

# Knowledge, Attitude and Practice (KAP) Assessment Towards COVID-19 Outbreak Among Pregnant Women at a Tertiary Care Hospital in Central India: A Cross Sectional Study

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## Abstract

**Background:** In an effort to curb the spread of COVID-19 outbreak, Government of India have imposed a series of preventive measures along with the media campaigns, disseminate information to the general public during the pandemic. Adherence to these measures is important to combat this pandemic when there is no definitive treatment available. However the level of knowledge and practice of these preventive measures among pregnant women who constitute a vulnerable group is yet to be evaluated.

**Aims and Objectives:** To assess the knowledge, attitude and practice towards COVID-19 outbreak among pregnant women and describe the association of various demographic characters with KAP.

**Materials and methods:** A cross sectional study was conducted for pregnant women attending antenatal OPD at Government Medical College and Hospital, Nagpur. We have interviewed 497 pregnant women attending our antenatal OPD with a questionnaire of 14 questions. The response rates were scored and also association of different demographic score with KAP score was analysed. Median and standard deviation (SD) were calculated for KAP score and Chi square test and Anova test were used to analyse the association of demographic variables with KAP.

**Results:** In our study scores of good knowledge, positive attitude and good practice were 81%, 90.54% and 86.12% respectively. Education, socioeconomic status and parity had significant association with KAP score.

**Conclusion:** Majority of the pregnant women attending our OPD had good knowledge, practices and positive attitude toward COVID-19. The results of our study may help health authorities in managing these vulnerable population and implementing educational programmes since awareness and prevention is the only way to curb the spread of this novel disease.

**Keywords:** Attitude; COVID-19; Knowledge; Practice; Pregnant women.

## Introduction

The novel Corona virus known as the SARS –CoV-2 was first reported in December 2019 in Wuhan, Hubei Province, China from where it spread rapidly to over 218 countries and territories. It was identified as a cluster of acute respiratory illness. On 30th January, India reported its first case of COVID 19 and it was declared a global pandemic by WHO (World Health Organisation) on 12th March 2020.<sup>1,2</sup> India currently has the largest number of confirmed cases in the world, with more than 16.3 million reported cases of COVID 19 infection.

Person to person transmission of COVID-19 occurs by close contact with an infected person and also from contaminated surfaces. Virus can be detected in respiratory secretions and droplets, fomites and faeces. Incubation period ranges between 5-14 days following the exposure.<sup>3,4</sup> However, there is no evidence of fetomaternal transmission of the disease.<sup>5</sup> Spectrum of infection ranges from asymptomatic to critical illness, majority being mild illness (81%).<sup>6,7</sup> Common symptoms include fever, dry cough, breathlessness, myalgia and anosmia. Although there is no definitive treatment protocol available, drugs like favipiravir, remdesivir, steroids, hydroxychloroquine and plasma therapy have been suggested.

During the pandemic, Indian Government and ICMR identified pregnant women do not appear more likely to contract the infection than the general population, but as being at a higher risk of severe illness if they become infected with SARS-COV-2 and develop COVID 19. Severe symptoms suggesting pneumonia and marked hypoxia are more common at later gestation. This can be attributed to the distinctive immunological suppression during pregnancy. There is no evidence currently that the virus is teratogenic or an increased risk of early pregnancy loss in relation to COVID 19. Only adverse pregnancy outcome validated after COVID 19 infection among pregnant women is preterm birth.<sup>8</sup>

Many infectious diseases taught us that knowledge and attitude about the disease along with accurate practices helps in curtailing the further spread of the disease.

The primary aim of our study was to assess and have an insight about the knowledge, attitude and practice towards the novel COVID 19 infection among pregnant women, as they form one of the vulnerable groups to be affected with this disease. Our secondary objective was to analyse the various demographic variables like age, socio economic status, level of education, parity and presence of comorbid illness with the knowledge, attitude and practice score.

## Materials and Methods

This cross sectional study was conducted from 1st June to 30th September 2020 on pregnant women attending antenatal outpatient department of Obstetrics and Gynecology, Government Medical College, Nagpur. Assuming expected proportion of 60% of pregnant women would have knowledge about COVID 19, a total of 444 pregnant women can be recruited with a relative precision of 10% and 99% confidence interval. We have recruited a consecutive sample of 497 pregnant women in our study.

