before discharge. Because of the low literacy rate of this population, to standardize the administration of the consent form, we prerecorded the consent form in Hausa and played it for the woman in the presence of the interviewer. Interviewers answered any questions that women had about confidentiality before the interview began. The study protocol was approved by the Ethics Board of *Médecins Sans Frontières*, the Institutional Review Board of the Guttacher Institute, and local ethics boards of Jigawa State.

Data collection started in the first quarter of 2020, halted for approximately four months due to Covid-19, resumed in August 2020 and continued until June 2021. The original minimum sample we aimed to collect was 30 interviews; study funding allowed us to continue to collect data after our target sample had been reached increasing the diversity of experiences captured as well as allowing us to collect a good deal of data on questions that were added in the field. Out of an eligible sample of 348 women, we interviewed 68 women. (For a description of the full quantitative sample, see Pasquier, Owolabi, Fetters, et al., 2023.)

² A near-miss abortion-related event is "a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy" (Say, Souza, & Pattinson, 2009).

While we cannot say with certainty we achieved saturation, the similarities across the respondents' narratives gives us confidence in the robustness of our results for describing the primary delays experienced by women with abortion complications seeking care in Jigawa State.

Interviews lasted between 20 min and 1 h 20 min. The data were collected in Hausa, recorded, transcribed by the interviewers (JK and LJ) and translated into English at the same time by the interviewers, and subsequently coded in NVIVO (Version 11; QSR International, Melbourne, Australia). During transcription, the interviewers create a map of the journey to get care to visually capture all the steps women took before arriving at the study site. Transcripts were coded according to primary themes of interest and those themes were analyzed to identify similarities and differences among the respondents' experiences. We identify the quotes using the respondent's age, number of previous pregnancies, gestational age at which this pregnancy ended, and severity of complication. We point out when a respondent is nomadic Fulani as these respondents are even more socially vulnerable than the other Fulani or Hausa respondents. This analysis presents women's pathways to care, focusing on delays one and two of the [Maine, Akalin, Ward, and Kamara \(1997\)](#) framework (see [Fig. 1](#)).

3. Results

The final sample is composed of 61 women. Seven interviews were not included in the analysis because the interview was unable to be completed, the woman's responses were incomprehensible, or the respondent did not qualify for inclusion and should not have been interviewed. Most of the descriptors of our qualitative sample come from the woman's medical record review. Most of the respondents were between 20 and 29 years of age ($n = 32$), with four between 16 and 19 years of age. This was a high parity sample, which is consistent with residents of Jigawa State: Forty-eight women had experienced four or more pregnancies, with 17 having experienced 7–9 pregnancies and 12 having experienced 10+. Twenty-five were in the first trimester of pregnancy, and 31 were in the second trimester at the time the pregnancy ended. Fifty-four of the women experienced near-miss complications; seven had potentially-life threatening complications. Eleven respondents stated that they interfered with the pregnancy in the quantitative survey but did not narrate this in the in-depth interviews. Twenty-one women reported living in areas affected by natural disasters in the previous two years; one woman reported living in areas exposed to war, conflict, armed or terrorist attacks in the previous two years. None reported being displaced. The sample was composed primarily of ethnically Hausa women ($N = 53$); eight were Fulani and of them, two were nomadic Fulani. All were married and Muslim, almost none had any formal schooling. See [Table 1](#).

Participants in the qualitative interviews said that they had not interfered with the pregnancy. Many women stated they did not know how it came to be that they lost the pregnancy. Some stated that the pregnancy loss could be a result of "evil people" or a trauma such as being woken in the night with a start, or the loss of a parent. For many women, it was simply Allah's will:

I believe what happened was predestined by Allah. In my opinion, if you were to ask me, I would say that the bleeding was as a result of an illness that Allah has bestowed upon me. (Age 24, 4th pregnancy, 16 weeks gestation, near-miss complication)

Traditional medicines were used a great deal within this population. Respondents were often using traditional medicines daily not necessarily tied to illness; some were taking traditional medicine for prevention of disease/protection of health. Most respondents were not able to name the herbs included in concoctions they were taking.

The following respondent explained why she used herbs during her pregnancy.

