



Knowledge, Attitude and Practice towards COVID-19 Infection during Pregnancy among Antepartum Women

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Pregnant women are more susceptible to developing severe cases of COVID-19. They need to be more careful during the antepartum, intrapartum, and postpartum periods to prevent untoward outcomes. As no definite treatment for COVID-19 has yet been proven, the only effective approach to prevent unfavorable outcome is by increasing awareness of COVID-19 among pregnant women and by encouraging them to follow the necessary prevention methods. This study was done to know, if the adherence to the recommended preventive practices were influenced by the knowledge and attitude of the mothers and whether having a good knowledge and attitude led to better adherence to prevention methods. It also aims to assess if current knowledge on the effects of COVID-19 infection on pregnancy among antenatal women is sufficient or if more efforts have to be taken to educate the mothers regarding the same.

Aims: This research aims to assess the knowledge, attitude, and precautionary measures taken towards COVID-19 infection in pregnancy among antenatal women attending the outpatient clinic.

Materials and Methods: It is a descriptive cross-sectional questionnaire-based study conducted in Saveetha Medical College Hospital from January 2021 to March 2021. All antenatal women attending the obstetrics outpatient clinic were included in the study. After obtaining their consent, each woman was given a semi-structured, pre-tested questionnaire to solve on the spot. The statistical analysis used were descriptive analysis, proportions, percentages, chi-square test, and Pearson correlation coefficient.

Results: Among the 465 pregnant women included in the study, 86.02% had good knowledge of COVID-19 and its impact on pregnancy, 89.89% of women held a positive attitude towards battling the pandemic and 98.92% had good prevention practices against COVID-19 infection. There was a significant association between age and knowledge and a significant association between socioeconomic status with the knowledge, attitude, or preventive practices of the patients and between education level and attitude of the women at $p < 0.05$. Knowledge, attitude and prevention were found to be strongly positively correlated indicating that with an increase in the knowledge there is an increase in attitude and practice of preventive measures by pregnant women.

Conclusion: The women included in this study had adequate knowledge and a good attitude towards the impact of COVID-19 on pregnancy and lactation. They also take necessary precautionary methods to safeguard against acquiring COVID -19 infection.

Keywords: COVID-19; pregnant; knowledge; attitude; awareness; precaution.

1. INTRODUCTION

Coronavirus disease 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV2) is an emerging respiratory disease, identified first in Wuhan city, China. [1] On March 11th, 2020, the World Health Organization (WHO) labelled it a pandemic. It is transmitted through direct contact with the respiratory droplets of an infected person (generated through coughing and sneezing). Touching of contaminated objects and surfaces has also been identified as a major route of transmission. [2].

In the COVID age, women are particularly concerned and worried about their pregnancy progress. [3-5] According to the World Health Organisation (WHO), pregnant women are presently recognized as a population at increased risk of developing severe COVID-19 if they are infected, compared with non-pregnant women of the same age. It has also been associated with an increased likelihood of pre-term birth, and persons with pre-existing medical conditions such as heart disease, hypertension, and diabetes are at particularly increased risk of serious outcomes of COVID-19 [6].

Hence, increased caution and adherence to preventive measures must be taken by pregnant women which are mainly affected by their knowledge, attitudes, and practices (KAP) toward COVID-19. [7] Therefore, the primary aim

of our study was to assess the KAP level among pregnant women and its association with demographic variables (age group, education, and socio-economic status).

2. MATERIALS AND METHODS

2.1 Study Population and Sampling Method

This is a descriptive cross-sectional questionnaire based study carried out for a period of 3 months from January 2021 to March 2021 at a tertiary care medical college hospital in the metropolitan city, Chennai, Tamil Nadu. All antenatal women attending the obstetrics and gynecology outpatient department of the hospital were included in the study. All those who did not give consent were excluded from the study. A total of 480 women were given the questionnaire for the study. Each participant was given a semi-structured, pre-tested questionnaire to solve on the spot. Out of 480, only 465 women gave completed responses. The purpose of this study and all the terms used in this study was explained to the respondents before giving the questionnaire and confidentiality was maintained.

2.2 Data Collection Tool

The pre-tested semi-structured questionnaire had 3 sections with a total of 20 questions,

that were categorized into 3 main sections, namely.

- 1) Knowledge on COVID-19 infection
- 2) Attitude and perceptions towards COVID-19 in the antepartum period, and
- 3) Preventive methods are taken to guard against COVID-19.

Questions were revised and adapted to Indian populations with of team of experts from Obstetrics and Gynaecology. The pilot test was carried out to check for the integrity of the questionnaire and revised accordingly.