Validated questionnaire was devised based on Indian Medical Council Research (ICMR) guidelines for the management of Covid 19 in pregnancy.<sup>9</sup> A pilot study was conducted on first 30 pregnant women for testing the correlation of self made questionnaire with the standard questionnaire for validation.

Verbal and written informed consent was taken from the respondent before the formal questionnaire. Data was collected via face to face interview technique using a structured and pretested questionnaire. The questionnaire consisted of two parts; demographic variables and KAP. Knowledge questionnaire consisted of 4 questions regarding symptoms and related information, 6 questions regarding routes of transmission, prevention and control of COVID 19 and 6 questions regarding affliction of COVID 19 in pregnancy. These questions were answered as true, false or 'i don't know'. Questions on attitude were answered as Yes, No and 'no idea' and questions on practice were answered as Yes or No. Each positive response were assigned score 1 and no / don't know as 0. Score for knowledge ranged from 0- 16 with those scoring 13 or more were considered as fair knowledge, score between 10-12 were taken as good knowledge and those with a score less than 10 were considered having poor knowledge about the COVID 19 pandemic. Attitude was tested by 2 questions regarding their agreement on the final control of COVID 19 and measures taken by the Government regarding the disease control. Responses were graded on a scale of 0-2 with 0 being negative attitude towards COVID 19. There were 4 Practice questions regarding the behaviour towards COVID 19. Total score was 4 with higher scores denoting good practices. Association of various demographic variables mentioned above were analysed with the knowledge, attitude and practice score.

The data was collectors were explained about the aim of the study, method of data collection, contents of the questionnaire, confidentiality, participant's right and informed consent before they start the data collection. The completeness and consistency of the

collected data was cleaned, cross checked and complied on daily basis by the principal investigator.

STATA version 10.1 (2011) software was used to analyse the data. Descriptive variables were expressed as frequencies and percentages. Pearson Chi square test was used to describe association of demographic variables with the KAP score.

**Results**

We have interviewed 497 pregnant women attending antenatal OPD at Government Medical College, Nagpur for our study.

**Table 1:** Frequency distribution of demographic variables.

Variables	n(%)
<b>Age Group</b>	
<19	11(2.2)
20-29	386(77.67)
30-39	98 (19.72)
40-49	2(0.40)
<b>Place of Residence</b>	
Urban	422(84.91)
Rural	75(15.09)
<b>Parity</b>	
Primigravida	206(41.45)
Multigravida	291(58.55)

**Table 2:** Responses to the knowledge, attitude, practice questions.

Knowledge Questions	Correct responsesn(%)	Non(%)	Don't known(%)
The main clinical symptoms of COVID-19 are fever, fatigue, cough, myalgia	478 (99.58)	2(0.40)	17(3.42)
Symptomatic and supportive treatment can help patients to recover from disease.	379 (76.26)	38(7.64)	80(16.9)
Elderly, people with chronic illnesses, obese are more likely to have severe disease	437 (87.93)	9 (1.81)	51(10.26)
Eating meat or eggs would result in the infection by COVID-19 virus	261 (52.52)	129(25.95)	107(21.52)
One should cover the nose and mouth to prevent the infection by COVID-19 virus	484 (98.57)	7(1.40)	6(1.20)
COVID-19 virus spreads via respiratory droplets of infected individuals	428 (94.07)	27(5.43)	42(8.45)
It is necessary to take measures to prevent the infection by COVID-19 virus	486 (98.78)	6(1.20)	5(1.01)
Avoiding crowded places and use of public transport	482 (98.37)	8(1.60)	7(1.40)
Effectiveness of Isolation, treatment and social distancing to reduce spread	474 (99.16)	4(0.80)	19(3.82)
Quarantine period for contacts of COVID 19 patient	385 (97.22)	11(2.21)	1(0.20)
Pregnant women are not more likely to contract infection than general population	193 (50.26)	191(38.43)	113(22.73)
Reported cases of COVID-19 pneumonia in pregnancy are milder and with good recovery	128 (52.67)	115(23.13)	354(71.22)
There is currently no evidence suggesting miscarriage or early pregnancy loss due to COVID-19	112 (22.54)	81(16.29)	304(61.16)
No transmission of the virus through breast milk	164 (33.00)	112(22.53)	221(44.46)
Routine antenatal visits should be reduced to minimum	336 (67.61)	30(6.03)	131(26.35)
We should follow vaccination schedule for baby in this pandemic	397 (97.78)	9(1.81)	91(18.30)

Table continous ....