It was because of my recent illness [referring to the onset of symptoms before the pregnancy loss]. [Coughs] I took herbs such as rubutu,³ herbs for protection from evil people. There was another herb gotten from a tree which I was asked to soak in water and then drink. There are many herbs that I took that I cannot remember. (Age 40, 11th pregnancy, gestational age missing, potentially life-threatening complication)

In many cases, bleeding started shortly after the ingestion of *rubutu* or herbs.

3.1. The first delay: delays in the decision to seek care

The first delay was composed of delays caused by the woman herself, and delays caused by others. Delays caused by the woman herself included delays in recognizing both/either the symptoms of pregnancy and/or the pregnancy loss that required care. An additional delay was women's religious beliefs that Allah is in control and it is not her place to intervene in Allah's plans. Even if the woman was convinced she needed care, as women in this region are dependent on others both financially and because they lack decision-making authority, it meant that it was most common that others decided whether to go for care. Delays were caused by others when individuals who need to make the decision perceived the health risk to be less than the woman did.

3.1.1. Delays in recognizing symptoms of pregnancy and pregnancy loss

When women started experiencing the bleeding that precipitated the pregnancy loss, some women were yet not aware they were pregnant although many of these respondents were high parity. Pregnancy confirmation was dependent on observing a missed period. This is predicated on having a regular period; for respondents with irregular periods or when they bled through the pregnancy, pregnancy recognition was harder.

The things that happened to me were just ... I was sitting down when suddenly the bleeding started. I assumed or thought that I was not pregnant. As such, I did not bother about it. After two days that was when it became serious, it was during that moment that the bleeding became profuse and persistent. (Age 30, 9th pregnancy, gestational age missing, near-miss complication)

When women were not sure they were pregnant, it took them longer to identify that they were experiencing a pregnancy loss.

Respondents linked relevant health complications to other comorbidities. Women reported bleeding for long periods of time, as well as experiencing body weakness and lower back pain which they did not connect to this pregnancy or pregnancy loss, and reported health problems including malaria, fever, anemia and tuberculosis, health effects of being high parity, and health effects of multiple pregnancy losses—as many as six and seven—which women stated sometimes left them in poor health. This resulted in delays in recognizing symptoms signifying a need for care.

3.1.2. Religious beliefs that it is the will of God (Allah) that she lose the pregnancy

Respondents expressed religious predetermination, i.e. that a higher power, in this case Allah, is in control and causing whatever happens to happen, and expressed resignation and acceptance at what was taking place during the pregnancy loss. In this world view, conception, interference with the pregnancy and complications of pregnancy loss are not things that can be controlled, as these respondents explained.

³ *Rubutu* means "writing" or "text" in Hausa. It is the word used to commonly refer to Islamic scriptures usually provided by an Imam written on slate and then washed off and women drink what is washed off to ingest the prayer.

The Three Delays Model

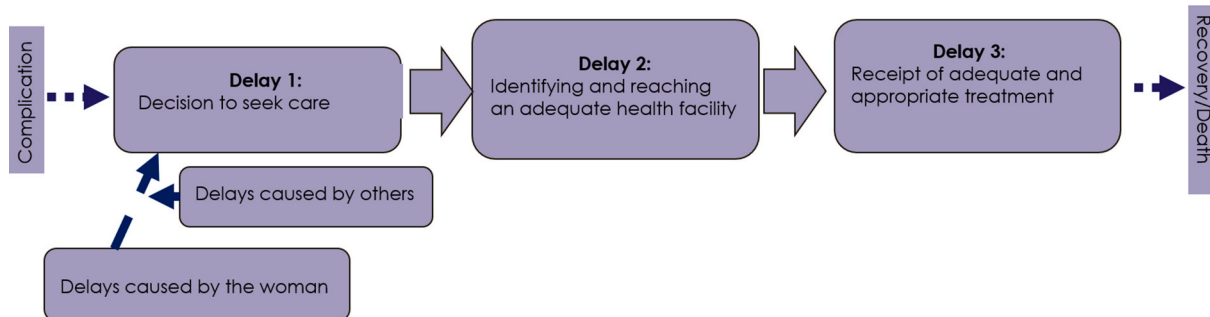


Fig. 1. A modified Three Delays Model of seeking maternal health care (Maine et al., 1997, p. 175).

