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## Original Research Article

# A study on utilization of ANC services and Psychological status of mothers during Covid–19 pandemic in five adopted villages of KSRDPR University, Gadag, Karnataka

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## ABSTRACT

**Background:** Antenatal care is also known as prenatal care is a type of preventive and primitive health care during the period of whole pregnancy to ensure a better birthing outcome for mother and baby. Improving the utilization of maternal health care services is a global challenge for the health system in low and middle-income countries. The goal set by the United Nations, Millennium Developmental goals to reduce the maternal mortality ratio by three quarters during the period 1990-2015. WHO's new SMART guidelines approach, which includes the ANC Digital Adaptation Kit and WHO digital ANC module to support countries through the process of adapting and applying. With the emergence of the COVID - 19 outbreak, it is not impossible that access to quality antenatal care services in the region will be further compromised due to competition for limited health care services. COVID -19 pandemic affects routine service delivery, which may have an impact on antenatal care (ANC) utilization among pregnant women.

**Objectives:** To assess the utilization of Antenatal services and Psychological status of mothers during the Covid -19 Pandemic period

**Materials and Methods :** After obtaining permission from the District Health Office and the appropriate officer in the health force, a community-based cross-sectional study was conducted. To select study participants who are both convenient and cooperative, the purposive sampling technique was used. A semi-structured questionnaire was used to collect data, information about mothers' socio-demographic details, Antenatal service utilization before and during the Covid - 19 pandemic, An interview schedule was developed in order to identify the Antenatal Care utilization Gap in the eyes of prospective pregnant mothers and the challenges faced by health workers in providing Antenatal services. The data was entered into an excel sheet, and the results were expressed as frequency, percentage.

**Results:** The study included 360 pregnant and delivered mothers aged 18 to 45 years. The majority of mothers (68.33 percent) are between the ages of 18 and 25. Half of the mothers are Primi (51.94%), a quarter of the mothers are Para 1 (33.61%), and more than one-fourth of the mothers are mildly anemic (38.06%). Few mothers have high blood pressure (8.89 percent), the majority of spouses supported their wives' Antenatal natal services visits (93.89 percent), and the majority of mothers received ANC services at no cost (99.44 percent).

**Conclusion :** The current study discovered that due to the COVID - 19 pandemics, antenatal care utilization was lower than before the pandemic period.

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## 1. Introduction

Antenatal care (ANC), a crucial component of maternal and child healthcare, plays a pivotal role in ensuring

safe pregnancies and childbirth outcomes. However, the provision and utilization of ANC faced unprecedented challenges during the COVID-19 pandemic, resulting in significant impacts on maternal and neonatal health. The pandemic led to disruptions in ANC services, primarily due to widespread lockdowns and travel restrictions, which hindered pregnant women's access to healthcare facilities.<sup>1</sup> The fear of contracting the virus further discouraged pregnant women from seeking essential ANC services, contributing to reduced utilization rates.<sup>2</sup> Overwhelmed healthcare systems had to reallocate resources away from routine maternal care to manage the pandemic's influx of cases, thereby affecting the provision of ANC services. Moreover, the pandemic disrupted community-based outreach efforts and health education programs, thereby diminishing awareness about the importance of ANC among pregnant women.<sup>3</sup> This lack of awareness further compounded the challenges faced by both ANC providers and users. To address these challenges, healthcare systems and providers adopted innovative strategies. Telehealth emerged as a vital tool, enabling remote ANC consultations and counseling services.<sup>4</sup> Mobile applications were leveraged to disseminate crucial information and reminders to pregnant women, ensuring they remained connected to ANC services.<sup>5</sup> Additionally, community engagement initiatives led by local influencers and healthcare workers played a pivotal role in raising awareness about ANC and addressing concerns related to COVID-19 transmission.<sup>6</sup> In response to staffing shortages and overcrowding at healthcare facilities, task shifting and flexible scheduling were implemented to ensure the continuation of ANC services.<sup>7</sup> In areas with limited access to healthcare facilities, home-based ANC services, including home visits and medication delivery, were introduced to bridge the gap. Despite the challenges posed by the pandemic, it underscored the resilience of healthcare systems and the importance of ANC services. The lessons learned during this period can guide future efforts to strengthen maternal and child healthcare, highlighting the need for sustained investment in ANC services and innovative approaches to ensure continuity during crises.<sup>8</sup>

In Gadag District 65.4% of Mothers who had at least 4 antenatal care visits. 84.57% of Mothers whose last birth was protected against neonatal tetanus. 64.9% of Mothers who had an antenatal check-up in the first trimester. Hence this study aims to assess the antenatal care practices among pregnant women before and during COVID – 19 pandemic in rural areas of Gadag Taluks.