<b>Level of Education</b>	
Secondary	166(33.40)
Higher secondary	197(39.64)
Graduate	124(24.95)
Postgraduate	10(2.01)
<b>Occupation</b>	
Homemaker	450(94.94)
Working	24(5.06)
<b>Presence of Co-morbidities</b>	
Yes	447(89.94)
No	50(10.06)

[Table 1] shows the frequency distribution of socio-demographic characteristics among the participants.

Majority of the participants were aware of the COVID 19 pandemic. In our study, scores for good knowledge, positive attitude and good practices were 81%, 90.54% and 86.12 % respectively. The median score for knowledge was 11.3 (SD+/-2.332). A knowledge score of 10 or more was considered adequate knowledge in our study. The median score for attitude was 1.52(SD +/-0.662). The median score for good practice 3.85 (SD +/- 0.388).

Frequency distribution of responses of the participants to the knowledge, attitude and practice questions towards COVID 19 is given in [Table 2].

Attitude questions	Positive Responen(%)	Negative Responen(%)	No idea n(%)
Do you think Indian Government is taking adequate measures against corona virus.	436(87.72)	26(5.23)	35(7.04)
Do you think COVID-19 infection will be successfully controlled.	324(65.19)	63(12.67)	110(22.13)
Practice questions	Yes n(%)	No n(%)	
In recent times do you avoid going to crowded places	479(96.37)	18(3.62)	
In recent times, do you cover the nose and mouth while going outside	496(99.79)	1(0.20)	
Are you practicing repeated hand wash and use of sanitizer for hand cleaning	491(98.79)	6 (1.20)	
Have you decreased the visits to the healthcare facility as advised.	448 (90.40)	49(9.85)	

Association of various demographic variables with KAP score is illustrated in [Table 3,4,5].

**Table 3:** Association of various demographic factors with grade of knowledge.

Variables	Grade of knowledge n			Pearson's chi2(2)	Pr
	1	2	3		
<b>Place of residence</b>				12.955	0.002
Rural	24	36	15		
Urban	70	206	148		
<b>Parity</b>				8.2170	0.016
Primigravida	43	111	52		
Multigravida	51	131	109		
<b>Education</b>				41.3875	0.001
Secondary	51	73	42		

Higher Secondary	31	105	61		
Graduate	12	58	54		
Postgraduate	0	6	4		
<b>Socioeconomic status</b>				18.0875	0.006
Low	1	0	1		
Lower middle	8	8	3		
Upper middle	30	123	82		
High	63	111	75		

**Table 4:** Association of demographic characters and attitude.

Total score attitude	Co-morbidities		Pearson's chi2(2)	Pr
	No	Yes		
0	43	4	6.9124	0.032
1	118	22		
2	286	24		

**Table 5:** Association of practice with baseline characters.

Total score practice	Place of residence		Pearson's Chi2 (2)	Pr	Education				Pearson's chi	Pr
	Rural	Urban			Secondary	H. sec	Graduate	Post-graduate		
1	1	0	10.4327	0.015	1	0	0	0	64.4482	0.001
2	1	2			1	1	1	0		
3	15	50			24	27	12	1		
4	58	370			139	169	111	9		

Adequate knowledge score was significantly associated with four baseline characteristics namely urban residence (p value=0.002), higher parity (p value =0.016), education (p value=0.001) and socioeconomic status (p value =0.006). No significant association was present between knowledge and age group (p value=0.05). Positive attitude was associated with presence of co-morbidities (p value= 0.032). Medical Co-morbidities were present in 9.86% (n=49) participants like hypothyroidism, sickle cell disease, chronic and gestational hypertension, gestational diabetes, heart disease complicating pregnancy, seropositive status and assisted conception. Good practices were significantly associated with urban residence (p value=0.015) and higher educational

levels (p vale=0.001).

## Discussion:

This study was performed within 3 months after COVID 19 outbreak in India. COVID 19 is a global pandemic. It is important to insist the public to adopt precautionary behaviours, which will only be after proper understanding of the disease process especially in the vulnerable groups like pregnant women. To the best of our knowledge; this is one of the few studies in India investigating the KAP towards COVID 19 amongst the pregnant women. Most of our participants were well aware of the disease and most of its consequences. Our study

showed that majority of the pregnant women obtained their information through television commercials, news media and internet.

