

Content available at: <https://www.ipinnovative.com/open-access-journals>

Indian Journal of Obstetrics and Gynecology Research

Journal homepage: www.ijogr.org

Original Research Article

Knowledge, attitude and practices about coronavirus disease (COVID-19) and its spread among pregnant females in rural West Bengal, India

Sabyasachi Ray^{1,*}, Jagriti Pandey¹¹Dept. of Obstetrics & Gynecology, Midnapore Medical College & Hospital, West Bengal, India

ARTICLE INFO

Article history:

Received 21-04-2021

Accepted 17-05-2021

Available online 26-11-2021

Keywords:

Attitude

COVID 19

Coronavirus

Knowledge

Practice

ABSTRACT

Introduction: In view of the prevailing COVID-19 pandemic, people should have adequate knowledge about cause of the disease, mode of spread and the protective measures against it. Basic protective measures against the Coronavirus disease have been laid out by WHO for the public which are practicing hand hygiene, social distancing and wearing a mask. Good knowledge status when coupled with optimistic attitude will lead to effective practice of the protective measures.

Purpose: This study will assess the knowledge, attitude and practices about Coronavirus disease among pregnant females of rural West Bengal. It will help in finding the limiting factors and assess the association between knowledge and attitude, practices of the respondents.

Materials and Methods: It is a hospital based cross-sectional study carried out in antenatal out patient department from 18th October, 2020 to 5th December, 2020. 500 pregnant women were enrolled through simple random sampling after proper informed consent.

Results: Significant association between knowledge score and age group ($p = 0.0457$) and literacy status ($p = 0.0105$) was found. The mean COVID-19 knowledge score was 10.70 (SD:2.18, range :1-12) with an overall correct rate of 89.17% (10.70/12* 100). Significant practice of wearing a mask was 6.5625 [OR -6.5625(3.1603, 13.6385; $p < 0.0001$)] times more in good knowledge score group.

Conclusion: Practice of preventive measures reduces the chances of contacting the infection, thus reducing maternal mortality and morbidity. Practices of preventive measures can be further strengthened by improving the knowledge of the people thorough awareness at grassroot level.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

COVID-19 pandemic caused by SARS-COV-2 has hit the globe and spread rapidly affecting all aspects of human life. This disease was first reported in Wuhan, China and was declared as a pandemic by WHO on 11th March, 2020.¹ Globally, the total number cases stand at 131 million with around 2 million deaths and the toll continue to rise.² In India, around 12 million people have been affected and 0.16 million deaths have occurred since the start of pandemic.²

The clinical course of COVID-19 is mostly mild but it can result in complications like severe pneumonia, acute respiratory distress syndrome, septic shock, and multiorgan failure resulting in death.³ Pregnant patients with laboratory confirmed SARS-CoV-2 infection, had higher rates of ICU admissions, invasive ventilation and deaths in comparison to nonpregnant women.⁴

The disease is highly contagious and to effectively contain it, basic protective measures for the public have been laid out by WHO.⁵ These are maintaining a distance a 1 metre between 2 people, wearing a mask, cleaning hands, coughing into a bent elbow or tissue, keeping rooms well ventilated and avoiding crowds. Thus, the

* Corresponding author.

E-mail address: sabyasachi_ray@yahoo.co.in (S. Ray).

non-pharmaceutical interventions (NPIs) which includes frequent hand hygiene, respiratory etiquettes and social distancing are now, the mainstay tool against COVID-19.⁵ These traditional public health measures have been effective during 1918 influenza pandemic, H5N1 and H1N1 influenza outbreaks.^{6,7}

Pregnant women undergo physiological changes and mental change which makes them more vulnerable to stress due to pandemic. The psychological impact of the pandemic on the antenatal women varies with baseline anxiety and pregnancy characteristic of the women.⁸ As per RCOG guidelines, vertical transmission is uncertain, and is not affected by mode of delivery, rooming in of mother and baby or method of feeding of baby. There is however, greater risk of preterm birth and caesarean delivery.⁹

2. Materials and Methods

The sample size was calculated using the formula $n = p \times (100 - p) \times z^2 / d^2$ where p is the expected prevalence; d is the desired precision; z is the standard normal distribution for the desired confidence level. The minimum sample size was calculated to be 384, anticipating that 50% of the study population have good KAP with a 5% absolute error margin, 5% level of significance and 95% confidence interval. The sample is further increased by 30% to account for contingencies such as non-response or recording error. Thus, the required sample size is 499 and bringing to a round figure and to strengthen data, 500 sample size is taken.

