Options

# The impact of COVID-19 on maternal and neonatal health in three states in Nigeria

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# Abstract


The Covid-19 pandemic has disrupted essential healthcare services worldwide. The objective of this study was to identify how maternal and neonatal health (MNH) service delivery, utilization and outcomes were affected by the pandemic in three Nigerian states: Lagos, Bauchi and Niger.

In this mixed-methods study, MNH service utilization and delivery data for three Nigerian states were obtained from the National Health Management Information System (HMIS), covering full calendar years from 2017–2020. Data were assessed and triangulated with key informant interviews (KIIs) conducted with female service users (n=15) and non-users (n=9) and healthcare workers (n=15), held in March and April 2021. Four years of data were compared to identify seasonal trends and enable the isolation of novel patterns during the pandemic. The KIIs were semi-structured to draw out perspectives on service provision and demand during the pandemic that may explain trends identified in the data.

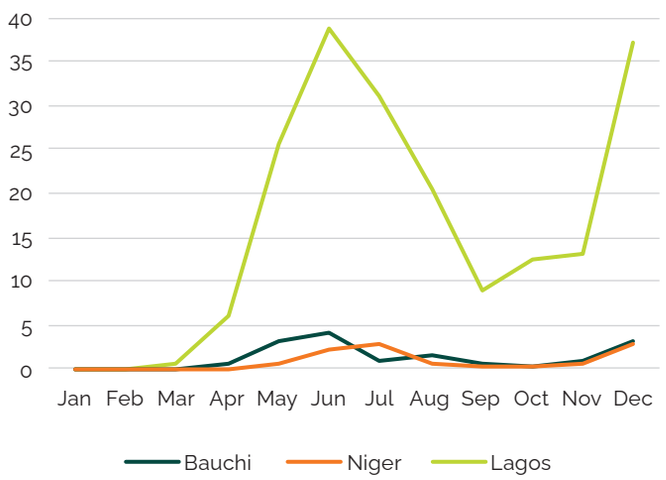
Quantitative analysis found a varied picture across the states and the selected health indicators. Notably, trends and spikes did not coincide with the reported Covid-19 incidence rate, though potentially lower antenatal care (ANC) attendance at the start of the pandemic led to spikes in adverse outcomes later in the year. Findings from the interviews indicate that the main barriers to accessing MNH services in 2020 were fear of contracting coronavirus, movement restrictions, more limited financial resources and reduced services.

This study has shown how Covid-19 has added to the various challenges women face in deciding to use, or reaching, MNH services. Encouragingly though, reports suggest that MNH services have adapted to the change in context and have been able to provide the majority of essential MNH services. In general, this suggests a need to focus predominately on reducing demand-side barriers to accessing health.

# Introduction

The first confirmed Covid-19 case in Nigeria was announced on 27 February 2020. Since then, the coronavirus has spread from state to state. By 31 March 2021, the Nigerian Centre for Disease Control (NCDC) had reported 163,195 confirmed cases of Covid-19 nationwide, with Lagos, Bauchi and Niger states accounting for 57,790 (35.4%), 1,531 (0.9%) and 930 (0.6%) of those cases, respectively. The monthly case incidence rate per 100,000 people is presented in Figure 1.

**Figure 1: COVID-19 monthly case incidence rate per 100,000 people in Bauchi, Lagos and Niger.**




From COVID-19 Nigeria, Nigerian Center for Disease Control (NCDC). [Accessed 27 May 2021]

At the onset of the outbreak, various reports predicted the pandemic would significantly impact health systems globally, affecting access, availability and quality of health services, particularly for mothers and their newborns.[1] A World Health Organization (WHO) survey stated, "It was reasonable to anticipate that even a modest disruption in essential health services could lead to an increase in morbidity and mortality from causes other than COVID-19 in the short to medium and long-term."[2]

In Nigeria, according to the National Demographic and Health Survey (NDHS) 2018, maternal mortality stands at 512 per 100,000 live births, which is among the highest in the world.[3] The WHO reported that Nigeria accounts for nearly 20% of all global maternal deaths, adding that between 2005 and 2015, more than 600,000 maternal deaths and about 900,000 maternal near-miss cases occurred in the country. The majority of such deaths are preventable.[4]

During the initial stages of the pandemic, reports from across Nigeria indicated that routine health care services, including maternal and neonatal health (MNH), had been affected by Covid-19, and possibly by the emergency response measures taken by the federal and state governments. This study was undertaken to investigate and gather information on what has facilitated or prevented the delivery and use of MNH services during the pandemic. It is hoped that findings will inform government, civil society and other relevant stakeholders and support them to adopt an evidence-based approach to sustain and improve the provision of quality MNH service delivery in this and future emergencies.

