

## Impact of COVID-19 Pandemic on Antenatal Healthcare in Al-Ramadi city, Iraq

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## ABSTRACT

**Background:** Antenatal care (ANC) is a form of preventive medicine, pregnancy-specific, and general health advice effectively given in the antenatal period. ANC is conducted by healthcare personnel on pregnant women at regular intervals to protect and improve maternal and neonatal health.

**Objectives:** The study aimed to know if the COVID-19 pandemic affects the coverage rate of ANC visits of pregnant women.

**Materials and methods:** This is a retrospective cross-sectional study conducted at Al-Andalus Primary Healthcare Center which is located in the center of Al-Ramadi city, Iraq. We reviewed the records of all ANC first, second, and total visits of the months February, May, and October during the years 2019, 2020, and 2021.

**Results:** The study showed the coverage rate of ANC visits was statistically significantly declined with the restrictions imposed in response to the COVID-19 pandemic. At the end of 2021, there are some elevation in the coverage rate of ANC visits. .

**Conclusion:** The study concluded that the lockdown period in the pandemic state due to COVID-19 led to a significant decline in the coverage rate of ANC visits.

**Keywords:** COVID-19; Antenatal care visits; Coverage rate; Seasonal variation.

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## INTRODUCTION

Antenatal care (ANC), often known as prenatal care, is a form of preventive medicine [1]. Pregnancy-specific and general health advice are effectively given in the antenatal period. Women and their partners should be informed of the pregnancy risks associated with lifestyle issues and should be given evidence-based treatment for common pregnancy symptoms. Various screening interventions for maternal and fetal complications are offered in pregnancy [2].

The conventional type of prenatal care dates back to the early 1900s. In high-income nations, traditional prenatal care consists of; monthly appointments throughout the first two trimesters (from the 1st to the 28th week), biweekly visits from the 28th to the 36th week of pregnancy, and a weekly visit to the primary health center following the 36th week of pregnancy [3].

According to the World Health Organization (WHO), all pregnant women should have at least eight prenatal checkups to detect and address issues as well as obtain vaccines. Even though prenatal care is critical for both mother and baby's health, many women do not receive eight sessions [4].

ANC refers to the frequent monitoring of pregnant women by healthcare professionals to safeguard and promote maternal and newborn health [5]. ANC programs have been described as one of the most important elements in the field of public health for preserving and strengthening health for mother and child in both growing and developed countries [6]. Prenatal care rates in underdeveloped and developed nations increased from 27.7% to 48.1% and 76.4% to 84.8% respectively, between 1990 and 2013. Furthermore, earlier research show global maternal mortality rates of 341 per 100,000 in 2000 and 211 per 100,000 in 2017 [5].

The WHO received a report in December 2019 from Wuhan, China, of a cluster of four cases of pneumonia of unclear cause [7]. Since then, coronavirus illness 2019 (COVID-19), which is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spread fast around the world. The epidemic was declared a pandemic by the WHO on March 11, 2020 [8]. To focus resources on COVID-19 treat-

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ment, several governments imposed restrictions on migration and limited non-emergency health care [9]. Because pregnant women are more susceptible to complications and severe disease from other coronavirus infections, they were identified as a vulnerable group and advised to take extra precautions as the COVID-19 pandemic virus spread [10, 11].

Various measures, such as social isolation and lockdowns, were attempted by governments to restrict the spread of COVID-19. Individuals and families may be unable to access services as a result of these lockdowns [12]. Healthcare access for non-COVID-19-related health conditions, such as prenatal care, has been severely hampered [13, 14]. This is mostly due to COVID-19-related limitations on transportation, a reduction in available healthcare services, and a scarcity of healthcare practitioners. Although insufficient healthcare access has an impact on the wider community, present health-related gender inequities will worsen, resulting in devastating outcomes for women and girls [15, 16].

Previous Ebola outbreaks have resulted in increased mother and infant mortality. The current COVID-19 pandemic is expected to have a similar effect [17, 18]. If vital maternal health services are not maintained, the progress accomplished thus far may be reversed, and increasing morbidity and death may be experienced in the coming months and years [19, 20]. Maternal and child health care services must be maintained since they need frequent follow-up and a steady supply of medications [21]. According to a recent systematic review and meta-analysis, ANC visits worldwide decreased by 38% during the COVID-19 pandemic [22]. According to another scoping assessment, prenatal care visits decreased throughout the epidemic [23]. Our goal of the current study was to assess the impact of the COVID-19 pandemic on the coverage rate of ANC visits of pregnant women.

