

Impact of Covid-19 Pandemic on Anc Clinic Visits and Deliveries by Skill Birth Attendant: A Retrospective Analysis in Kaduna State

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ABSTRACT

COVID-19 pandemic caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2) was first discovered in December 2019 in Wuhan, China and later declared a pandemic on March 11, 2020 by the WHO. This study was conducted to assess the impact of COVID -19 pandemic and its attendant infection prevention of lockdown on ANC utilization and deliveries by skilled birth attendants in Kaduna State. It is a retrospective data review of 18 months data on ANC clinic visit and skill birth delivery from 1,722 health facilities. October 2019 to March 2021 data was extracted from the DHIS 2. The analysis was carried out on SPSS using One Way ANOVA. A decline of 13.5% antenatal attendance for first booking compared to pre-COVID-19 was recorded. There was a slight increase of 3.5% Post-COVID-19. There was also a reduction of 4.1% in the number of pregnant women who had the four recommended ANC visits during the COVID-19 compared to pre-COVID-19 period. However, there was a reduction of 10.2% of pregnant women returning post COVID-19 lockdown. The study revealed increased number of pregnant women that delivered during and post COVID-19. There was an increase of 2, 753 and 1,699 during and post-COVID-19, respectively. At 95% confidence interval using significance value is 0.610 (i.e., $p = .610$), the significance is more than 0.05. Therefore, there is no statistically significant difference in the ANC utilization and skill birth attendance before, during and after the Covid-19 pandemic. Therefore Covid-19 did not affect ANC and skill birth deliveries.

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Received: May 22, 2021; **Accepted:** May 27, 2021; **Published:** May 31, 2021

Introduction

COVID-19 is an ongoing global pandemic caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2). The virus was first discovered in December 2019 in Wuhan, China and later declared a pandemic on March 11, 2020 by the WHO. Globally, a total confirmed case of about 161 million have been identified with about 3.3 million deaths reported as of May 12, 2021 making it one of the deadliest pandemics ever seen in the history of the world. There have been about 3.4 million confirmed cases in Africa with 84, 000 associated confirmed mortality [1].

On December 31, 2020, WHO approved the Pfizer vaccine for emergency use and as of 12th May 2021, 1.2 billion people have been vaccinated globally. According to WHO, Nigeria currently has a total of 165,612 confirmed cases with 2,066 reported mortality. Vaccination coverage in Nigeria is on the rise with about 1.4 million people vaccinated with AstraZeneca Covid vaccine. Nigeria reported an average of 5,261 cases in the second week of December 2020 as compared to the latest data of 41 reported cases on 15th May 2021[2].

In Nigeria, COVID-19 pandemic has affected various sectors of the economy negatively because of Government enforced lockdowns

as well as fears from associated morbidity and mortality from the infection. The Nigerian health sector has been plagued with inadequacies including shortages of human resources, lack of equipment, infrastructural decays leading to distrust by the public. Due to COVID the health sector is also stretched thin with a ratio of 1 doctor to about 22,000 Nigerians in rural areas as opposed to the 1:600 recommended by the WHO [3].

According to Tanvir Ahmed, 2021, there was reduction in utilization of basic essential MNCH services such as antenatal care, family planning and immunization in Bangladesh, Nigeria and South Africa due to lockdown, fear of contracting the COVID-19 and resource constraints, deterred people from accessing basic MNCH care [4].

ANC visits in Nigeria has been perennially low, a study suggested that only 53.5% mothers had four antenatal visits in Nigeria[5]. This shows the gross underuse of ANC facilities in Nigeria. Delivery rate according to NDHS 2018 revealed that only 43% of all births in Nigeria were attended to by a skilled provider [6].

Kaduna State, located in the Northern part of the country has available National data that revealed 9068 cases of COVID-19

from 2020 to date with 65 deaths[2]. Kaduna state government like other governments around the world introduced some drastic measures to curb COVID-19 spread including partial or total lockdown as deemed necessary based on prevailing circumstances.