Each question was analysed using a scoring system where 'right' answers were coded as one and 'wrong' and 'not sure' answers as zero. Those respondents who obtained a knowledge score of 5 and above were considered to have adequate knowledge and < 5 as poor knowledge. For measuring attitude, students who scored 3 and above were said to have a good attitude and a score < 3 as poor attitude. For practice, attaining a score of 3 was considered to be good practice and less than 3 as poor practice.

2.3 Statistical Analysis

Data collected during the survey were checked in the field, entered, and analysed, using MS office Excel 365 and SPSS 21 versions respectively. Descriptive variables were interpreted using proportions and frequencies. A chi-square test was used to examine whether or not an association existed between the age, education status, and socio-economic status of the women and their knowledge awareness and practice towards COVID19. A p-value of <0.05 was considered to indicate a statistically significant difference. Pearson correlation coefficient was used to assess the strength of linear association between knowledge and attitude scores of the mothers.

3. RESULTS

A total of 465 pregnant women participated of which the mean age was 25.57 (SD=6.81) years.

The majority of the women were homemakers (84.94%, 395). About 51% (237) of women were educated till college level, 45%(209) till grade 12, and 4%(19) below grade 7 (Table 1). About

54.4% of women belonged to the lower middle class, Socio-economic class III (Table 2). Fig. 1 shows the distribution of women among the socio-economic classes.

A small proportion of women (13.92%,65) had fear about acquiring the infection. About half (51.9%) admitted that they felt anxious about being pregnant during the COVID-19 pandemic.

3%(14) of the women had acquired the infection within the past 1 year and about 32%(149) had a positive family history of COVID-19 infection.

The majority (60.52%) of respondents were aware of the ongoing COVID-19 pandemic. About 92.9% (432) women were willing to receive the COVID-19 vaccine once available to the general public. A majority (86.02%) of women had adequate knowledge of COVID-19 and its association with pregnancy, 89.89% of women held a positive attitude.

Majority of the women, 98.92% had good preventive practices towards COVID-19 infection. About 99.2% women practiced the habit of wearing a cloth/surgical mask when they leave the house, 99.7% practiced washing of hands and sanitising the things bought from a store and 92.3% practiced social distancing as much as possible when in public. Overall 444(95.48) women scored 3 for preventive practices and 21(4.51%) women had a score of less than 3.

There was a significant association between age and knowledge (Table 3), but no significant association between age with attitude and practices (Table 3). There was a significant association between socio-economic status with the knowledge, attitude or preventive practices of the patients at $p < 0.05$ (Table 4). There is a significant association between education status and attitude of the patient (Chi-square = 11.3662, $p = 0.000748$) (Table 5). However, knowledge, attitude and prevention were found to be strongly positively correlated ($r(463) = .9519$, $p = < 0.00001$) indicating that with an increase in knowledge there is an increase in attitude and practice of preventive measures by pregnant women. There is also a positive correlation between knowledge and practice, ($r(463) = .556$, $p = 54.40\%$ of pregnant mothers were aware that pregnant women are at higher risk of getting severe respiratory illness compared to non-pregnant women.

Table 1. Socio-demographic details of the study population

Age		
<25	224	48.17
>25	241	51.82
Occupation		
Home Maker	395	84.94
Working	70	15.05
Education		
Primary	19	4
Secondary	209	45
Tertiary	237	51

Table 2. Socio-economic status of the study population

Upper middle (II)	176	37.84
Lower Middle (III)	253	54.4
Upper lower (IV)	36	7.74

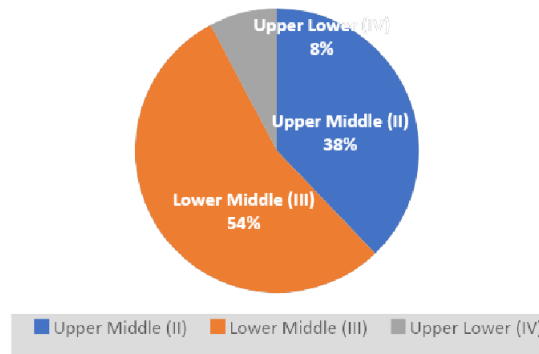


Fig. 1. Pie chart of Socio-economic status of the study population

Table 3. Association Between Knowledge, Attitude and Practice with Age

Good (>5)	200	200	.05035
Poor score (<5)	24	41	
Attitude			
Good (>3)	200	218	.675597
Poor (≤3)	24	23	
Practice			
Good (3)	204	216	.818596
Poor (1,2)	22	25	

Table 4. Association between Knowledge, Attitude and Practice with Socio-economic status