## 2. Materials and Methods

### 2.1. Study design

A Community based cross sectional study was conducted in rural areas (Five villages) of Gadag district on

pregnant women's, Delivered mothers and health workers. Proportionate sampling technique was used to recruit the study participants. Socio-demographic details of mothers and health workers, Utilization Provision of Antenatal services and psychological status of mothers during COVID - 19 pandemic related 60 data was obtained used semi – structured questionnaire.

### 2.2. Study settings

A Community based cross-sectional study was conducted in the rural areas (Five villages) of Gadag district on Pregnant mothers, delivered mothers (Before and During COVID – 19) pandemics and health workers. Data was obtained from November 2021 to January 2022 using a pre-tested semi-structured interview questionnaire.

### 2.3. Participants

All Pregnant mothers during COVID – 19 Pandemic (2020 – 2021) and Post- natal mothers during Covid – 19 pandemic period during 2019-2020, 2020 – 21 who given signature written consent to participate in the study were included.

### 2.4. Variables

1. **Independent variables:** Gender, age, education, occupation, religion, types of family.
2. **Dependent variables:** Utilization of Antenatal checkups, Provision of Antenatal checkups

### 2.5. Data sources

Primary data was obtained introducing the questionnaire to the Pregnant and delivered mothers and health care professionals. Visited the Households of Five adopted villages and questionnaire was administered related to utilization and Provision of Antenatal visits before and during COVID - 19 Pandemic

### 2.6. Study size

KSRDPR University was located in the Gadag district Headquarters. Purposive sampling technique method was used to recruit the study participants. Totally 360 Pregnant mothers and delivered mothers and all health care professionals data was collected from the 5 villages of Gadag Taluks. Table 1 describes about the total ANC and PNC registration in five villages of Gadag taluks and sample taken from each village.

Sample size is 360 which is calculated using prevalence method  $F = \frac{4pq}{L^2}$ , Whereas  $P = \text{Prevalence}$  67 (Taken from NFHS – 4),  $Q = (100 - P)$ ,  $L = \text{Acceptable Error}$  (5-15%).  $n = 4 \frac{(67)(100 - 67)}{(5)^2}$

$n = 268 (33) / 25$

$n = 353.76$ , approximately taken sample size (360).

**Table 1:** ANC and PNC registration and Sample size distribution of five villages in Gadag taluks

Villages	Total Population	ANC Registered (2019 – 20)	ANC Registered (2020 – 21)	PNC Registered (2019 - 20)	PNC Registered(2020 - 21)	Sample Taken
Hulkoti	11075	310	190	319	310	113
Kurtokoti	10702	218	190	319	310	103
Nagavi	3475	344	300	310	298	124
Kalsapur	3500	91	91	80	80	34
Binkatkatti	3302	65	38	60	23	19
Total						360

**Table 2:** Socio demographic details of antenatal mothers of five villages of Gadag Taluks

Social-Demographic Profile Characteristics	Frequency	N=360 Percentage
<b>Age of mothers</b>		
18 – 25 years	246	68.33
26 – 34 years	105	29.17
35 – 45 years	9	2.5
<b>Education</b>		
Graduate	49	13.61
Intermediate or diploma	81	22.5
High school certificate	87	24.17
Primary school certificate	17	4.72
Illiterate	49	13.61
Profession or honor's middle school certificate	12	3.33
	65	18.06
<b>Occupation</b>		
Legislations, senior officials and managers	6	1.67
professionals	3	0.83
Technician and associate professionals	4	1.11
Clerks	3	0.83
Skilled workers and shop and market sales workers	2	0.56
Craft and related trade work	1	0.28
Skilled agriculture and fishery workers	31	8.61
Elementary Occupation	5	1.39
Homemaker	305	84.72
<b>Religion</b>		
Hindu	338	93.89
Muslim	22	6.11
<b>Type of family</b>		
Nuclear	357	99.17
Joint	3	0.83

Table 2: The following are the list of ANC registered before and during COVID – 19 pandemic in Five villages of Gadag taluk. As Hulkoti (11075), Kurtakoti (10702) have higher Population where as Nagavi (3475), Kalsapur (3500), Binkatkatti (3302) have lower Population.