# Methodology

With focus on Lagos, Bauchi and Niger states, this mixed-methods study drew on routine MNH data from the National Health Management Information System (HMIS) and key informant interviews with health facility in-charges, and female service users and non-service users of childbearing age.

The study used HMIS data on antenatal care, institutional deliveries, skilled birth attendance, postnatal care, and maternal and perinatal deaths from across the three states from January to December 2020, and for comparable periods in the preceding three years. These data were used to identify patterns and the potential impact of the Covid-19 situation on MNH by allowing other seasonal patterns to be identified and excluded. The data was downloaded from the HMIS system onto Microsoft Office Excel where it was analysed by comparing year on year trends.

To further understand how services were provided and accessed during the study period, key informant interviews were conducted with 15 officers in charge of primary and secondary health facilities, or their assistants, 26 women who chose to use a health facility and 11 women who chose not to use a health facility during the period. Interviews were held in April and May 2021 and were conducted in English, Hausa and Yoruba. All interviewees gave informed consent to participate.

The interviews were conducted by members of the State-Led Accountability Mechanisms in each state, and recordings were sent to a transcription agency to be transcribed verbatim and, where necessary, translated into English. Transcripts were reviewed and a number of interviews were rejected based on the low quality of the interviewing; this included interviews of three service users and one non-user from Lagos, and eight service users and one non-user from Niger. The final sample included 15 healthcare workers,15 women who chose to use a health facility, and nine women who chose not to use a health facility during the study period.

Interview data were transferred to Microsoft Office Excel and analysed using a thematic approach by one researcher. Codes and themes were identified both inductively and deductively, with initial codes based on findings from previous, similar research,[5 6 7] and frameworks including the continuum of care and the WHO Quality of Care Framework for maternal and newborn health.[8] The coded data were reviewed by an additional researcher and finalized.

# Results

## Covid-19 related issues affecting uptake of services

### Fear of COVID-19

Almost all respondents in Lagos and Bauchi reported fear of contracting Covid-19, or fear of being perceived to have contracted the virus, as a key barrier to accessing health services in a timely manner. This was reported in Niger also, though only by one respondent. This may be linked to the limited data retrieved from Niger State.