Knowledge	Upper Middle	Lower Middle/ Upper Lower	P-Value
Good (>5)	147	259	0.0554
Poo Poor score (<5)r<5)	29	30	
ATTITUDE ATTITUDE			
Good (Good (>3)>3)	153	265	0.094
Poo Poor (≤3)r (≤3)	23	24	
PRACTIC PRACTICE E			
Good Good (3) (3)	171	265	0.01812
Poor (1, Poor (1,2)2)	5	24	

Table 5. Association Between Knowledge, Attitude and Practice with Education level

Good (≥ 5)	193	206	.483048
Poor score (< 5)	35	31	
Attitude			
Good (≥ 3)	194	224	.000748
Poor (≤ 3)	34	13	
Practice			
Good (3)	225	235	.621841
Poor (1,2)	3	2	

4. DISCUSSION

Due to altered physiology, weakened mechanical and immunological features, pregnant mothers constitute a particularly susceptible segment of the population in any infection pandemic. The curtailment of the spread is mostly dependent on the behavior of people, their attitudes towards this problem, and the practices they develop over time.

In light of this understanding, this study was undertaken to assess the level of knowledge of COVID-19, the attitude of pregnant women towards it, and the precautionary measures undertaken by them to combat it.

In this study, only 60.52% of the women were aware of the ongoing COVID-19 pandemic.

However in studies conducted in Nigeria, and Andhra Pradesh, 98.6% and 99.6% of pregnant women were aware of the ongoing COVID-19 pandemic [8,9]. 74.28% of working women were aware of the pandemic while only 40.25% of unemployed women were aware. The decreased awareness in our study could be due to the fact that most of the women are unemployed and belong to semi-urban areas. This indicates the importance of employment in general awareness of the pandemic. However, knowledge scores were comparable between both groups.

A majority (86.02%) of women had adequate knowledge of COVID-19 and its association with pregnancy. This is comparable to a study conducted in Northern Ghana [10] (85.6%) and higher than studies conducted in Ethiopia [11] (52.1%), Nigeria [8] (46.9%), New Delhi [9] (68.5%). This difference is probably associated with variations in socio-demographic characteristics, study setting,

and study participants, disparities of health care systems, and of trained human resources to create awareness regarding the pandemic.

Awareness about the mode of transmission was found in 69.46% (323) of women. This is also lower than in the study conducted by Kaur TP, Rana A where 96% of the women knew the transmission methods of the virus [9].

Only 49.47% (230) believed that COVID-19 cannot be transmitted in-utero, while 79.78% of women knew that the virus cannot be transmitted through breastmilk and 77.21% of women were aware of precautionary measures to be taken before and after breastfeeding. This is higher than in the study conducted by Kamal D et al [7] and Varuna Pathak et al [12]. where only 50.2% and 59.5% of women respectively were aware of the same. The higher awareness in our study is reflected in the fact that the majority were aware of the precautions to be taken before and after breastfeeding to minimize the chance of the infant contracting the infection. And 92.47% were willing to follow the same to prevent infection from spread to the infant.

In our study, about half the respondents (51.9%) admitted that they felt anxious about being pregnant during the COVID-19 pandemic. This was lower than studies conducted in Singapore and Iran where 74% and 58.89% of women were anxious about being infected by COVID-19 during pregnancy respectively [13,14]. Therefore, it is of paramount importance to provide psychosocial support to pregnant women and alleviate any fears and misconceptions that might be present about the effect of COVID-19 infection in pregnancy and on the fetus.

Majority of pregnant mothers held a positive attitude towards combating COVID -19 and were willing to follow the necessary precautions, quarantine and lock-down measures that are implemented to prevent the spread of COVID-19. Similar findings were reported in studies conducted by Kamal D et al and Rai S et al where 73.9% and 97.33 % of women had a positive attitude [7,15].

As educated persons adhere to preventive and therapeutic measures better, there was a minor positive significant statistical correlation ($r=0.2801$, p -value 0.012) between overall knowledge score and practices followed in this study. The same was also noted in a study conducted in South Africa [16]. This could be due to widespread awareness through mass media coverage initiated by the Government of India and the State Government regarding good prevention practices such as following proper hand hygiene, wearing masks, and social distancing.

Almost all pregnant women adhered to recommended safety measures such as wearing Ethical approval was obtained from the institutional ethics committee masks, frequent hand washing, and social distancing. This is comparable to other studies conducted where similar trends were observed. [8,14]

5. CONCLUSION

There was a high level of knowledge and awareness of COVID-19 and were following appropriate practices regarding COVID-19 among the pregnant women attending the antenatal clinic in Tamil Nadu but further efforts in creating awareness should be continued.