### 2.7. Statistical analysis

Data was entered into excel sheet, analyzed using SPSS v20 and expressed in frequency and percentages for Pregnant and delivered mothers and health care professionals. Chi – square test was used for showing significant association Four Antenatal visits done by pregnant women's, Iron

sucrose taken by pregnant women's. Before and during COVID – 19 pandemics.

### 3. Results

Table 2 Represents In the current study more than half of the mothers belongs to age group (18– 25 years), Quarter of the mothers belongs to age group of 26 – 34 years. Approximately Quarter of the mothers has completed their high school certificate. Majority of the mothers are Homemakers.

Table 3 a - Represents In that Five villages, Half of the mothers are Primi and Quarter of the mothers are belongs

**Table 3: (A)** – Utilization of antenatal services in five villages of Gadag Taluks.

Characteristics	Frequency	Percentage
<b>No of Pregnancies</b>		
Primi	187	51.94
Para 1	121	33.61
More Than Para 2	52	14.44
<b>why did you visit for last ANC check-up</b>		
Advice by the lady health worker or ANM	337	93.61
As routine check-up	18	5
Clinic is near to my home	1	0.28
I was sick	4	1.11
<b>Why did you go to the above health institution for check-up</b>		
Close to my house	6	1.67
Good quality service	151	41.94
My friend also go there	10	2.78
Service provider is good	192	53.33
expense is less	1	0.28
<b>Level of Hb</b>		
Less than 7 (severe)	2	0.56
7 – 9.9 (moderate)	38	10.56
10 – 10.9 (mild)	137	38.06
More than 11 (no anaemia)	183	50.83
<b>Weight of pregnant women</b>		
30 – 35 kg	8	2.22
36 – 40 kg	30	8.33
41 – 45 kg	73	20.28
46 – 50 kg	121	33.61
50 and above	128	35.56
<b>Is your BP is high</b>		
Yes	32	8.89
No	328	91.11

**Table 3: (B)** Utilization of antenatal services in five villages of Gadag Taluks. (Continued...)

<b>Family members supported for Antenatal check-up</b>		
Not supported	2	0.56
All others	19	5.28
Both I and my husband agree	338	93.89
Left to my choice	1	0.28
<b>Health problem in last pregnancy</b>		
None	324	90
Bleeding per vagina	5	1.39
Fever	1	0.28
Hypertension	5	1.39
abdominal pain	1	0.28
any other	6	1.67
child death	5	1.39
miscarriage	13	3.61
<b>Pregnancy wanted</b>		
Yes	20	5.56
Yes, wanted family members	305	84.72
No	35	9.72
<b>Is they verbally informed you before ANC check-up examination?</b>		
Yes	358	99.44
No	2	0.56
<b>Services provided free of cost</b>		
Yes	358	99.44
No	2	0.56

**Table 4:** Psychological effect of Covid – 19 in pregnant mothers

<b>ANC visit during Pandemic (Covid-19) N=188</b>		
<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Are you satisfied with all the facilities received during the visit of ANC at the time of Lock down</b>		
Yes	175	93.09
No	13	6.91
<b>Biggest worrying factor/reason for you during lock down period</b>		
Any other reason	2	1.06
Mental stress	10	5.32
No worried	175	93.09
Problem in buying medicines	1	0.53
<b>Are you feeling worried about the corona virus</b>		
Not at all or never	182	96.81
Like previous time	4	2.13
More than previous time	1	0.53
Severe than previous one	1	0.53
<b>Have you ever felt that you are losing confidence during pregnancy</b>		
Yes	108	57.45
No	80	42.55
<b>Do you have any kind of fear or concern due to corona virus</b>		
For ANC check-up in hospital	4	2.13
Problem in delivery	7	3.72
Transportation problems	1	0.53
Lack of food	1	0.53
Not worried	175	93.09
<b>Are you Vaccinated</b>		
Yes	138	73.4
No	50	26.6
<b>What can you do to avoid coronavirus</b>		
Avoid going in crowded places	2	1.06
Cover your nose and mouth with a mask during sneezing and Coughing	1	0.53
Follow physical distance	3	1.6
If any	9	4.79
Use mask	147	78.19
Wash hand again and again	26	13.83

on Para 1 and few mothers belongs to Para 2. Maximum mothers are advised by ASHA workers or ANM for last ANC checkups. Quarter of the mothers are mild anemic. Quarter of the mothers had weight of (46kg – 50 kg) and few mothers are hypertensive. (Table 3 a)

(Table 3 b) represents Majority of the mothers are supported by their husband for Antenatal checkups. Few mothers had faced problem as bleeding per vagina, fever, hypertension, abdominal pain, miscarriages. Maximum mothers are verbally informed by ANC checkups examination.