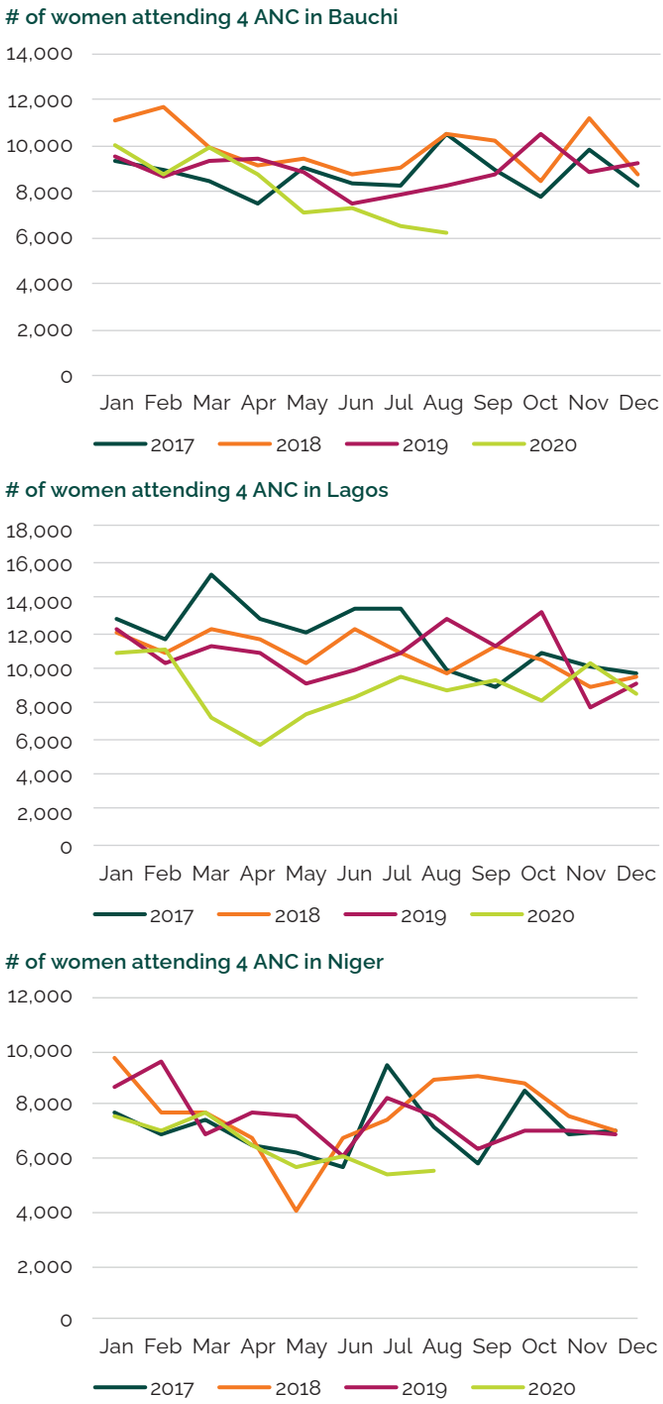
A non-user in Bauchi stated,

> "Yes, I went to hospital during check-up before the outbreak, but since the outbreak I did not go back because I was afraid. I was afraid of Covid, it has very uncomfortable symptoms, and it can be easily contracted. I started but later stopped for Covid reasons." (Bauchi, non-user)

Similarly, a respondent in Lagos reported that in not attending the facility for ANC, she was *"trying to protect [her]self"* (Lagos, non-user). Another respondent in Lagos explained, *"You don't know, maybe the person sitting by your side, you don't know maybe the person has it or not. So, that's the fear"* (Lagos, user). Most respondents suggested that this fear was predominately felt in the early stages of the pandemic and was in part due to misinformation and myths surrounding the virus; *"They believe when they come, immediately [they will] be infected"* (Bauchi, HCW).

This may be a reason for the sudden decline in the number of women attending four ANC appointments in Lagos. There was also a declining trend evident in ANC attendance in Bauchi, though this began slightly later, in line with the first confirmed Covid-19 case reported from this state (see Figure 2).

**Figure 2: Number of women attending four ANC visits in Bauchi, Lagos and Niger.**




Nigerian HMIS. [Accessed 30 March 2021]

Fear of attending the health facilities was also felt by healthcare workers:

> "During those periods, people were scared to move closer to patients. You know, aside from taking history for the patient, the examination point is also important. And I think this aspect was grossly deficient during the pandemic. People were scared. The health workers were scared. Everybody [was] scared. I am scared, too. I was scared." (Lagos, HCW)

> "Hospital attendants…run away from patient[s] during the pandemic." (Bauchi, HCW)

This led to some staff not attending their posts and reduced service availability.

## Economic challenges

Numerous respondents from all three states cited financial constraints as a major barrier to utilizing health services:

> "Although we wanted to go, we could not. We would love to go to the city, but we don't have the means for transportation. That was what happened. But I suffered." (Bauchi, non-user)

> "Because I do not have the money to. I talked to my husband and he says he does not have money either. We can barely feed ourselves." (Niger, non-user)

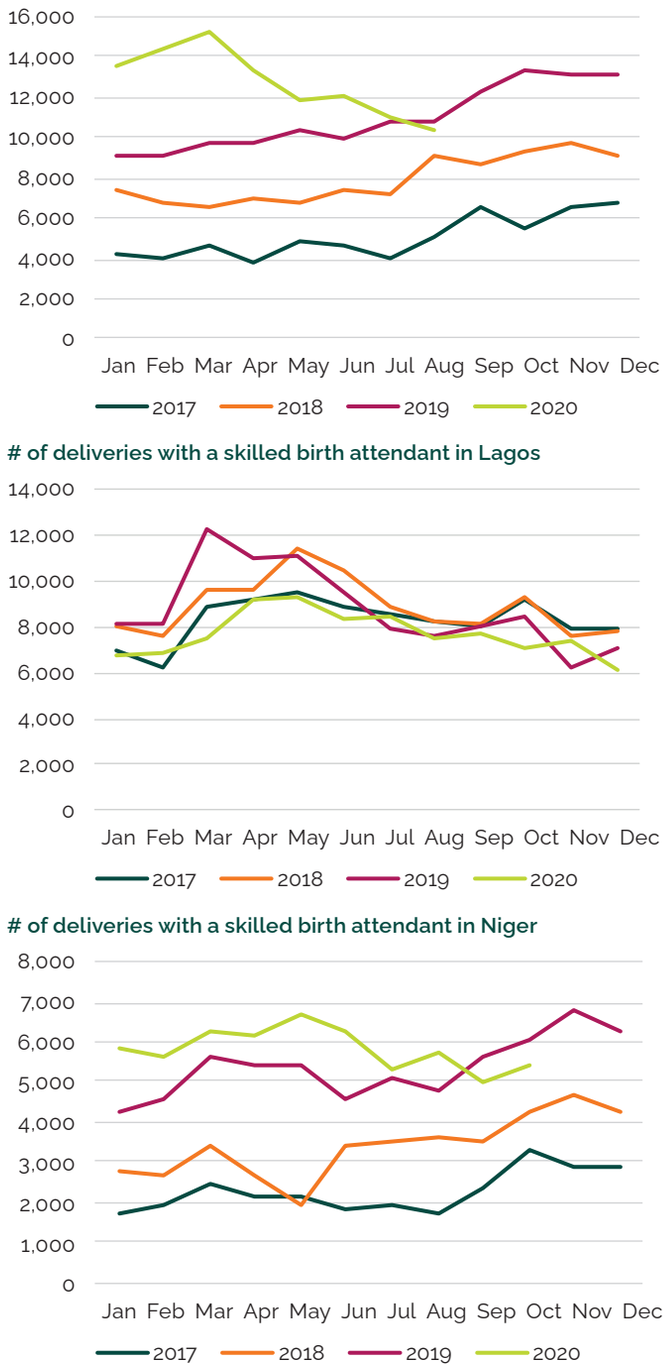
> "Anything that has to do with money, many families may not afford it. Because of that, it has contributed in resulting to traditional practices and non-patronage in the hospital or decrease patronage in the hospital." (Bauchi, HCW)

