





# Accessibility and utilization of antenatal care services in sub-Saharan Africa during the COVID-19 pandemic: A rapid review

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## Abstract

Control measures for the COVID-19 pandemic brought unprecedented challenges to health care delivery. Some countries in sub-Saharan Africa (SSA) stopped the provision of essential health care except for those services that were deemed emergencies or life-threatening. A rapid review was conducted on March 18, 2022, on the accessibility and utilization of antenatal care services in sub-Saharan Africa during the COVID-19 pandemic. PubMed, Google Scholar, SCOPUS, and the World Health Organization library databases were searched for relevant studies. A modified Population, Intervention, Control, and Outcomes (PICO) framework informed the development of the search strategy. The review included studies conducted within Africa that described the availability, access, and utilization of antenatal services during the COVID-19 pandemic. Eighteen studies met the inclusion criteria. This review revealed a reduction in access to ANC services, an increase in the number of home deliveries, and a reduction in the number of women attending ANC visits during the COVID-19 pandemic. A decrease in ANC service utilization was reported in some studies in the review. Barriers to ANC access and utilization during the COVID-19 pandemic included movement restrictions, limited transport access, fear of contracting COVID-19 at the health facilities, and facility barriers. The use of telemedicine needs to be improved in African countries to allow for the continued provision of health services during pandemics. In addition, there should strengthening of community involvement in the provision of maternal health services post-COVID-19 so that services may be able to better withstand future public health emergencies.

## KEYWORDS

Africa, antenatal care, COVID-19

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## 1 | INTRODUCTION

The World Health Organization (WHO) declared the COVID-19 outbreak a pandemic in March 2020. The drive to control the pandemic within countries brought unprecedented challenges to health care delivery.<sup>1,2</sup> Some countries in sub-Saharan Africa (SSA) stopped the provision of essential health care except for those services that were deemed emergencies or life-threatening. Hence, care for chronic conditions,<sup>3</sup> conditions requiring elective surgery, family planning services, cervical cancer screening, and other nonurgent medical conditions was compromised.<sup>4,5</sup> Despite the lack of formal evaluations of the impact of these stoppages in many countries, it is postulated that the indirect impacts of the COVID-19 pandemic on health care delivery in Africa may have surpassed the direct impacts by wide margins.<sup>6</sup> This is more so as the direct morbidity and mortality from COVID-19 in SSA were much lower compared with the devastating effects in America, Asia, and Europe.<sup>7</sup>

Of particular concern has been the impact of the COVID-19 pandemic on maternal outcomes, as they were compromised. In SSA, maternal mortality is still generally high, with most of the countries still far from attaining Sustainable Development Goal number 3.1 (SDG 3.1), intending to reduce the global maternal mortality ratio (MMR) to less than 70 maternal deaths per 100 000 live births, leaving no country with greater than double the global average by 2030. Significant strides have been made in reducing the MMR in many countries in SSA from what it was a decade ago. Unfortunately, the COVID-19 pandemic may have resulted in a reversal of the gains. An essential aspect of maternal health affected by the pandemic was accessibility and utilization of antenatal care (ANC) services.<sup>8</sup> ANC is a preventative service, where low-risk pregnancies are differentiated from higher-risk pregnancies, leading to closer surveillance or referral of high-risk pregnancies to higher centers for appropriate care. During ANC, women are also offered micronutrient supplements, especially hematinic supplements to reduce the risk of anemia in pregnancy and offered screening and testing for the human immunodeficiency virus (HIV) and other sexually transmitted infections (STIs), leading to appropriate care and treatment.<sup>9</sup>

Women without access to ANC services may end up with avoidable maternal and perinatal morbidity and mortality. A retrospective audit of the effect of the COVID-19 pandemic on maternal and perinatal outcomes at two tertiary hospitals in Harare, Zimbabwe, revealed a tendency toward reduced utilization of maternity services and an increase in adverse maternal outcomes.<sup>10</sup> To inform the ongoing pandemic, and for future preparedness, it is key for stakeholders in public health, maternal health, and

health care in general, and policymakers, to understand the impact of blanket disaster control policies on maternal health. Against this background, we conducted a rapid review of the accessibility and utilization of ANC services in SSA, anticipating that 2 years into the pandemic, several studies would have been published on this topic, and collating the evidence from across the region would be more informative than a single primary research study.