## MATERIALS AND METHODS

### Study design and setting

This is a retrospective cross-sectional study conducted at Al-Andalus Primary Healthcare Center which is located in the center of Al-Ramadi city, Iraq. We reviewed all visits of pregnant women during the years 2019, 2020, and 2021. The study was approved by the Al-Anbar Health Directorate/Department of Training and Human Development (Approval number 63 on 3-3-2022).

Al-Andalus Primary Healthcare Center served 10000 population, from these 10000 population, pregnant women represent 2.80%. Therefore, the annual target of pregnant women is 280 women. The target of pregnant women visited the primary health care center for each month calculated by divided 280 over 12, therefore, the target for each month is 23 women. The coverage rate of antenatal care visits for pregnant women is calculated by multiplying the actual number of pregnant women who visited the primary health care center by 100 and divided on the target of ANC visits which is 23.

Three months were chosen (February, May, and October from each year 2019, 2020, and 2021) and compare the coverage of ANC visits of pregnant women for these three years. The first and second visits and the total number of all visits were selected as indicators. The information was taken from the review of records in Al-Andalus Primary Healthcare Center.

Seasonal variations in the coverage rate of ANC visits for each year (2019, 2020, and 2021) were compared also, to know if there is any variation in the coverage rate of ANC visits

through the seasons of the year.

### Statistical analysis

Data were entered and analyzed using SPSS version 23. The Chi-square test was used to compare the categorical variables. P-value was calculated and considered a significant difference if less than 0.05.

## RESULTS

Table 1 shows the coverage rate of the first ANC visit declined from 52% during February of 2019 to 39% during 2020, and to 13% in 2021 for the same month. Regarding the second ANC visit during February also there was a decline in the coverage rate from 26% during 2019 to 13% in 2020, and to 4.5% in 2021. The coverage rate of total ANC visits for February 2019 was 95%, 65% for 2020, and 30% for 2021. The differences among the variables were highly significant (P-value = 0.000).

Table 2 shows the 30% coverage rate of the first ANC visit for May of 2019 reduced to 22% and 13% for 2020 and 2021 respectively. While the second ANC visit shows little change from 17% in 2019 to 13% in 2020 and 2021. The coverage rate of total ANC visits in May of 2019 were 82% compared by 43% in 2020 and 34.8% in 2021 (P-value = 0.000).

The coverage rate of the first ANC visit during October of 2019 was 52% compared with 22% for 2020 and 26% for 2021 during the same month. While the second ANC visit coverage rate of 2019 was 30%, which declined to 13% during 2020 and 22% during 2021. The coverage rate of total ANC visits declined from 108% during 2019 to 34.8% during 2020 and raised to 52% during 2021, as shown in graph 3 (P-value = 0.000) which was a highly significant reduction Table 3.

Table 4 shows a reduction in the coverage rate of ANC visits (first, second, and total visits) in May of 2019 compared with February and October of the same year. However, this reduction was not statistically significant (P-value = 0.169).

Table 5 shows a 65% coverage rate of total ANC visits during February of 2020, while the coverage rate of total antenatal visits during May and October of 2020 was 43% and 34.8% respectively. The differences were statistically significant (p-value = 0.005).

The seasonal variation for the coverage rate of ANC visits during 2021 shows that the total visits coverage rate for February, May, and October were 30%, 34.8%, and 52% respectively. There was a statistically significant difference among the three months (P-value = 0.029) Table 6.

## DISCUSSION

ANC is an essential primary preventive health service to reduce maternal and neonatal mortality and morbidity rates.

**Table 1.** Shows the coverage rate of ANC visits for February of the years 2019,2020, and 2021\*.

Year Visit	2019	2020	2021
First visit	52%	39%	13%
Second visit	26%	13%	4.5%
Total visits	95%	65%	30%

\* P-value = 0.000

**Table 2.** Shows the coverage rate of ANC visits for May of 2019, 2020, and 2021\*.

Year Visit	2019	2020	2021
First visit	30%	22%	13%
Second visit	17%	13%	13%
Total visits	82%	43%	34%

\* P-value = 0.000

**Table 3.** Shows the coverage rate of ANC visits for October of 2019, 2020, and 2021\*.

Year Visit	2019	2020	2021
First visit	52%	22%	26%
Second visit	30%	13%	22%
Total visits	108%	34.8%	52%