Kaduna State has 608 Local Government health facilities, 656 private health facilities, 23 secondary hospitals and two tertiary hospitals aside specialized health facilities. Health Care Services in the State is plagued by shortage of human resource for health in medicine, pharmacy, laboratory science, x-ray, etc. Available statistics shows, there are 133 doctors in the public service and 56 in the private practice. The State Health Sector goal is to ensure all citizens of Kaduna state have quick and easy access to improved and affordable curative, preventive, rehabilitative and promotive health services. The State Healthcare policy focuses on key deliverables including: Free healthcare for pregnant women and children under 5 (40% of population); malaria treatment and prevention for all. The State has unacceptably poor health indices and heavy disease burden; Infant mortality rate - 103/1000, Maternal mortality rate - 800/100,000, under five mortality rate - 170/1000, TB prevalence rate - 4/1,000, and Fertility rate - 6.1[7].

According to WHO in July 2020, Kaduna State witnessed over 50% reduction in hospital attendance and access to services due to disruption of routine essential services and programmes resulting from prioritization of COVID-19 response[8]. This is suggestive that utilization of antenatal care services might also be affected.

Studies established that utilization of Antenatal care (ANC) services will reduce neonatal deaths. In 2016 WHO introduced the New ANC Model for Positive Experience because the focus Ante natal Care (FANC) was not promoting positive pregnancy experience and desired perinatal death reduction. This was reduced to six physical contact and two virtual contacts during COVID-19 pandemic[9]. Kaduna state commenced eight contact visits in 255 Primary health care facilities in January 2021, though other facilities are on the four focussed visits. ANC 1 which is also known as Booking, is the first Antenatal visit to the health facility, and WHO recommends that this should take place before 16 weeks of gestation[10]. ANC 4 is the 4th recommended antenatal visit by WHO at 36 weeks of gestation[10]. The 4th ANC visit is a priority indicator in the State. Study on the impact of COVID-19 on pregnant women, revealed 69.3% had missed at least one antenatal care service and 24.2% had experienced traveling difficulties to seek health care during the lockdown. Inadequate antenatal care

during the lockdown was reported as 24.2%.11 We aim to carry out this study to assess the decline and return rate of pregnant women in utilizing ANC services and delivery by skilled birth service providers due to COVID-19 pandemic. The findings of this study will assist Kaduna state government in developing strategies for the utilization of ANC and in designing strategies for other MNCH services.

Methodology

This retrospective analysis study aims to analyze the impact of COVID-19 pandemic and its attendant infection prevention measures of lockdown and restriction to movement on antenatal clinic visit and facility delivery rate in both public and private health institutions across Kaduna State. To achieve this, an 18-month data on antenatal clinic visit and skilled birth delivery in Kaduna spanning between October 2019 to March 2021 was extracted from the DHIS 2 and analyzed. The 18 months period was divided into Pre-COVID-19 (October 2019 – March 2020), COVID-19 (April 2020 – September 2020), and Post-COVID-19 (October 2020 – March 2021) period, in a 6-monthly cohort. The data extracted was from 1,722 health facilities distributed across 23 LGAs and 3 Senatorial Zones (Central, Northern, and Southern Zones) in Kaduna, with 627, 37%; 523, 30%; and 572, 33% health facilities, respectively. The data set extracted includes ANC 1st visit, ANC 4th visit, ANC Total Attendance, and deliveries by Skilled Birth Attendance (SBA). The data set were analyzed and compared between the 3 periods to ascertain any impact by the COVID-19 pandemic lock down and restrictions.

Statistical Analysis

Descriptive statistics and frequencies were used to present demographic variables. Demographic and clinical variables were presented in tables and charts. The Analysis was carried out SPSS using One Way ANOVA to test the effect of COVID-19 on ANC Attendance and Deliveries by Skilled Birth Attendants.