Strengthening of health policies directed at pregnant women should be prioritized with a special focus on pregnant women with low KAP scores who are at high risk for contracting the disease due to lack of awareness. Findings from this study would help the government agencies and public health authorities to help formulate relevant policies and programs by becoming aware of the gap areas in health care of pregnant women during the pandemic.

The physical burden of pregnancy makes it psychologically and emotionally challenging in vulnerable pregnant women. Hence it is important to render appropriate counselling and clarification on the effect of COVID-19 among pregnant women for their psychological support and mental well-being.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

Ethical approval was obtained from the institutional ethics committee.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, Si HR, Zhu Y, Li B, Huang CL, Chen HD. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*. 2020; 579(7798):270-273
2. Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *Journal of autoimmunity*. 2020;109: 102433.
3. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry research*. 2020;288: 112954.
4. Durankuş F, Aksu E. Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: a preliminary study. *The Journal of Maternal-Fetal & Neonatal Medicine*. 2020;1-7.
5. Liu X, Chen M, Wang Y, Sun L, Zhang J, Shi Y, Wang J, Zhang H, Sun G, Baker PN, Luo X. Prenatal anxiety and obstetric decisions among pregnant women in Wuhan and Chongqing during the COVID-19 outbreak: a cross-sectional study. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2020;127(10):1229-1240.
6. Coronavirus disease (COVID-19): Pregnancy and childbirth [Internet] World Health Organization, 2021 Accessed 10 September 2021 Available: <https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-pregnancy-and-child-birth>
7. Kamal D, Thakur VD, Swain SK, Vikneshram CR. Knowledge, attitude, and practice toward COVID-19 among pregnant women in a tertiary care hospital during the COVID-19 outbreak. *Journal of Marine Medical Society*. 2020;22(3):66.

8. Omozuwa SE, Uwaibi NE. Level of awareness, knowledge and perception on COVID-19 among pregnant women attending antenatal clinics in Central Hospital Benin City, Edo state. *Annals of Clinical and Biomedical Research*. 2021;2(1).
9. Kaur TP, Rana A, Perumal V, Sharma A, Dadhwal V, Kulshrestha V, Singhal S, Meena J, Kumar S, Bhatla N. A Cross-Sectional Analysis to Evaluate Knowledge, Attitude And Practices Among Pregnant Women During COVID-19 Pandemic. *The Journal of Obstetrics and Gynecology of India*. 2021;71(S1):18-27.
10. Kumbeni MT, Apanga PA, Yeboah EO, Lettor IB. Knowledge and preventive practices towards COVID-19 among pregnant women seeking antenatal services in Northern Ghana. *Plos one*. 2021;16(6):e0253446
11. Degu A, Nibret G, Gebrehana H, Getie A, Getnet B. Knowledge and Attitude Towards the Current Pandemic Corona Virus Disease and Associated Factors Among Pregnant Women Attending Antenatal Care in Debre Tabor General Hospital Northwest Ethiopia: an Institutional-Based Cross-Sectional Study. *International Journal of Women's Health*. 2021;13:61.
12. Pathak V, Wadhvani R, Ahirwar N, Chaurasia V. Knowledge, Attitude and Practices Regarding Covid in Pregnancy Among Women Attending Antenatal Clinic. [Internet]*Int. J. Heal. Clin. Res*. 2021;4(14): 57-60. Available:<https://www.ijhcr.com/index.php/ijhcr/article/view/2231>
13. Lee RW, Loy SL, Yang L, Chan JK, Tan LK. Attitudes and precaution practices towards COVID-19 among pregnant women in Singapore: a cross-sectional survey. *BMC pregnancy and childbirth*. 2020;20(1):1-10.
14. Maharlouei N, Asadi N, Bazrafshan K, Roozmeh S, Rezaianzadeh A, Zahed-Roozegar MH, et al. Knowledge and Attitude regarding COVID-19 among Pregnant Women in Southwestern Iran in the Early Period of its Outbreak: A Cross-Sectional Study. *The American journal of tropical medicine and hygiene*. 2020;103(6):2368.
15. Rai S, Poonja N, Nandhan N, Chauhan S, Alevoor S. Knowledge, Attitude and Practice towards the Corona Virus [COVID-19] Pandemic among the Pregnant Women. *Journal of Evolution of Medical and Dental Sciences*. 2021; 10(17):1191-1196
16. Hoque AM, Alam AM, Hoque M, Hoque ME, Van HG. Knowledge, attitudes, and prtices towards COVID-19 of pregnant women at a primary health care facility in South Africa. *Eur J Med Heal Sci*. 2021;3(1):50-55.

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