> "I think it hit everybody financially. That's why the governor identified this and made sure that, I think for a period of almost three months, free services were rendered in these hospitals." (Lagos, HCW)

For those that did manage to access the health facilities, financial barriers remained: "*We were able to get some of the drugs but the expensive one we could not afford*" (Bauchi, user). Even when services are free, the price of medication and consumables can still be prohibitive to accessing care. In Bauchi, women reported having to purchase cleaning products to support the hospital to maintain its infection, prevention and control measures in their vicinity.

In Lagos, the State provided maternal and child healthcare for free between April and June 2020. This might explain why the number of deliveries with a skilled birth attendant remained reasonably consistent with previous years. It appears women may have considered that the risk of Covid-19 infection outweighed the benefits of attending ANC (Figure 2), but that the benefits of delivery with a skilled birth attendant outweighed the risk of Covid-19 infection (Figure 3).

**Figure 3: Number of women delivering with a skilled birth attendant in Bauchi, Lagos and Niger.**




Nigerian HMIS. [Accessed 30 March 2021]

## Covid-19 movement restrictions

One of the measures enacted by each state government was to restrict movement between and within states unless for essential reasons. This was in place from April to May 2020 in Bauchi and Niger, and from March to June 2020 in Lagos. Reports from KII respondents indicate that these restrictions affected both health facility users and healthcare workers.

> "The death started at home, due to transport issues, sometimes before they even get vehicle or car for them to transport themselves, it takes time due to issue of lockdown and restriction." (Bauchi, HCW)

"Yes, it has also changed maybe because of transportation. Since it was said that nobody should move out, so they were not coming." (Niger, HCW)

"Getting our workers to come to work… was difficult, because of the curfew." (Lagos, HCW)

This was said to have affected women attending ANC and the health facility for deliveries, as well as those who delivered at home and would have normally attended the health facility for postnatal care. In Figure 2, the number of women attending ANC can be seen to reduce in each of the states, particularly in Lagos, during the lockdown movement restrictions; however, the number of women attending the health facilities to deliver, as shown in Figure 3, does not seem to have been affected in the same way, raising questions about the true impact of movement restrictions on health-seeking and attendance.

In Lagos, movement and transportation were also affected by the EndSARS protests that took place in October 2020:

"It was that EndSARS period…people couldn't come. They don't know what's happening." (Lagos, HCW)

This claim is supported by the slight drop in number of women attending the health facilities for both ANC and delivery in October 2020.

## Covid-19 health service adaptations

### Reduced services

One of the measures taken in health facilities to lessen the transmission of Covid-19 was to reduce the number of people present at any one time, so as to allow social distancing. This was predominantly mentioned in relation to ANC services in Bauchi and Lagos.

"So, during that time, the ANC [service] was temporarily stopped. And at some point, we introduced it with certain number of people, thereby creating social distancing and preventing congestion in the ANC and family planning units." (Bauchi, HCW)

"During the Covid pandemic period, definitely many of the services…we had to scale down. Just as I said, the antenatal care was not a full service, I mean provision here, it was skeletal." (Lagos, HCW)

"Because we're not really doing much of postnatal. We had to put a stop since we're not taking any… postnatal patient. The ones that had surgeries were told that, if you have any complication, come straight. But those that have normal deliveries were told that because of the pandemic they need to understand. Nobody was really sure…how long it was going to last. And it was difficult for us to tell them, come at so date. But…after that relaxation of the lockdown people started coming." (Lagos, HCW)

"We increased the time duration between hospital visits for the ANC patients. Many of them could not make up the time, some of them forgot their time and did not come, so it caused a total reduction." (Lagos, HCW)

The reduced frequency of ANC meant that some women were not able to complete the four ANC visits but they may have accessed some ANC. Late, limited, or no attendance at ANC and lower attendance at PNC are cited below as key contributing factors to adverse maternal and perinatal outcomes.