Table 1
Qualitative sample description from the medical record review and quantitative survey, AMoCo Study, 2020–2021

	N	%
<u>Age^a</u>		
16–19	4	6.6%
20–29	32	52.5%
30–39	15	24.6%
40+	10	16.4%
<u>Number of pregnancies including current pregnancy^a</u>		
1	5	8.2%
2–3	8	13.1%
4–6	19	31.1%
7–9	17	27.9%
10+	12	19.7%
<u>Gestational age (assessed by provider)^a</u>		
≤12 weeks	25	41.0%
13–18 weeks	12	19.7%
19+ weeks	19	31.1%
Missing	5	8.2%
<u>Abortion complication severity^a</u>		
Potentially life-threatening	7	11.5%
Near-miss	54	88.5%
<u>Induction reported in the quantitative interview^b</u>		
Yes	11	18.0%
No	50	82.0%
<u>Living in an area affected by natural disaster in the last two years^b</u>		
Yes	21	34.4%
No	40	65.6%
Total sample size	61	

^a From the Medical Record Review.

^b As reported by women during the quantitative interview.

How would I react to the will of Allah even if I felt something? It was Allah who gave me [the pregnancy] and he collected it [the pregnancy] so, why would I bother? (Age 24, 2nd pregnancy, 19 weeks gestation, potentially life threatening complication, induced abortion reported in the quantitative interview)

Respondents’ trust in Allah’s will also reduced their motivation to seek care as this was interfering in Allah’s will, as the following respondent explained.

No one can know if he or she will live to see tomorrow when sick or not except for Allah. If Allah lets us see tomorrow, then you will see it when tomorrow comes. But Allah did not give that right or knowledge for you to know except when tomorrow comes. (Age 27, 5th pregnancy, 26 weeks gestation, near-miss complication)

This perspective meant that seeking care was often not a priority because what was occurring was perceived as what was meant to happen and therefore did not require interference.

3.1.3. Others did not perceive the symptoms to be as serious as the woman did

Women mentioned that they are dependent on others, usually a husband or if there was no husband present, elders to make decisions and to be financially responsible for the woman. It is this/those individual(s) who decide whether and when to go for care. Women shared that sometimes individuals who had the power to make the decision to go for health care perceive the health risk to be less serious than she did.

Well, whenever I remind or tell him [my husband] about it [pregnancy complication], he would tell me, ‘Please be patient.’ [...] Every day, he would tell me that [...] I told him that I was feeling sick due to the pregnancy and his reply will be, ‘Please be patient. I will give it [money] to you so that you can go to the hospital for them to examine and carry out a scan on you.’ And I would reply ‘Okay.’ I was suffering and patiently waiting for him until this bleeding happened. [...] That was when we went to the hospital. (Age 24, 4th pregnancy, 16 weeks gestation, near-miss complication)

He [my husband] did not say anything ... he did not say anything. [...] He went to the town before he came back, I still told him, but he did not tell me anything. I was having it [bleeding] for long. [...] Then it came back one night again. I told him again, but he did not say anything. I have been bleeding for long; I do it at night, I do not experience it during the daytime, and he does not talk to me whenever I tell him about it until he saw that my condition was bad ... I have been looking for medicine all by myself, he does not take care of me until he saw that the thing has become bad. (Age 27, 5th pregnancy, 23 weeks gestation, near-miss complication, induced abortion reported in the quantitative interview)

Another woman narrated that even after she alerted her husband to her healthcare problem, her husband and his mother did not think it was urgent to get care. “They were thinking it was not serious, that I had to sleep in my blood while the bleeding persisted till the next day” (Age 20, 2nd pregnancy, 12 weeks gestation, near-miss complication). Even once the decision was made to seek care in that household, her husband prayed first for about 20 min before acting on the woman’s request to go for care.

One respondent explained that from her perspective, men often do not take seriously the health problems of women. In her case, she did not wait for someone else to decide whether she needed to seek care; she was an outlier in this behavior.