\* P-value = 0.000

**Table 4.** Shows the seasonal variation for the coverage rate of ANC visits during 2019\*.

Month Visit	February	May	October
First visit	52%	30%	52%
Second visit	26%	17%	30%
Total visits	95%	82%	108%

\* P-value = 0.169

**Table 5.** Shows the seasonal variation for the coverage rate of ANC visits during 2020\*.

Month Visit	February	May	October
First visit	39%	22%	22%
Second visit	13%	13%	13%
Total visits	65%	43%	34.8%

\* P-value = 0.005

**Table 6.** Shows the seasonal variation for the coverage rate of ANC visits during 2021\*.

Month Visit	February	May	October
First visit	13%	13%	26%
Second visit	4.5%	13%	22%
Total visits	30%	34.8%	52%

\* P-value = 0.029

The worldwide fear of COVID-19 causes disruptions in ANC usage. According to data from the United Nations International Children’s Emergency Fund (UNICEF), nearly half of countries worldwide experience problems in using ANC services [24]. The results of this study showed that the coverage

rate of the first ANC visit declined from 52% in February of 2019 to 39% in 2020 and 13% in 2021 for the same time, while the coverage rate of total visits of ANC during the same month declined from 95% in 2019 to 65% and 30% during 2020 and 2021 respectively (p-value = 0.000) which means there were significant reductions.

Regarding the difference between the coverage rate during May, also there was a significant reduction from 82% coverage rate of total visits in 2019 to 43% in 2020 and 34.8% in 2021 (P-value = 0.000). The same thing noted at the end of 2019 (October), the coverage rate of total visits was 108%, significantly declined in 2020 to 34.8% for the same month, while in October of 2021 the coverage rate raised to 52% for the total visits (P-value = 0.000).

During these three years (2019,2020 and 2021) there were no changing regarding the infrastructure of Al-Andalus Primary Health Care Center, the availability of medical and paramedical staff, and availability of vaccination and drugs for ANC services, which might affect the utilization rate of ANC visits.

The present study assesses the utilization of ANC services during the lockdown period in the pandemic state due to COVID-19, which was found to be low, this might be due to movement restrictions, fear of infection, and economic pressure. A similar study conducted in Qassim, Saudi Arabia during 2021, found that near one-third of the pregnant women had missed their ANC appointments during the COVID-19 pandemic [25]. Another study conducted during the COVID-19 pandemic in the Asia Pacific region reported the utilization service would decrease to half [26]. Consistently, in the US, some facilities have converted maternity wards to COVID-19 units, to accommodate the increasing number of COVID-19 patients [27]. Another study which was conducted in North-east Ethiopia concluded that COVID-19 has caused disruption of health services on a global scale, including MHS (maternal health services). Due to this pandemic, women are facing more barriers to accessing maternal healthcare [28].

Regarding the seasonal variation of the coverage rate of ANC visits, the study showed no significant relationship between seasons and coverage rate of ANC (P-value = 0.169), but there was some decline in coverage rate during May of 2019 (first visit, second, and total visits), this may be due to coincidence Ramadan with the beginning of May, and as we know most of the women not prefer to leave home during the day of fasting, this variation was not found in the years 2020 and 2021. In October 2021, the records showed raised in the coverage rate of ANC for the first visit, second visit, and total visits compared with May and February of this year i.e. 2021, this may be due to slow down the restrictions that apply during pandemic state and the people started to overcome the fear from the virus and they become more alert how to protect themselves from the COVID-19.

The selection of 3 months from the years 2019, 2020, and 2021 didn’t reflect exactly the whole seasons and this might affect the results. This point was considered as one of the limitations of the study. The relatively small sample size was considered another limitation of the current study. The third limitation was the retrospective nature of the study.

**CONCLUSION**

The study concluded that the lockdown period in the pandemic state due to COVID-19 led to a significant decline in the coverage rate of ANC visits. The seasonal variation in the

coverage rate of ANC visits found in the year of 2019 between February, May, and October (not significant variation), this variation not found in 2020 and 2021. At the end of 2021, there were some elevation in the coverage rate of ANC visits, which is a good thing, further research is needed to follow

the ANC services. Lastly, new regulations are required to enable pregnant women to utilize safe and good quality ANC services.

#### CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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