In addition to reduced services at the health facilities included in this study, there were reports that other "*small clinics were not operating*" (Niger, HCW). This was only reported in Niger after probing; it may have been the case in Lagos and Bauchi but it was not questioned by the interviewer or volunteered by the interviewee.

### Covid-19 infection prevention and control measures

Healthcare workers were questioned whether they had received guidelines or training on how to prevent the spread of Covid-19 and how to maintain maternal and neonatal services amid the pandemic. The results indicated that Covid-19 infection prevention and control (IPC) guidelines had been well-circulated, but more specific guidelines or training on how to deliver maternal and neonatal health services in the context of Covid-19 had not, though a number of healthcare workers described comprehensive triaging processes to identify potential Covid-19 patients in order to take necessary precautions. All respondents mentioned infection, prevention and control measures implemented and enforced at the health facilities. These included the wearing of personal protective equipment (PPE), handwashing, and increased cleaning of the facilities:

"We now had to do it frequently than what we were doing, the infection prevention control in the hospital. We did regular disinfection of the hospital. And every office and every person was given personal hand sanitizer. You are given face mask every day." (Lagos, HCW)

It is not clear if the above respondent meant one face mask per day or as many as needed to safely attend to multiple patients. This was not presented as a limitation despite other reports of PPE shortages in Bauchi and Lagos:

"...during the period, even the hospital was exhausted in terms of resources and equipment and hospital consumables. Even with your money, you may not obtain some things. You may remember that time, the facemask was a problem, hand gloves was a problem, hand sanitizer, spirit, everything." (Bauchi, HCW)

"There were gross shortage of the preventive equipment. You know, talking about face masks, talking about the [...] suit and some other things like that that may be needed to protect the healthcare providers, those were challenges we faced during the pandemic period." (Lagos, HCW)

Of the women who attended the facilities, almost all reported use of facemasks and gloves by the healthcare workers and other patients:

"Yes, they were all wearing [facemasks]. Even patients must wear it before coming into the hospital. Whoever does not have will not be allowed to enter the hospital. And if you refuse, the doctor will not see you without it, you must wear it before any other thing." (Bauchi, user)

Overall, most women who attended the facilities were satisfied with the IPC measures taken and the cleanliness of the health facilities:

"Yes, we were given sanitizers for our hands, and also made to sit on chairs that have been distanced from one another. People were also cautious about sneezing, coughing and even touching different surfaces. I felt encouraged because of the approaches used in self-protection." (Bauchi, user)

"I wasn't scared because I was wearing facemask. I was very satisfied, the population was not too much, they split us and there was space. The matron said even if the toilets are not washed, they should tell her, they are trying and they are working very well." (Niger, user)

## Changes to maternal and neonatal health outcomes

The graphs on maternal and neonatal health below (Figure 4) show a very varied picture across the states and selected outcomes. Overall there has not been a substantial increase in the number of maternal or perinatal deaths, and in a number of cases the trends for 2020 are comparable to or an improvement on previous years. However, there are some exceptions. The number of maternal deaths rose sharply in September in Bauchi and Lagos, alongside stillbirths in Bauchi and Niger in September and neonatal deaths in Lagos in August. This does not coincide with an increase in Covid-19 cases or restriction measures. One possibility is that this increase was a result of the reduced uptake and availability of ANC during the initial months of the pandemic, and consequent lack of screening for high risk cases. This was proffered by several HCWs:

"You know, the closest hospitals to our patients are the primary health care centres. If they are not functioning during that period, it will affect all the indices in terms of maternal death, pre-natal deaths during that period." (Lagos, HCW)

"I can suggest that because of poor antenatal visit. Antenatal care may lead to late or non-detection of pregnancy-related complications. Like anaemia, preeclampsia, influenzas and maybe complications of labour and delivery like postpartum humerus, which can lead to increase in maternal, mobility and mortality." (Bauchi, HCW)

However, when asked about whether there was an increase in maternal mortality, still births, or neonatal mortality, most HCWs reported that they had actually witnessed a decrease:

"Actually, there was...in fact, there was reduction in the maternal... In fact, we did not even record single maternal mortality during first three months of the pandemic. So, there was no increase." (Bauchi, HCW)

"Okay, I'm reviewing data for last three years now. So, I can tell you emphatically that stillbirth are reducing. Even maternal deaths are still reducing." (Lagos, HCW)

"Surprisingly, that's even the period where we [had] the least maternal mortality. In fact, last year was the best for us in terms of our mortality rate, not because patients did not come to the hospital, but maybe because [we] were more proactive. And for the first time in the history of [facility name removed], in a month we did not record a maternal mortality. We had that in September. For 42 days, we did not record a single maternal mortality." (Lagos, HCW)

It is particularly interesting that the month of September is singled out again. Further investigation is required.