It was not like I delayed [to come to the hospital] when the bleeding started, I did not even pay attention to my husband’s attitude because some of the men in this context do not care or show care when a woman is sick. To them, when you tell them, they will think it is a minor issue that can be resolved or solved at home without going to the hospital. As such, they might tell you not to go and stay at

home. (Age 40, 15th pregnancy, 24 weeks gestation, near-miss complication)

Women narrated that their husband’s unwillingness to make a decision to seek care often seemed to be related to the fact that there was no money to travel to get care. A calculation that some respondents described making was that when they knew their husband didn’t have money to pay for transportation to a health facility, they did not want to tell him they needed care because that created a burden on the man to try to provide money. Therefore, they delayed telling their husbands about their complications until a time when he might have money. As a consequence, husbands may not have perceived the situation to be as severe as the woman and that may have prolonged the delay. What constitutes a first delay versus a second delay became murky when someone else had to make the resources available to go for care as the lack of resources to facilitate the care-seeking (second delay) may reflect the man’s perception of the (un)importance of seeking care (first delay).

3.2. The second delay: delays in reaching adequate care

Once it had been decided that care was required, respondents’ journeys to reach adequate care were slowed because of not having enough money to cover the costs of transport, structural delays related to a lack of passable roads and lack of transport, and engagement with traditional providers either as the woman’s preference or the preference of the decision-maker. Once a health care facility was reached, at lower-level facilities delays occurred due to inefficient assessment procedures and weak referral processes as well as misdirection from health providers.

Few women took relatively direct pathways to the referral maternity hospital. It was much more common that women took complex pathways to care, trying herbalists (sometimes multiple times) as well as seeking care from lower-level facilities before reaching the referral maternity hospital. See Fig. 2 for examples of women’s pathways to care.

3.2.1. Not having enough money to cover the costs of transport

Transportation costs were often needed not just to one facility but to numerous facilities (described in further detail below). In this region, it is socially inappropriate for women to travel alone, so travel costs were needed for more than just her. Furthermore, women were sick, weak and sometimes unconscious, and this meant that more people were required to accompany her on her journey to care incurring additional costs. At the health facility, relatives who stayed with the respondent needed money for food, and patients often have to purchase needed medication once they do see a doctor. Therefore, even when the family had a little bit of money, some were reluctant to spend it to reach care if they thought they didn’t have enough to cover the costs of remaining with the woman and/or to purchase any recommended medication.

This respondent explained how money is the condition required to go for care, otherwise she suffers at home:

You know, sometimes when my husband has money I go to the hospital once the pain starts but when there is no money, I would stay at home and after two days, the pain would stop on its own. Since I became pregnant, I have been suffering from lower abdominal pain. (Age 24, 2nd pregnancy, 19 weeks gestation, potentially life-threatening complication, induced abortion reported in the quantitative interview)

Respondents described complex calculations about how money might be obtained to go for care. This respondent explained:

Honestly, it was due to lack of money. There is someone who if we had asked him for money, he would give us every penny he has but I want to remind you that he is a businessman and you know that business does not bloom like in the past. His [referring to her husband] only concern is that when he asks him [referring to the creditor], he [creditor] would not deny him [referring to her husband] the money as such, he [referring to her husband] will feel a sense of guilt when he requests for a loan. Therefore, he decided to wait for the Fulanis that were owing him some money before we could go the hospital. (Age 20, 5th pregnancy, 22 weeks gestation, potentially life-threatening complication)

3.2.2. Structural delays due to the lack of passable roads and lack of transport

Women explained how health facilities are hard to reach from where they live—rural areas subject to floods with a poor road network and few paved roads. Lack of access to passable roads meant that some respondents who were unable to walk had to use an animal cart to be conveyed to a place where another vehicle could pick them up. Motorcycles, the most common form of transport in the area, are not a viable option for some women who are either too sick or physically unable to sit on a motorcycle. These two respondents provide examples of this:

Since we are staying in a village and other smaller villages are surrounding us, that [getting a motorcycle] would be very difficult to achieve. [...] You will have to use a[n animal] cart and that will be stressful. (Age 30, 7th pregnancy, 14 weeks gestation, near-miss complication, Nomadic Fulani)

You see, it was not like our house was by the roadside as such. There was no way I could sit on a motorcycle. Therefore, they had to use a [n animal] cart to convey me to the motor park. That was when we boarded the car that conveyed us to this place. (Age 32, 8th pregnancy, 12 weeks gestation, near-miss complication)

These difficult transportation conditions added delays to their journeys.