Results

From the analysis and review of the extracted Kaduna state data for the period of October 2019 to March 2021 from DHIS 2, it was found that Kaduna North, Igabi, and Chikun LGAs which are located in the Central Senatorial Zone have the highest number of health facilities of 111, 106, and 105 respectively, while the LGAs with the lowest concentration of health facilities are Kudan, Kaura, Kajuru, and Sabon Gari with 39, 41, 52, and 52 health facilities, respectively.

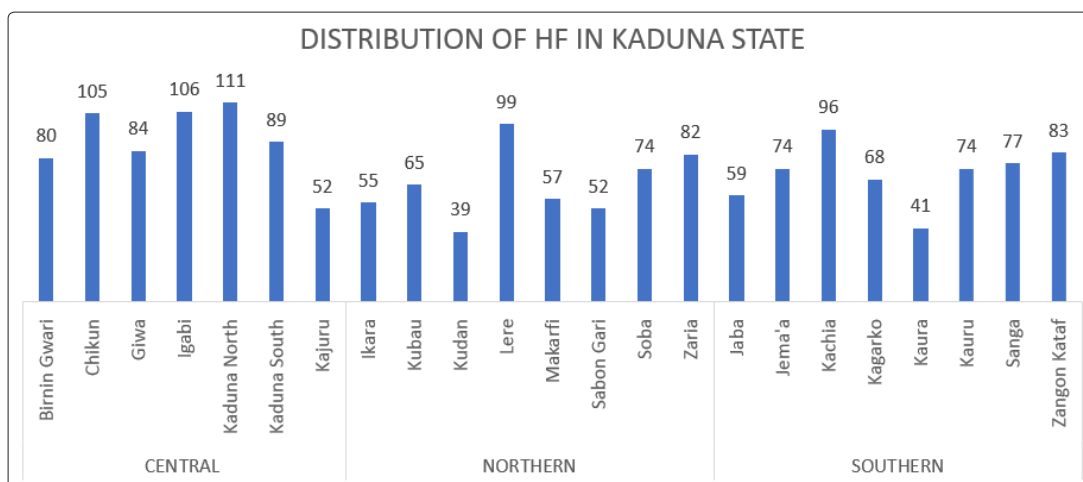


Figure 1: A bar chart showing the distribution of the Health facilities across Kaduna state, highlighting the distribution across LGAs and Senatorial Zones

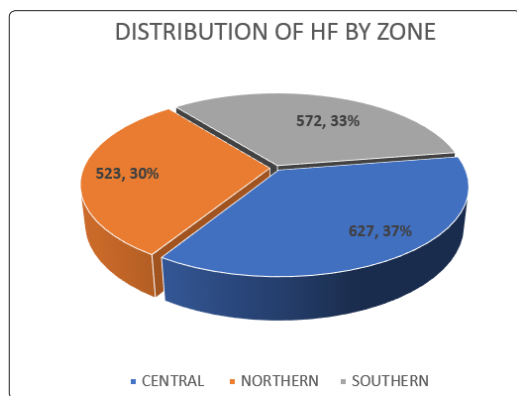


Figure 2: A Pie Chart showing the distribution and proportion of health facilities across the 3 senatorial zones in Kaduna

The data review revealed that ANC 1 reduced sharply from 233,417 recorded in the pre-COVID-19 Period to 201,946 in the COVID-19 period, and rose significantly to 209,055 during the post-COVID-19 period. The Northern and Southern senatorial zones also experienced similar trend in ANC 1 as there was 113,927 and 46,655 ANC 1 in the Pre-COVID-19 period; 106,070 and 33,261 in the COVID-19 period, and 110,991 and 36,276 in the post-COVID-19 period, respectively. The Central senatorial zone took a different trend from the others as it recorded 72,835 ANC 1 in the Pre-COVID-19 period, 62,660 in the COVID-19 period, and a slight increment of just 872 in the Post-COVID-19 period with ANC 1 of 61,788. Most of the 23 LGAs also shows a dip in ANC 1 from the Pre-COVID-19 period to the COVID-19 period, except for Igabi and Kagarko LGA which recorded a pre-COVID-19 ANC 1 of 12,247 and 4,515, respectively, lower than COVID-19 period of 13,496 and 4,600, respectively. At 95% confidence interval using significance value is 0.648 (i.e., $p = 0.648$), the significance is more than 0.05. Therefore, there is no statistically significant difference in the ANC 1 Attendance pre-, during and post-COVID-19 pandemic. Therefore, COVID-19 did not influence ANC 1 Attendance.