Unfortunately, there is still some way to go to reduce maternal and perinatal mortality. Across the states, the predominant reasons for such deaths were delays in deciding to access care and delays in reaching the appropriate care:

"We have a lot of cases of pregnancy-induced hypertension who did not come to the hospital to take the drugs, and we have cases of gestational diabetes, who did not come to the hospital for regular checks, so this affected the outcome, and most of them come with stillborn." (Lagos, HCW)

"Most were brought in dead, some die at home, most die at home or in transit, maybe along the way from home to the hospital....So, I can say that the number of brought in dead increased. I still feel because of the generalized fear, it delayed coming to the hospital to lay their complaints, until the later end when nothing much can be done." (Lagos, HCW)

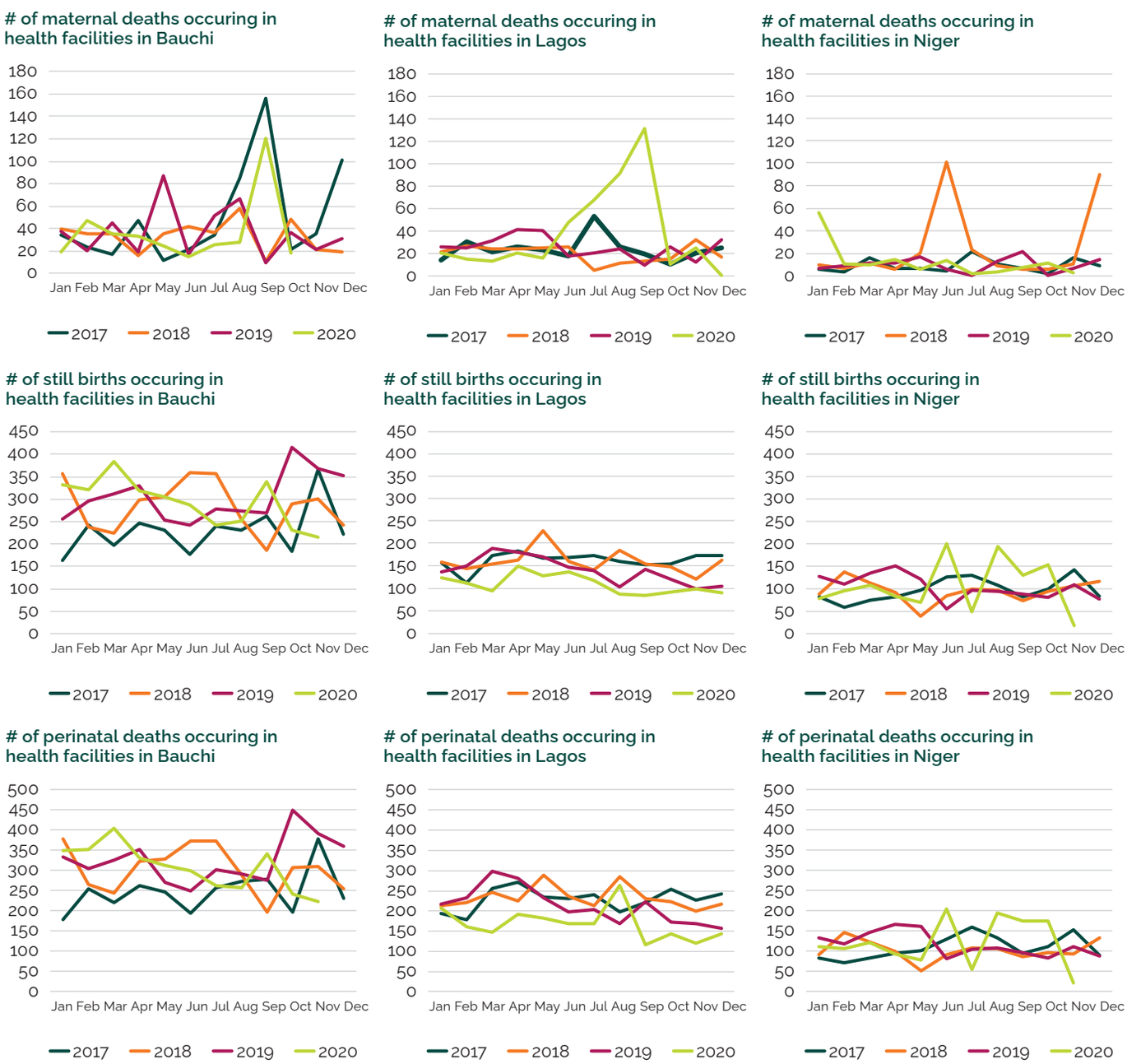
"For those who made it to the facility, we don't have problem with that. However, there are few cases that may be brought to the hospital almost in that state, that effort to resuscitate them sometimes fail because of the late presentation. I remember about two to three cases that presented to the facility even [...]. So, practically there was nothing we could do. Before we even scale a line to start resuscitating them, some of them gave up." (Bauchi, HCW)