Simple pathway to care example



Complex pathway to care example

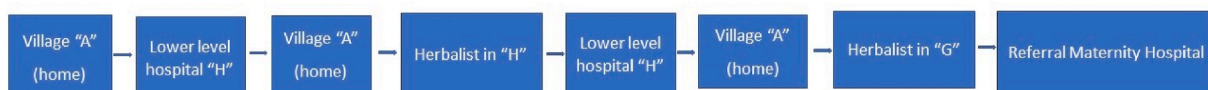


Fig. 2. Examples of simple and complex pathways to care, AMoCo Study, 2020–2021.

When asked about challenges that women experienced getting to care, they explained that cars were sometimes not available:

It was just the car because the car was not gotten in our village. They had to go to another village before they were able to get a car that conveyed us to this place. [...] All the cars had gone to [another town] [...] As such, they had to go to another village in search of a car before it arrived. When it arrived, we came here. (Age 29, 8th pregnancy, 20 weeks gestational age, near-miss complication, induced abortion reported in the quantitative interview)

3.2.3. Often traditional medicine was used first

Traditional medicine was used first to fortify the body, chase away evil spirits, elicit good prayers and spiritual health, and to treat the symptoms. Respondents' preferences for traditional medicine were often informed by the perceived reasons for the pregnancy loss. This respondent explained:

The reason I did not go to the hospital was that my husband was saying that it was the evil spirit. [...] The people around were saying that it was the influence of an evil spirit. They said a lot of people suffer from the evil spirit possession and that even though we decide to go to the hospital, they [referring to the healthcare providers] would not be able to detect what was happening to me or the name of the sickness. Now, because of that, we did not go to the hospital. (Age 30, 9th pregnancy, gestational age missing, near-miss complication)

Use of traditional medicine such as blood tonics and concoctions including *jiko*, a herbal mixture that varies in its composition, were either requested by the woman or provided to her by those caring for her often as a first response to the symptoms of pregnancy loss. *Rubutu* was used by most respondents to address the bleeding and other symptoms; some respondents recounted using *rubutu* multiple times before seeking care from a health facility.

I also thought to myself, 'Could this be caused by evil spirits?' Well, all these thoughts were in my head. 'Could this bleeding be as a result of an evil spirit possession?' During that period, I informed my husband about it and he went and got me *rubutu* to take. He kept on collecting the *rubutu* to see if there was going to be any change. We believed that if my condition had anything to do with the evil spirit, by Allah's grace, the *rubutu* will chase them away but the bleeding did not stop. (Age 24, 4th pregnancy, 16 weeks gestation, near-miss complication)

Sometimes it was the woman's preference to use traditional medicine first, sometimes it was the preference of others.

Even if I did tell him [husband, about her pregnancy complications], there is nothing he will say, also he will not provide the medicines for the bleeding [...]. If I had told him, he could only wish me well, ask questions to know how I am feeling ... and again to many, if a man will go get help [medicine], he will get that from the herbalists [traditional herbs] and not that of the doctors [hospital], that is just it ... (Age 27, 5th pregnancy, 26 weeks gestation, near-miss complication)

3.2.4. Inefficient assessment procedures in lower-level health facilities

Women who attempted to seek care for their complications at lower-level health facilities reported not being assessed upon arrival and being sent away from government-run facilities on Sunday.

We came here on Friday. [...] In the afternoon. [...] When we arrived here, the man that oversees the patient card was not on his seat because he had gone for a break. We went to get the patient card when we were told, 'No, you would have to wait for the man that gives out the patient card to return because he just left right now. He had gone to pray but once he returns, he will attend to you.' On

hearing that, we waited for him and when he returned, we got the patient card then we joined the queue with the rest of the patients who came to see the doctor. We waited up till *La'asar* [prayer time] before we were able to see the doctor. When we met with the doctor, we explained to him what happened, and afterward, he wrote on a paper and directed us to this place [referring to the referral maternity hospital]. (Age 24, 4th pregnancy, 16 weeks gestation, near-miss complication)

These delays introduced by women seeking care at lower-level facilities lose women precious time as their conditions deteriorate.