Table 1: Table showing ANOVA observation for ANC 1

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|--------------|------|------|
| Between Groups | 23687953.130 | 2 | 11843976.565 | .436 | .648 |
| Within Groups | 1792499395.304 | 66 | 27159081.747 | | |
| Total | 1816187348.435 | 68 | | | |

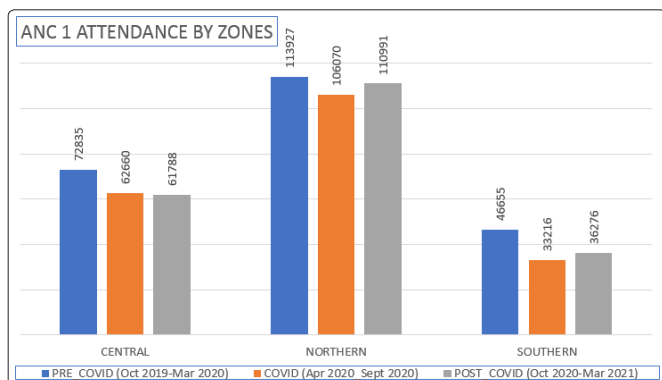


Figure 3: A Bar Chart showing Number of ANC 1 across the senatorial zones in the 3 periods analyzed

ANC 4 is the 4th recommended antenatal visit by WHO at 36 weeks of gestation[10]. Data review showed that the pre-COVID-19 Period had a visit of 113,917, while visit at the COVID-19 period

was the highest with 118,671 and a post-COVID-19 period visit of 107,822. The Northern senatorial zone almost exhibited the same ANC 4 visit trend as it recorded 59,227 in the Pre-COVID-19 period and 71,237 in the COVID-19 period, with a slightly higher visit in the Post-COVID-19 period of 59,896 than in the Pre-COVID-19 period. The Southern and Central senatorial zone shows a higher ANC 4 visit in the Pre-COVID-19 period, with a slight dip in both the COVID-19 and Post-COVID-19 period and a little difference between the later. The Central zone had 39,300 pre-COVID-19 ANC 4 visit, 33,074 COVID-19, and 33,008 post-COVID-19 ANC 4 visit, while the southern zone had 15,390 (pre-COVID-19), 14,360 (COVID-19), and 14,918 (Post-COVID-19). The Northern Zone just as it is in ANC 1 visit notably recorded more ANC 4 visit than the other two zones, with the southern zone having the lowest number of ANC 4 visit.

Kachia, Igabi, Kaura, and Kauru LGAs all had a lower pre-COVID-19 ANC 4 visits, compared with other LGAs with a higher Pre-COVID-19 period ANC visit. Sabon Gari LGA had a significantly higher COVID-19 period ANC 4 visits (13,537) compared to both the Pre- and Post-COVID-19 era, 6,860 and 7,783, respectively. At 95% confidence interval using significance value is 0.916 (i.e., $p = 0.916$), the significance is more than 0.05. Therefore, there is no statistically significant difference in the ANC 4 Attendance before, during and after the Covid-19 pandemic. Therefore, Covid-19 did not impact on ANC 4 Attendance.

Table 2: Showing ANOVA observation for ANC 4.