"The nurses complained that I did not come for antenatal care before delivery. They ended up treating typhoid." (Niger, non-user)

"We noticed that there are few cases of neonatal sepsis, sometimes tetanus. It was [rising]. When we dig down the history, we discovered that they delivered at home." (Bauchi, HCW)

Home births are common in Bauchi, Lagos and Niger states for various sociocultural and economic reasons. It remains unclear whether the number of home births has increased as a result of the issues noted above—fear of Covid-19, economic challenges and/or movement restrictions—and whether the maternal and perinatal mortality represented here is indicative of the full picture.

**Figure 4: Number of maternal, still birth, and perinatal deaths in Bauchi, Lagos and Niger.**




From Nigerian HMIS. [Accessed 30 March 2021]

# Discussion

Covid-19 has undoubtedly affected MNH service utilization and service delivery, though its impact on health outcomes remains unclear, and there are considerable variations between the three states.

In particular, uptake of care faced a number of barriers, not least fear of contracting Covid-19, increased financial challenges, movement restrictions and reduced service availability—both actual and through misinformation or misunderstanding regarding lockdown rules and movement regulations. This is appears to be evidenced by the decrease in ANC attendance in Lagos between March and May 2020, when only essential healthcare services were available. It is encouraging though that deliveries with a skilled birth attendant were not very affected by the pandemic or the lockdown in Lagos, perhaps a testament to the state government's free maternal and child healthcare provision during this time. By contrast, in Bauchi and to a lesser extent in Niger), ANC attendance and deliveries with a skilled birth attendant decreased gradually over the course of the year. This follows a more familiar pattern as women who attend ANC are more likely to deliver at the facility. Further analysis would benefit from looking at institutional delivery rates as opposed to the absolute numbers, as despite Lagos having a far larger population, the number of women accessing ANC and skilled birth attendants was (respectively) similar or lower in Lagos than in Bauchi, which has a population less than one third of the size.

There were many suggestions from healthcare workers across the three states that home deliveries may have increased during 2020. The reasons that contributed to low ANC attendance and (in Lagos) low institutional deliveries are the same for increases in home deliveries. The impact of this is not clear, as we cannot be certain that maternal or perinatal deaths at the community level are captured in the HMIS. However, it was clear that maternal and perinatal deaths occurring in health facilities were in the vast majority of cases linked to home births that had run into complications, with appropriate care sought too late. Further information on the causes of spikes in maternal deaths seen in Bauchi and Lagos and stillbirths in Bauchi and Niger between June and October 2020 may help to prevent recurrences in future emergency situations.

In terms of health service delivery, most health facilities maintained the continuum of essential health care services during the pandemic, though with some reduced availability and/or amendments to their mode of delivery to ensure compliance with Covid-19 protocols, such as social distancing. Several healthcare workers described comprehensive Covid-19 triaging procedures, and no women interviewed raised issues about these changes, suggesting that they were implemented well or that these women are not aware of what constitutes good quality of care. In some cases, facilities had to regulate the number of clients they saw at a particular time. For example, the capacity of ANC clinics was reduced in some facilities, which had knock-on effects on the number of women able to complete four ANC visits. Healthcare workers also reported challenges accessing adequate PPE, particularly at the start of the outbreak. This was not raised by the women who attended health facilities though, with almost all reporting that their nurses and doctors wore facemasks and gloves, and that other patients were also wearing masks and provided with handwashing facilities or hand sanitizer. Further information on whether face masks were used for multiple patients would perhaps shed more light on the discrepancy between reports on the availability of PPE.

Overall, reports suggested that health facilities had adapted well to the changes despite varied reports on the receipt of training and guidelines. One healthcare worker from a facility in Lagos spoke positively of a WhatsApp group used to communicate new guidelines as and when they were released. Further information on how other facilities managed this process would be valuable and may allow lessons to be drawn on what works and what does not, perhaps shedding light on why some healthcare workers had not received updates on MNH service guidelines.