3.2.5. Referrals not being facilitated and misdirection

Lower-level facilities lack ambulances to transfer women and so women have to transfer themselves. This means more time to find transportation and more money needed to pay for the transportation. This respondent narrated:

First, we did not know that my condition will get to this point. If we had foreseen that we will be referred to the hospital, we would have come here direct without wasting time and spend money in those other places. Going to the first hospital, we spent nothing less than ₦700 (~\$2 USD) whereas ... while we paid ₦500 (~\$1 USD) for our transportation to and fro. We spent a total of ₦2300 (~\$5 USD) in both hospitals... It was cheap compared to others; this is the total cost without other expenses. The commercial motorcyclists that took us there felt pity for us that was why they took us at that amount... If we had gotten the right treatment there, do you think we would have come here? We would not have come here. (Age 20, 5th pregnancy, 22 weeks gestation, potentially life-threatening complication)

Respondents reported not getting treated even at the places they were referred to. One respondent explained, "The next day we went to [Health Center 1] where they referred us to [Health Center 2]. On arriving [Health Center 2], we were referred back to [Health Center 1]."

Another relayed:

When we arrived [at the hospital in the nearby town], I had a contraction in my lower abdomen that I had to bend down for a while and they [the healthcare providers] shouted from afar, 'Is it delivery?' And I said, 'No, it is miscarriage.' They asked, 'How old is it?' I replied, 'Six months.' And they said, 'You people should go to [referral hospital]. You are staining the whole place with your blood. You can go now.' We came out of their office, they were supposed to give us a car that would convey us here but [they did not]. When we came here, it was difficult for them to attend to us because we did not come with a [referral] paper from the other hospital. We told them that we were from that hospital [referring to the hospital in nearby town] and we were not given any paper. (Age 24, 2nd pregnancy, 19 weeks gestation, potentially life-threatening complication, induced abortion reported in the quantitative interview)

As women (including their support network) have to transfer themselves, this requires securing more money as they shuttle around to various facilities while their complications are becoming more severe. Arriving without the appropriate referral paperwork hindered prompt care.

4. Discussion

These results provide new insights into the causes of delay in reaching adequate care to treat severe abortion-related complications in a fragile context. There are structural barriers to receiving care for what became severe abortion-related complications: not having money, lack of passable roads and lack of transportation, inadequate service provision at lower-level facilities; and there are also individual-level barriers including not recognizing the pregnancy or the pregnancy loss, a trust in Allah, women's lack of decision-making power, and a preference for

traditional medicine.

The first delay we captured was women and their families not recognizing the need for care or agreeing to seek care in a timely way, and a trust in Allah to determine what will happen. Attempting to capture when the woman began to recognize symptoms related to the loss of the pregnancy was challenging as it was difficult for some respondents to isolate the onset of symptoms related to the experience that led to her hospitalization in the midst of other health problems she was experiencing. The overall poor health conditions of this study population (National Population Commission - NPC & ICF, 2019) contributed to this, and also may have served to obfuscate for the decision-makers the indications that care for the loss of the pregnancy was required.

Previous research has found that misattribution of the cause of the physical symptom(s) as well as perceptions of severity which do not ascribe warranted urgency to the situation have resulted in delayed care-seeking for maternal and newborn health in northern Nigeria, as well as in other settings (Deribe, Biadgilign, Amberbir, Belachew, & Wolde-michael, 2010; Killewo, Anwar, Bashir, Yunus, & Chakraborty, 2006; Sharma, Leight, AbdulAziz, Giroux, & Nyqvist, 2017). Fatalism about pregnancy, delivery or postpartum complications including postpartum hemorrhage was found by Sharma et al. (2017) in their study in Jigawa State. A belief in religious predeterminism may be comforting when individuals have little control over negative experiences such as environmental disasters, however this belief can be dangerous if it forestalls action when a woman is in urgent need of attention from a healthcare provider to save her life.

Delays in seeking care due to women's lack of decision-making authority were previously documented in northern Nigeria (Butawa, Tukur, Idris, Adiri, & Taylor, 2010; Sharma et al., 2017). Anthropological work on the Hausa have found low levels of autonomy among women and low levels of communication between the wives and husbands (Wall, 1998). While of course there are deviations at the individual level, the social behavior our respondents described is consistent with those findings.