## 2 | METHODOLOGY

### 2.1 | Information sources and literature search

We searched PubMed, Google Scholar, SCOPUS, and the World Health Organization library databases for relevant studies. The MeSH terms employed included COVID-19, Female, Humans, Africa, Maternal Health Services, Reproductive Health Services, Pandemics, Pregnancy, and SARS-CoV-2. All database searches were conducted on March 14, 2022. Because of the rapid nature of this review, a modified Population, Intervention, Control, and Outcomes (PICO) framework informed the development of the search strategy to ensure that the boundaries of the research question were clearly defined:

- Search # 1—Population (Studies conducted in African Countries).
- Search # 2—Intervention ~ the environmental matrix of interest (Antenatal care services).
- Search # 3—Outcomes (the utilization of, delivery of, and access to antenatal services during the COVID-19 pandemic).

The modified PICO framework was used since it was found to be more precise compared with unguided searching.<sup>11</sup> The reference lists of all full-text articles screened were searched for relevant studies.

### 2.2 | Study selection and inclusion criteria

We searched for reports and primary research studies. The review included studies conducted within Africa that described the availability, access, and utilization of ANC services during the COVID-19 pandemic. We defined accessibility as services being open to accepting clients and clients being able to physically attend a facility offering the service and utilization as a proportion of pregnant mothers who attended and received these ANC services.

## 2.3 | Screening process

We developed a screening criterion a priori for each of the three stages: title, abstract, and full text. Two researchers screened the articles independently (EM and IC). Differences in screen results at the full-text stage were resolved by discussion with the lead author. Covidence, an online tool for conducting various types of reviews ([www.covidence.org](http://www.covidence.org)), was used to review the titles and abstracts for inclusion/exclusion based on the criteria described in the modified PICO framework. Next, articles were single screened during full text using the same inclusion/exclusion criteria.

## 2.4 | Data abstraction and synthesis

A data abstraction form was developed, discussed, and revised a priori. Data extraction was completed using the following end points<sup>1</sup>: country<sup>2</sup>; study aim<sup>3</sup>; study design (if applicable)<sup>4</sup>; qualitative and quantitative findings on the accessibility of antenatal services<sup>5</sup>; qualitative and quantitative findings on the utilization of antenatal services; and<sup>6</sup> main gaps revealed; two reviewers (EM and IC) abstracted data from the included studies. For collating, summarizing, and reporting the findings, first, the reviewers familiarized themselves with the content of the articles. Second, findings reported in the papers were grouped into categories based on the reported findings, and a narrative was provided.

## 3 | RESULTS

Our initial keyword database search found 1867 potentially eligible articles. Following title screening, 64 articles were eligible for inclusion in abstract screening. These articles were imported into Covidence. A total of 39 studies were excluded following abstract screening, leaving 25 articles for full-text screening. Seven articles were excluded after full articles screening, leaving 18 articles for data extraction (Appendix S1). Of the articles excluded at the full-text screening stage, two lacked information on ANC accessibility/utilization care during COVID-19,<sup>12,13</sup> one was conducted pre-COVID-19,<sup>14</sup> one was conducted in Iran,<sup>15</sup> one was a commentary,<sup>16</sup> one review article,<sup>17</sup> and one did not have an English version full text.<sup>18</sup> More details are presented in Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart.

### 3.1 | Characteristics of included studies

Of the 18 articles included in the study, six were from Ethiopia,<sup>19–24</sup> three from Kenya,<sup>25–27</sup> two were multi-country,<sup>28,29</sup> two from Nigeria,<sup>30,31</sup> and one each from the Democratic Republic of Congo,<sup>32</sup> Mozambique,<sup>33</sup> Rwanda,<sup>34</sup> Uganda,<sup>35</sup> and Zimbabwe.<sup>36</sup> Ten of the studies were cross-sectional studies,<sup>19–21,23,24,27,30,31,34,36</sup> three employed an interrupted time series design,<sup>29,32,35</sup> three were qualitative,<sup>22,25,26</sup> and two studies<sup>28,33</sup> utilized mixed