# Recommendations

These recommendations are in response to the gaps and challenges noted above, as well as from healthcare workers on what they believe has worked well, and women on what they want from their services.

### Community awareness-raising

- There were some inconsistencies reported in the availability of services during the Covid-19 lockdowns, with some healthcare workers suggesting that women did not attend MNH services because they thought them to be closed. In the case of future lockdowns, additional and more effective dissemination of what services are available and how services are managing Covid-19 may help to prevent this misunderstanding and allow women to access the MNH services they require.
- Radio programmes, house to house visitations, and/or community outreach is needed to increase health-seeking behaviour, particularly on the importance of attending ANC and delivering in hospitals. A healthcare worker in Lagos mentioned that community sensitization had led to an increase in patients.
- Education of traditional birth attendants on danger signs is vital so as to avoid unnecessary delays in women's access to health facilities.
- Further awareness-raising on the importance of the Covid-19 vaccine is required for both the wider population and healthcare workers themselves.

### Financial support to access healthcare services

- Financial assistance programmes or health insurance is needed to ensure that everyone can access healthcare services and necessary medication as and when needed.
- Free transportation to health facilities would help to reduce delays accessing care commonly associated with adverse maternal and perinatal outcomes.

### Respectful maternity care

- Whilst it could not be attributed to Covid-19, a number of women reported that a reason to not attend the health facility was to avoid being shouted at by healthcare workers (predominantly nurses). Of the women who did attend health facilities, one of the most common reasons for being satisfied with the service they received was the kindness of healthcare workers, not being shouted at, and having their questions answered. Such professionalism was also a motivation for women to attend the health facility on recommendation from other women, and to refer their friends and family to the facility. Further research should ascertain healthcare workers' views and perceptions on this matter and additional training and guidelines on respectful maternity care should be provided.

### PPE and cleaning products

- Free facemasks are essential for patients attending health facilities.
- Additional support for medical consumables such as facemasks, gloves and hand sanitizer is needed for all health facility personnel.
- One health facility reported that it was able to produce its own hand sanitizer and cleaning products and was able to avoid both stock-outs and shutting down due to Covid-19 exposures. Learning from such experience would be valuable and may also help reduce financial pressures on health service users, who have reported having to purchase cleaning products while in hospital.

# Limitations

This study faced several limitations:

- Whilst enlisting members of the State-Led Accountability Mechanisms (SLAMs) to conduct the interviews allowed them the opportunity to probe on issues of interest or relevance to them and ensured their understanding and ownership of the results, their capacity to conduct the interviews was over-estimated and, on reflection, further training will be required in the future. This approach resulted in limited qualitative data, with issues such as leading and closed questions, and lack of probing. Additionally, 13 interviews had to be discounted entirely due to the lack of data within them or unclear data as a result of poor questioning.
- Overall, healthcare workers were the richest source of data, while women respondents provided very varied levels of detail on their decision-making, attitudes and practices with regards to seeking and receiving MNH services. Reasons for this may link to interviewer inexperience in building a rapport and helping interviewees feel comfortable in sharing their thoughts and experiences, and views on cultural

barriers. This issue was most significant in Niger, to a lesser extent in Lagos, and was further compounded by the interviews that had to be discounted in both localities. Findings are therefore skewed towards the experiences of healthcare workers and participants from Bauchi.

- Accessing data from the HMIS proved cumbersome and led to gaps and challenges with the final dataset. The study was initially designed to cover the first few months of the outbreak, but as the outbreak continued, the time under consideration increased. This meant that multiple requests were made to the state HMIS officers. Unfortunately, these requests led to confusion and bureaucratic challenges that could not be overcome, resulting in data for Niger and Bauchi from September to December 2020 not being available for all indicators. Additionally, questions raised on the denominator of some proportion or rate indicators were not resolved adequately, hence the presentation of numbers rather than proportions in this study.
- Despite various reports suggesting a rise in home births and use of traditional birth attendants, no data exists to verify this or its impact on maternal and perinatal health outcomes.

# Conclusion

This study has shown how Covid-19 has added to the various challenges women face in deciding to use, or reaching, MNH services. This has been experienced directly, owing to fears of contracting the virus, movement restrictions and reduced services, and also indirectly, through the limiting of financial resources. More encouragingly though, reports suggest that MNH services have adapted to the change in context and have been able to provide the majority of essential MNH services. In general, this suggests a need to focus predominately on reducing demand-side barriers to accessing health services by raising awareness on the importance of attending ANC and delivering with skilled birth attendants and providing financial support to allow women to do so. With the continuation of the Covid-19 pandemic, there is a need to effectively communicate lockdown restrictions and the measures being taken in health facilities to reduce and contain virus transmission, as well as the measures individuals can take to protect themselves.

# Endnotes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