The second delay, arriving at an adequate facility that could provide care, was due to a lack of money to pay for transportation as well as other costs respondents and their families perceived would be incurred by seeking care such as medication and accompaniment costs. Cost and distance to the health facility was previously documented by Sharma et al. (2017) as a barrier in Jigawa to receiving adequate care during pregnancy, delivery and postpartum care. Eighty-five percent of residents of the North Central area of Nigeria, in which Jigawa State is located, live on less than USD 1.90/day, the poverty line in 2018–2019 (The World Bank, 2021). The nomadic respondents have even fewer opportunities to earn money and thereby were even less likely to have the resources to address an acute event such as a near-miss abortion-related complication. Poor road infrastructure and lack of access to a vehicle served to add to the delay.

Beliefs that lead to the use of traditional remedies included the perceived reasons for pregnancy loss that women and their communities felt cannot be addressed by allopathic medicine such as evil spirits and curses. A preference for traditional providers for care during pregnancy has been previously documented in this context (Fakeye, Adisa, & Musa, 2009; Guerrier, Oluyide, Keramarou, & Grais, 2013) including the use of *rubutu*, and that this has been shown to delay getting to qualified medical practitioners (Sharma et al., 2017).

Seeking care at lower-level facilities further delayed care as women related inefficient assessment procedures, being turned away from lower-level facilities and being referred to various facilities without adequate support to get to the referral facilities. Understaffed health facilities are a chronic problem in fragile contexts, making it less likely in such places that lower-level facilities will have staff with the necessary qualifications to care for women at the first site they approach (Pasquier, Owolabi, Fetters, et al., 2023; Sharma et al., 2017). In addition, these facilities are under-resourced meaning that they may not have what is required, such as manual vacuum aspiration equipment, to

manage severe complications. All of the above played a role to varying and compounding degrees, in delaying women's access to adequate care.

As eleven of these respondents did state in the quantitative survey they had interfered with their pregnancies, there is some easy-to-spot underreporting of induced abortion in the qualitative data. Furthermore, there is no reason to believe that there wasn't underreporting on the quantitative survey. Women's underreporting of their abortion experiences is well-documented (Jones & Kost, 2007; Lindberg, Maddow-Zimet, Mueller, & VandeVusse, 2022; Rossier, 2003; Sedgh & Keogh, 2019). We are left to hypothesize that women may have been reluctant to report interfering with the pregnancy due to shame, stigma and worries about confidentiality, even more when it was the second time that they were asked about it by our study team (the first time being during the quantitative interview). The qualitative interview asked respondents to go deeper in their explanations for their behavior which women who interfered with their pregnancies may have found even more uncomfortable than answering survey questions about the experience. Another inhibition to reporting pregnancy interference in the qualitative interview may have been because the qualitative interview was audio-recorded.

However, the proportion who did interfere with ending their pregnancy may be less than the proportion with severe complications who terminated their pregnancies in other settings. While most of the existing evidence shows that abortion-related severe complications are linked to induced abortion (Calvert et al., 2018; Srinil, 2011), a few studies have shown that in some rare cases, miscarriages can lead to severe complications when they are associated with underlying conditions, especially when they happen during the second trimester of pregnancy (Sante Publique France, n. d.; "Saving Mothers' Lives," 2011; Warakamin, Boonthai, & Tangcharoensathien, 2004); which just over 50 percent of our sample were. Therefore, it is possible that known underlying conditions that respondents reported—including others that they may not know they have—as well as their high fertility, could provoke severe complications from miscarriages, especially in the second trimester. In addition, the use of traditional medicine and herbs could be inadvertently causing abortions and/or provoking severe complications in miscarriages already on-going. Causes of delay in seeking care for severe complications are equally relevant between women inducing abortion and women with spontaneous abortions when they lead to near-miss events.

Limitations of the quality of the information we were able to collect include that some of the women we interviewed were still exhausted and weak at the time of the interview; this likely impacted the quality of information we were able to collect from them. Another limitation is that women were often unable to specify what herbs they had taken which meant we could not look into existing evidence on potential health effects of these herbs. In addition, we did not have permission to interview family members; this would have been especially valuable to do when the woman narrated that she arrived unconscious to the referral maternity hospital as it meant that we were unable to get information about important parts of her journey to care.