Based on our results, KAP towards COVID 19 score was significantly higher in respondents with higher education, urban residence, higher socio economic status and higher parity. Our results were similar to the previous study regarding KAP towards COVID 19 in general Chinese population.<sup>10</sup> At the start of the outbreak in India, Government provided information on various aspects of COVID 19 through various media like television, newspaper, radio, and internet and also through health care workers. This may be the reason for higher knowledge scores in respondents. Most of our respondents had completed their secondary education (66.59%) which reveals a significant association between this demographic variable and knowledge scores and the results are similar to the other studies on this aspect.<sup>10</sup> Further, our study also revealed that higher knowledge score about COVID 19 was significantly associated with a higher likelihood of having positive attitude and good practice at the time of COVID 19 outbreak by one way ANOVA test. Thus we can interpret that improving the knowledge through various media can help in building the positive attitude and good practices in general population. The vulnerable groups to COVID 19 infection can also be helped by providing information on spread, course of the disease and further complications.

A positive correlation between urban residence and knowledge score may be because of the ample information that is accessible to the urban population through social media and non-government associations. And also to note that in India, rural regions are less affected than the urban contributing to the low knowledge scores among the pregnant women from the rural residence. Increasing Parity was another significant association for better KAP scores, since women who have already been pregnant would be well aware that infections in pregnancy could be dangerous to the foetus and would thereby follow proper norms of social distancing and hand washing.

The result of this study also showed that there was a positive relationship between current antenatal follow up care and knowledge in the respondents. Pregnant women in present pregnancy had good level of knowledge. This is due to the fact that reliable information is being given by the health care provider in every antenatal visit.

However poor knowledge scores were exhibited by our participants in information regarding the complications in pregnancy, transmission of the

disease through breast milk and possible effects of the disease in early pregnancy. This may be because of the less information about these topics in the internet and social media.

Most of the respondents had good knowledge of COVID-19 and were well aware of the fact that it can be fatal.

The overall attitude score towards COVID 19 among pregnant women was 94.37%. They agreed that Government is taking adequate measures to control the spread of the disease. Those having a lower positive attitude score compared to other participants may be due to the fact that many people have lost their jobs and faced financial problems during the lock down. Majority of the participants agreed with having quarantine, locking down city borders, restricting travel, closing educational centres and religious sites. Taking such measures is necessary to prevent the spread of the disease and curb the pandemic. Isolation, quarantine, social distancing and containment are the only available methods of prevention. Nearly 83.74% of participants agreed that COVID 19 will be controlled once vaccine becomes available.

Based on the overall practice score, majority of the participants took adequate measures to avoid contracting the disease. Avoiding crowded places, repeated hand washing and wearing appropriate masks was practiced by 96.38%, 98.79%, 98.80% participants respectively. This was also due to the fact that women generally restrain from unsafe practices and less risk taking behaviour. Around 90.14% of pregnant women limited their visits to health care facility. The results of our study was also supported by previous studies.<sup>11,12,13</sup>

We have notified our study findings to our institutional administrators and nearby peripheral health care centres that would help them to formulate an institutional policy for providing information regarding the disease, good practices and positive attitude toward COVID 19, especially in pregnant women. Proper and reliable information can alleviate the unnecessary anxiety and fear about the disease among pregnant women and their care providers thereby assuring good perinatal mental health.

## Conclusion

There may be no treatment for COVID 19 disease now but we can prevent it with our awareness and understanding. Our study was able to provide comprehensive information about the KAP among pregnant women about COVID 19 outbreak. This study demonstrates that most of the pregnant women

have adequate knowledge, positive attitude and good practice methods and various demographic variables associated with KAP to combat this pandemic. However, consistent reliable information and health education programmes from the government and non government organisations along with the health care provider's particularly targeting lower knowledge and vulnerable groups will be essential to improve overall knowledge and understanding of COVID 19.

### *Strengths and limitations*

Our study is one of the initial studies defining KAP among pregnant women in Central India. The data was collected during the peak of COVID 19 transmission in India. Therefore the results of this study would help in formulating strategic plans to curb the pandemic among the pregnant women.

This study was carried out in a Government tertiary care facility with most of our patients representing the nescience, impoverished subpopulation with more medical co morbidities. Therefore the findings cannot be generalised to the entire pregnant population in India. Further research should be multicentric for better assessment of KAP. Another limitation of our study is the possibility of participants giving socially desirable responses suggesting response bias. It is possible that our participants may have answered attitude and practice questions positively based on what they perceive to be expected of them.<sup>14</sup>

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