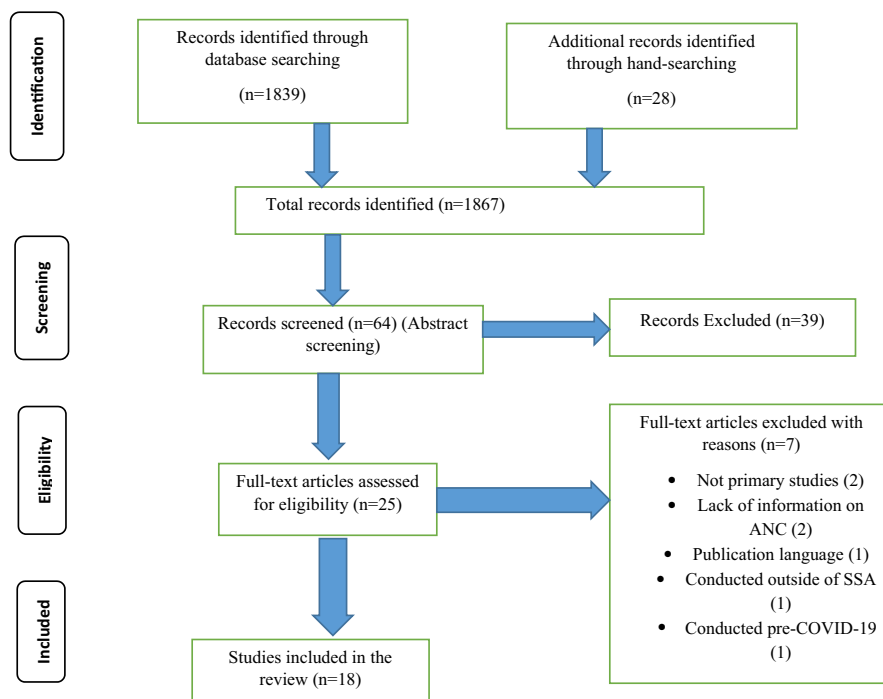


FIGURE 1 PRISMA flow diagram. [Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

methods approaches. More details are presented in Appendix S1.

## 3.2 | Study findings

### 3.2.1 | Impact on antenatal care services availability/accessibility

Five studies<sup>19,25,30,33,35</sup> included revealed a reduction in access to ANC services during the COVID-19 period when compared to the period before the COVID-19 pandemic. A study conducted in Mozambique recorded a 26% decrease in the number of women attending their first standard ANC visit and a 74% increase in the number of home deliveries during the COVID-19 period.<sup>33</sup> In one study that was conducted by Burt and colleagues<sup>35</sup> in Uganda, a total shutdown in ANC services during the first 4 weeks of the country's COVID-19 lockdown (March 23 to April 21, 2020) led to 539 fewer ANC visits in the first 3 months of the lockdown compared with the 9 months before the lockdown.

### 3.2.2 | Impact on antenatal care services utilization

A decrease in ANC service utilization during the COVID-19 period when compared to the period before the pandemic was reported in seven of the studies included.<sup>20,24,29,33–36</sup> A study conducted by Kassie and colleagues<sup>20</sup> revealed a 27% decrease in ANC utilization from March–June 2019 to March–June 2020. In Ethiopia<sup>20,23</sup> and Rwanda,<sup>34</sup> studies demonstrated a reduction in the first-time standard utilization of ANC services during the COVID-19 pandemic. On the contrary, the utilization of four or more ANC visits increased in two of these studies<sup>20,23</sup> over the same period with this increase attributed to the possibility of the first three visits having occurred before the COVID-19 pandemic. Regional variations in ANC service utilization were observed in a study conducted in Rwanda<sup>34</sup> which reported the highest declines in the Western Province which is close to the Democratic Republic of Congo (DRC), where a huge number of COVID-19 cases were reported. This same pattern was also observed in the Gombe region in DRC, which recorded a decrease in ANC visits of approximately 45%.<sup>32</sup> One study conducted in Kenya<sup>27</sup> revealed no significant changes in the mean hospital attendances for ANC services during the 4-month period pre-COVID-19 compared with during the equivalent 4 months during the COVID-19 pandemic. In an interrupted time series analysis conducted in the Democratic Republic of Congo,<sup>32</sup> ANC first standard visits increased

modestly following the start of the pandemic but did not increase significantly over time as compared to the trends that would have been expected without COVID-19.