Limitations of the methodology are that the three delays model only captures women who receive emergency obstetric care, omitting those who do not make it to care and those who took preventative action earlier (Filippi, Richard, Lange, & Ouattara, 2009; Gabrysch & Campbell, 2009). Such evidence of these other experiences could provide positive samples of women averting severe complications; although those women are much more difficult to find since aversion of a possible outcome doesn't mean that the outcome would necessarily have occurred. Nevertheless, it generates new insights that have the potential to improve health systems to minimize gaps in care for women experiencing pregnancy losses in the future.

Women's experiences of quality of care were not part of their stated reason for delaying care-seeking, but as they narrated experiences of poor treatment at lower-level facilities, the anticipation of poor

treatment may be a reason influencing them not seeking care sooner. It may not have emerged because it is not something that women were consciously considering but previous experiences of poor treatment may simply make women reluctant to seek out these services if they can expect to be shouted at and treated disrespectfully when they go. Stigma has been shown to play a role in delayed health seeking after harmful abortion practices; at least in part through experiences of anxiety and stress related to seeking healthcare for abortion-related complications (Cleeve, Faxelid, Nalwadda, & Klingberg-Allvin, 2017; Pershad et al., 2022; Ushie et al., 2019).

Areas for future research include work on the possible abortifacient properties of herbal remedies as our study was not designed to investigate this and did not look at usage in women who did not present with severe complications from abortion. Further work is also needed on the health impacts of underlying conditions in this population including malaria, anemia, the causes of reported fever, tuberculosis, etc., and whether these conditions could provoke severe complications from miscarriage. Women who have severe anemia were recently found to have a seven times higher odds of death or near-miss from postpartum hemorrhage compared to women with moderate anemia (Mansukhani et al., 2023); severe anemia and its impact on blood loss during pregnancy loss requires further attention.

Recommendations that these data point to include a need for more knowledge in the community on the danger signs of high-risk pregnancies and pregnancy loss in both the first and second trimester which could be done through the dissemination of information-education-communication (IEC) materials that describe the danger signs. It is critical that such activities not only involve women, but also their husbands and elders, about the signs and symptoms of pregnancy loss and abortion-related complications which require prompt care so as not to endanger the woman's life (Sharma et al., 2017). Working with the wives of imams might be one promising way to disseminate this relevant information. Interventions that address women's autonomy and decision-making power in the home as well as interpersonal communication between couples could potentially facilitate faster decision-making to seek care when the woman's life is in danger.

Giving pregnant women coupons which taxi drivers could turn in for reimbursement would minimize delays caused by transportation costs. The Haji Wala Program was a locally led effort to improve transportation options for individuals to reach health care; health care providers believe it should be restarted (Project Workshop, July 28, 2021). Developing a stronger network between PHCs and hospitals for early warning, identification and referral could potentially shorten the duration of time between when a woman first makes contact with a health facility and receiving care at a facility that is able to provide adequate care. Training of health workers who are currently staffed at lower-level facilities on post-abortion care would allow women to reach a qualified medical professional faster. Trainings of providers such as S-CORT which is meant to strengthen provider capacity in managing abortion and post-abortion complications in humanitarian settings has been shown to enhance provider competencies by improving their confidence and addressing their fears, eventually transforming attitudes towards uterine evacuation (Tran et al., 2021). If resources allowed, better infrastructure including blood and plasma transfusion capacity at lower-level health facilities, functioning ambulances including fuel supplies, and better staffing could also shorten women's delays. Finally, as demonstrated in Uganda with HIV counseling and testing, herbalists (and imams) could be capacitated to collaborate with formal healthcare providers to recognize pregnancy loss complications and refer patients to adequate healthcare providers as well as increase knowledge and awareness about substances contraindicated during pregnancy (Boum, Kwedi-Nolna, Haberer, & Leke, 2021; Sundararajan et al., 2021).

Severe abortion-related complications are a product in Jigawa State, Nigeria, of various social as well as structural factors which delayed women's ability to get to adequate care. Improving health education and improving referral networks to facilitate women's access to adequate

care are the easiest to address; capacitating health systems, improving women's health and addressing religious predeterminism and a preference for traditional medicines will take longer. Bringing down the mortality rate in northern Nigeria will require efforts on multiple fronts.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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