Table 4 shows few of the mothers having mental stress (5.32 % 0 due to covid –19 and half of the mothers Loosing their confidence during pregnancy (57.49 %) in covid –19 pandemics, Quarter of the mothers are not vaccinated (26.6 %) of covid – 19 due to stigma of miscarriage and child death.

#### 4. Discussion

The Study revealed that ANC registration done during Covid – 19 was 62 % and Four Antenatal visit was 65 %. A community based cross sectional study was conducted in the field practice area of a teaching hospital in Mangalore, Karnataka. Study included 142 women who had delivered in the last one year in the study area. Among the participants, 99.3% registered their pregnancy and 91.5% had minimum antenatal visits.<sup>9</sup> A study was conducted by Harish Chandra Tiwari et al. all in the Shivarjpur block of district Kanpur in Uttar Pradesh (2013) found that 91.9% coverage of antenatal care which was based on receiving at least one antenatal check-up.<sup>10</sup> A study was conducted in urban slums of Aurangabad city conducted by Dabade Kuldeep et al they found that 67.6% of respondent women had their first antenatal visit in 1st trimester. Most of the respondent

women 88.9% had received two doses of TT. Only 41.7% of respondent women had consumed equal to or more than 100 IFA tablets.<sup>11</sup> The study shows that total ANC services Utilization is 65.43 % and two doses of TT taken is 84.57 %. A cross-sectional survey was carried out from July 2012 to June 2013 in two urban slums of Aligarh with sample of 405 women. Antenatal care (ANC) utilization was found to be 74.3%. 89.4% women received two doses of TT injections and 55.8% women consumed Iron Folic Acid (IFA) tablets at least for 90 days.<sup>12</sup> In this study, participants have received 100% TT Vaccination and counseling from the Doctors / health workers about their pregnancy. 101(96.19%) participants received IFA supplementations till the period of delivery. A study was conducted (2016) by Mamata Sherpa Awasthi et al found that 68.3% of the mothers had consumed Iron/Folates within 45 days after delivery. 70.0% of respondents had received TT Vaccines during their last pregnancy.<sup>13</sup> A study conducted by Darshan Bhagwan et al in 2016 in Manipal found that around 95% of the study subjects had consumed more than 100 Iron and Folic Acid tablets. A study conducted by Rekha Shekawat et al in Jaipur (2018), found that 98.19% of were immunized with an adequate dose of tetanus toxoid and 30.6% had consumed 100 or more than 100 IFA tablets. 47.7% women had received four or more antenatal visits, 98.19% of were immunized with an adequate dose of tetanus toxoid (20). In the Present Maximum mothers were supported by Family but faced some problems like Anxiety Stress, low confidence due to Covid – 19 pandemics. A total of 64,449 pregnant women were part of the current systematic review and meta-analysis reported a significant relationship between low social support and the risk of developing mental health problems (i.e. depression, anxiety, and self-harm) during pregnancy.<sup>14</sup> A study was conducted by Parineeta et al in 2014 found that adequate utilization of ANC services was only 61.4%. It means that 22(38.6%) pregnant women had underutilized or not utilized the services. Education, religion, type of family head of the family were significantly associated with the utilization of ANC services. The main reasons for the underutilization of ANC services were financial, obstacles from family members, unavailability of transport facilities tradition.<sup>15</sup> A study was conducted by Poonam Kushwaha et al. in 2016 at J N Medical College, Aligarh, India. They found that full utilization of ANC services was 59%, the main reasons for in adequate (partial/no) utilization of ANC services were financial constrain (34.14%) and lack of awareness (30.48%).<sup>16</sup>

## 5. Conclusion

Age of mothers, Place of residence, fear of Covid – 19 pandemic were Significant factors that contributed the lesser utilization of Antenatal services during Covid – 19 Pandemic. Hence it was recommended policymakers

and concerned bodies should design appropriate training programs for the health care workers working in the area and strategies to help the study subjects acquire adequate quality of ANC and hence help them to reduce the risk of complications during pregnancy and to reduce the adverse outcomes of pregnancy. Further Research is need to do in comparison of Urban and Rural population for broad knowledge of Antenatal services Provision and Utilization.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.


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