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|--------------|------|------|
| Between Groups | 2571744.087 | 2 | 1285872.043 | .088 | .916 |
| Within Groups | 967156881.130 | 66 | 14653892.138 | | |
| Total | 969728625.217 | 68 | | | |

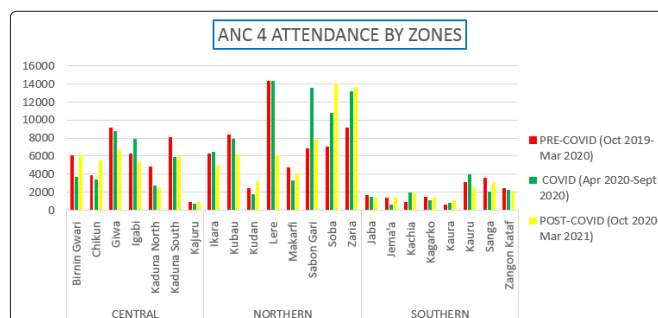


Figure 4: A chart showing the ANC 4 visit across the 23 LGAs and the 3 senatorial zones of Kaduna

ANC Total Attendance review showed that there were 559,114 visits in the Pre-COVID -19 period, 479,483 in the COVID-19 period and 545,83 in the Post-COVID-19 period. The Central, Northern, and Southern senatorial zones had ANC total attendance in the Pre-COVID-19 period of (196,444, 266,704, and 95,9660, respectively), a COVID-19 period of (160,064, 245,384, and 74,035, respectively), and a Post-COVID-19 period of (169,041, 288,998, and 87,414, respectively). Again, the Northern zone generally had a higher ANC total attendance than the other zones, with the southern zone registering the lowest. All the LGAs recorded a higher Pre-COVID-19 ANC total attendance, except at Kagarko LGA where the COVID-19 ANC total attendance was a bit higher than the Pre-COVID-19 period. The Post-COVID-19 ANC Total attendance was notably higher in these LGAs Igabi, Jema'a, Kagarko, Kubau, Kudan, Makarfi, Sabon Gari, Soba, and Zaria. At 95% confidence interval using significance value is 0.610 (i.e., $p = .610$), the significance is more than 0.05. Therefore,

there is no statistically significant difference in the ANC Total Attendance before, during and after the Covid-19 pandemic. Therefore Covid-19 did not affect ANC Total Attendance.

Table 3: Showing ANOVA observation for ANC Total Attendance

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|-----------------|----|---------------|------|------|
| Between Groups | 158227270.464 | 2 | 79113635.232 | .497 | .610 |
| Within Groups | 10496427194.696 | 66 | 159036775.677 | | |
| Total | 10654654465.159 | 68 | | | |

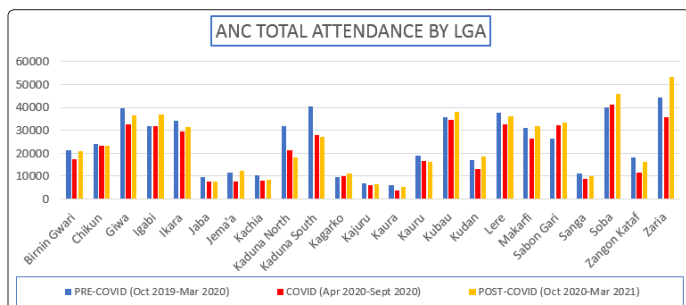


Figure 5: A chart showing the ANC total attendance in the 23 LGAs of Kaduna in the Pre- COVID-19, COVID-19, and Post-COVID-19 period

Skilled Birth Attendant (SBA) as defined in a joint statement by WHO, International Confederation of Midwives (ICM), and Federation of Obstetricians and Gynecologist (FIGO) as “an accredited health professional such as a midwife, doctor or nurse who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in identification, management and referral of complications in women and newborns”[12]. From the data review, it revealed an increasingly number of deliveries by SBAs from the Pre-, COVID-19 to the Post-COVID-19 period of 66,464, 69,217, and 70,916, respectively. The Northern senatorial zone shows a similar trend of increasingly number of deliveries by SBA across the three periods (Pre-COVID-19 24,829, COVID-19 29,662, and 31,406 for the Post-COVID-19 period). The Central zone exhibited an opposite trend as it shows a decline in the number of deliveries by SBA across the 3 periods of 23,193 in the Pre-COVID-19, 21,078 in the COVID-19, and 19,074 in the Post-COVID-19 period. The Southern Zone which recorded the lowest total number of deliveries by SBA, had 18,442 in the Pre-, 18,477 in the COVID-19, and 20,436 in the Post=COVID-19 period. Kabau, Kudan, Lere, Sabon Gari, Soba, Kaura and Zango Katarf LGAs had a s significantly higher deliveries by SBA in the COVID-19 period than in the Pre-COVID-19 period, in the other LGAs the reverse is the case.