### 3.2.3 | Barriers to ANC access and utilization during the COVID-19 pandemic

Seven of the studies<sup>21,22,25,26,28,30,33</sup> included revealed barriers to ANC service access and utilization during the COVID-19 pandemic. Government COVID-19 movement restrictions and the subsequent limited transport access which led to the high cost of transport are believed to have played a role in reducing mothers' access to ANC services.<sup>21,22,28,30</sup> Four of the included studies had participants attributing their low usage of ANC service to the fear of contracting COVID-19 if they visited health facilities.<sup>22,25,26,33</sup> A community-based cross-sectional study conducted in Ethiopia presented distance to health facilities as a challenge. Mothers who traveled more than 30–60 minutes and 60–90 minutes to reach health facilities were 63% and 90% less likely to utilize maternal health services during the COVID-19 pandemic than those who traveled less than 30 minutes to reach the health facility, respectively.<sup>21</sup> One of the included studies conducted in Ethiopia attributed the reduced ANC utilization during the COVID-19 pandemic to facility barriers related to poor logistics, staff redeployment, and lack of incentive package affecting the provision of ANC service during the pandemic. The study further reveals that pregnant women cited their perception of poor quality of care during COVID-19 as the main reason for not attending ANC as they felt pregnancy-related issues during the pandemic may not receive sufficient attention as before.<sup>22</sup>

## 4 | DISCUSSION

As the world recovers from the COVID-19 pandemic, the focus is now on restoring robust and resilient public health care systems to prepare for future COVID-19 resurgences and other public health emergencies. As of June 2022, the reported monkeypox outbreak continues to be under surveillance to determine its global transmission. It is predicted that there are going to be more public health emergencies in Africa soon. This is because the continent has weak and fragile health systems emanating from poor health governance, inadequate health infrastructure, shortage of health care workers, inadequate essential medicines and technology, and limited funding.<sup>37</sup> As a result of the COVID-19 pandemic, countries in SSA, just like any other country in the world, faced a lot of unexpected financial requirements to quickly implement prevention



and control measures. The countries also required financial resources to reduce the financial pressures that were faced by households and businesses because of lockdowns. As a result of the slowing down of the global economy because of the challenges brought by the COVID-19 pandemic, the revenues collected by governments decreased, resulting in reduced spending on ANC services.<sup>38</sup> Hence, lessons from the COVID-19 pandemic are critical for future preparedness. This rapid review provides direct evidence that across several countries in SSA, the challenge of the COVID-19 pandemic resulted in reduced accessibility and utilization of ANC services. Unfortunately, pregnancy-related conditions are time and care-sensitive, and any impact on care can easily lead to adverse maternal and perinatal outcomes, hence the need to build robust systems that can withstand future insults. Since the baseline functionality of some health systems in the continent is lacking, returning to a robust health system for the continent will require effort and a lot of resources.

This rapid review showed that there was reduced accessibility/availability of ANC services across several countries on the African continent, including the total shutdown in some countries during the first lockdowns in some countries. Reduced accessibility/availability ultimately translates to reduced utilization and an increase in adverse maternal and perinatal outcomes such as maternal mortality, antenatal and postnatal hemorrhage, intrauterine growth restriction, stillbirth, an increase in preterm deliveries, and early neonatal deaths.<sup>39</sup> Using Thaddeus and Maine's three delays conceptual framework,<sup>40</sup> reduced availability/accessibility results in first-phase delays. The implication is inadequate antenatal surveillance, especially for high-risk pregnancies that require early referral and intervention. Conditions such as multiple pregnancies, hypertensive disorders of pregnancy, and previous cesarean sections have optimal maternal and perinatal outcomes when mothers are identified and accorded appropriate management in the antenatal period.<sup>41</sup> Factors for reduced availability of ANC services were numerous and included stoppage of health services deemed as nonessential such as happened in Zimbabwe and reduced availability of transport, especially in marginalized areas where patients must travel for long distances, sometimes more than 10 km, to the nearest health facility. At the onset of the pandemic in Zimbabwe, outpatient clinics were stopped across the country, leaving women with nowhere to turn for ANC services.<sup>9</sup> It is important that countries in the region classify ANC services as essential services so that pregnant women are allowed to travel to access ANC services without hindrances during future pandemics.

The reduced accessibility/availability of ANC services partially explains the reduced utilization that was noted

in this review. However, there were other explanatory variables too. The findings concur with those of a study conducted in Kenya, which revealed delayed ANC initiation during the COVID-19 pandemic.<sup>42</sup> Clients' and health care workers' fear of contracting COVID-19 was high at the onset of the pandemic. This was more so when infection prevention and control (IPC) measures were not yet strong enough across the continent, and personal protective equipment (PPE) was not adequately available. The infodemic, with the numerous myths, misconceptions, and rumors about COVID-19 and its origins made women shun health care facilities.<sup>42</sup> As Africa recovers from the COVID-19 pandemic, it is more important to harness the power of social media for positive behavior change across the continent. Social media have the potential to reach a lot of people in social marketing campaigns. Online communication has been found to be effective at improving knowledge and understanding of specific health topics. Social media can successfully encourage behavior change, which may encourage the utilization of health services like ANC services and dispel myths and misconceptions about the pandemic.<sup>43,44</sup>

Transport availability and costs and fear were some of the barriers noted across the reported studies. Unfortunately, telemedicine services, which have been shown by a previous study<sup>15</sup> to be an alternative to providing obstetric services, were underutilized in Africa.<sup>45</sup> This aspect of health care provision needs to be strengthened. Telemedicine can be used to provide educational information to pregnant women through texts, videos, audio messages, and images. Mobile phone applications should be developed to offer features that help with home-based exercise programs, symptom tracking, medication adherence, and movement analysis during pregnancy. The use of mobile phones may also help pregnant women to stay connected to each other and freely share their pregnancy-related problems with their health care providers.<sup>15</sup> In addition, for marginalized communities, we propose the strengthening of community involvement in reproductive, maternal, neonatal, and child health (RMNCH) post-COVID-19. This can result in the improved provision of RMNCH services, which may be able to better withstand future public health emergencies.<sup>46</sup> This is because services will be provided to people in areas where they reside and by people they trust. In Africa, this is important because significant proportions of the population live in rural areas. According to the World Bank, 59% of the population in Africa stayed in rural areas in 2020.<sup>47</sup> Although home deliveries are usually associated with poor maternal and child outcomes,<sup>48</sup> in the context of the COVID-19 pandemic, they might have helped reduce congestion in health care facilities, thereby reducing workload among health care providers and the spread of COVID-19.

Although this review included studies that were conducted in SSA, similar challenges were faced in other regions of the world, especially low-to-middle-income countries (LMICs) whose health systems have the same challenges as those of SSA, and therefore, the results may be generalizable to other LMICs. It is worth noting that this study was a retrospective secondary data analysis, and so are some of the included studies in this rapid review. Retrospective analyses using data not collected primarily for research purposes are subject to several biases, including missing/incomplete data, especially in settings where electronic health records are not available. Hence, the true magnitude of the adverse outcomes stemming from the COVID-19 pandemic may have been underreported. In addition, only four databases were used, and this may have resulted in some relevant articles being missed. Since articles only published in English were included in this review, there might have been a language bias. Furthermore, there might have been underlying bias within the selected studies such as baseline bias and confounding variables.

## 5 | CONCLUSIONS

Control measures for the COVID-19 pandemic brought unprecedented challenges to health care delivery. This review revealed a reduction in access to ANC services during the COVID-19 pandemic. An increase in the number of home deliveries and a reduction in the number of women attending ANC visits were also reported. We found a decrease in ANC service utilization with some variation within and between countries. Barriers to ANC access and utilization during the COVID-19 pandemic included movement restrictions, limited transport access, fear of contracting COVID-19 at the health facilities, and facility barriers. The failed global response to the COVID-19 pandemic was not only seen in ANC services, but also in the maldistribution of the COVID-19 vaccines, which directly impacted LMICs. The use of telemedicine needs to be improved in African countries to allow for the continued provision of health services during pandemics. In addition, there should be strengthening of community involvement in the provision of RMNCH services post-COVID-19, so that communities may be able to better withstand future public health emergencies.

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None.

## CONFLICT OF INTEREST STATEMENT

None.

## DATA AVAILABILITY STATEMENT

The authors confirm that the data supporting the findings of this study are available within the article [and/or] its Appendix S1.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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