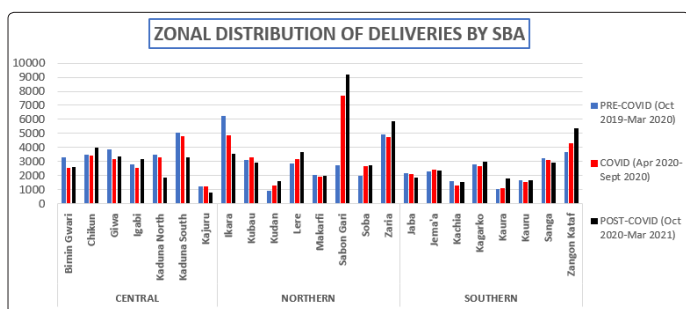


Figure 6: A Chart showing the distribution of deliveries by SBA across the 23 LGAs and Senatorial zone of Kaduna in the 3 periods reviewed

Discussion

This study represents a comprehensive review of pregnant women utilization of health facility for both antenatal care services and skill birth deliveries at pre-, during, and post-COVID-19 pandemic. Anecdotal evidence suggests an increase in pregnancy rates during lockdown. Our study indicates that no measurable impact on antenatal services utilization and skilled birth deliveries during COVID-19 pandemic. The association between COVID-19 pandemic, ANC utilization, and Skilled Birth deliveries remains insignificant across the zones.

This study recorded a decline of 13.5% antenatal attendance for first booking compared to pre-COVID-19. However, 3.5% increase was observed in the Post-COVID-19. WHO (2020) reported a decline of 50% in hospital attendance due to disruption of COVID-19 pandemic in Kaduna state. Also, Hailemariam et al. (2021) agreed with this finding of reduction in essential services including ANC. Njue (2020) and Tadesse (2020) stated fear of contracting COVID -19, transportation cost to health facility, movement restrictions, and economic pressure, greater disruptions to health systems due to workforce and supply chain issues and the repurposing of health workers as some of the reasons for the decline in utilization of health facility. However, Igabi and Kagarko LGAs had an increase of 10% and 1% of ANC 1, respectively [8,13,14,15].

The result of this study shows that there was a reduction of 4.1% in the number of pregnant women who had the four recommended ANC visits during the COVID-19 compared to pre-COVID-19 period. A study revealed that 29.3% of pregnant women fully received the recommended antenatal care services during the COVID-19 pandemic in Ethiopia[15]. Sabon Gari LGA recorded a 96% increment in ANC 4 visit.

The data on skilled birth attendance, which is a priority indicator in Kaduna State revealed increased number of pregnant women that delivered during and post COVID-19. There was an increase of 2, 753 and 1,699 during and post-COVID-19, respectively.

Further studies will be needed to elicit reasons for decline and observed increase in ANC 1 and ANC 4 in some LGAs identified.

Limitations of the Study: The review was limited in age disaggregation, and qualitative study for both ANC utilization and delivery.

Conclusion

The study revealed a minimal decline in the utilization of ANC services during and at post COVID -19 period. However, deliveries by skilled birth attendants were higher during and after the pandemic.

Recommendation

The study suggests qualitative study to deduce the reasons for the decline after COVID-19 lock down. It is recommended that health promotion activities should be intensified to ensure pregnant women visit health facility after COVID-19.

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