A total of 500 participants were enrolled in the study by simple random sampling. Inclusion and exclusion criteria were considered and proper informed consent was taken. The participants were pregnant females attending the antenatal outpatient department for regular antenatal check -up. A predesigned, pretested questionnaire was used to collect data on knowledge, attitude and practices on COVID-19 by personal interview method. Institutional Ethics Committee clearance was taken. The participants were briefed about the survey and then question with multiple choices were asked to them. The responses of the participants were recorded by the interviewer in the survey forms. Firstly, socio-demographic details were collected on name, age, occupation, residence, literacy, socio-economic status. Next, the questionnaire had seven questions on knowledge, five questions on attitude and three questions on practices regarding coronavirus disease. Data analysis was done using SPSS software and P value less than 0.05 was considered significant.

3. Results

The age of the respondents varied from 15 years to 40 years, majority of the participants, 239(47.8%) belonged to the age group of 15-20 years, followed by 191 (38.2% belonging to

the age group 21-25 years. The mean age was 21.74 years (SD:3.82).

Modified BG Prasad scale was used to calculate the socioeconomic status. 272(54.4%) participants belonged to the lower class, 176(35.2%) belonged to lower middle class and 38(7.6%) participants were from middle class. 485 (97%) were homemakers and only 3% were working women.

Table 1: Socio-demographic features of study participants (N=500)

Characteristics	N (%)
Age group	
15-20	239(47.8%)
21-25	191(38.2%)
26-30	57(11.4%)
31-35	10(2.0%)
36 above	3(0.6%)
Socio-economic status	
Lower class	272(54.4%)
Lower middle class	176(35.2%)
Middle class	38(7.6%)
Upper middle class	12(2.4%)
Upper class	2(0.4%)
Literacy	
Not attended school	22(4.4%)
Below primary	34(6.8%)
Primary	64(12.8%)
Middle	114(22.8%)
Secondary level	150(30.0%)
Higher secondary	90(18.0%)
Graduate and above	26(5.2%)
Occupation	
Housewife	485(97.0%)
Working	15(3.0%)

Education status of the participants was enquired and 22(4.4%) had never attended school and were illiterate. Most of the participants, 150(30%) had studied till secondary followed by middle school 114(22.8%). Only 26(5.2%) had education of graduation and above.

The source of information for COVID -19 was mainly through television (56.2%) where news and advertisements played a significant role.

The questionnaire had 15 questions with multiple choices and in some questions multiple responses were applicable. Every correct response was given score of 1 and incorrect response 0. Knowledge score was calculated on the basis of correct responses where 12 was the maximum score and 0 being the least score. Good score was assigned to total score of ten and above and poor score to less than ten. Majority of participants, 401 (80.2%) had good score and 99 (19.8%) had poor score.

The mean COVID-19 knowledge score was 10.70 (SD:2.18, range :1-12) with an overall correct rate of

89.17% (10.70/12* 100).

All the participants (500) had heard about coronavirus disease. All the three major symptoms of COVID -19 i.e; fever, cough and shortness of breath were known to 376 (75.2%) of respondents. However, 58 (11.6%) participants had no idea about any symptoms. Both respiratory route and contact spread as modes of transmission was known to 405(81%) participants. Spread of the virus through contact was the less known mode of transmission.

None of the modes of transmission was known to 36(7.2%) participants. The high- risk group for COVID -19 are older age, hypertensive, diabetic and those suffering from chronic pulmonary or renal disorders. This fact was known to 409 (81.8%) participants. Frequent hand washing and social distancing as effective measures against coronavirus disease was ascertained by 460(92%) expectant mothers. The components of social distancing are staying indoors, avoiding mass gatherings and maintaining at least 1 m distance from another person. Around 12(2.4%) had no idea about social distancing whereas, 442 (88.4%) correctly reported the three components.

Knowledge score of the participants varied with different levels of socio-economic status, age groups and literacy status (Table 2). It was significantly associated with literacy status.

Most of the respondents, believed that handwashing [455(91.0%)] and social distancing [468(93.6%)] are effective in preventing coronavirus infection. Participants reporting "yes" to above questions (A1, A2) were significantly associated with good knowledge score $P < 0.0001$ (Table 4). COVID -19 pandemic resulted in the imposition of a nation-wide lockdown. In this study, 240(48%) felt optimistic and 260(52%) were pessimistic during the lockdown. Respondents with Secondary or higher level of educational status [v/s below secondary, OR:1.5892(1.1152,2.2648) $P=0.0102$] had significant optimistic attitude during lockdown (Table 4). During sneezing or coughing, handkerchief [493(98.6%)] and bend elbow [107(21.4%)] should be used to limit spread of infection. It was seen that very few participants are aware of using the bend elbow during sneezing. Respondents with good knowledge score (chi-square -16.3327; P value < 0.0001) had cough etiquettes (Table 4). A large number of expectant mothers [351(70.2%)] feared that their new born could be affected by coronavirus infection.

Majority of the respondents, practiced hand hygiene [486(97.2%)] regularly and social distancing [485(97.0%)]. Face masks was used by [467(93.4%)] antenatal patients. Rest, used piece of cloth like handkerchief or scarf to cover nose and mouth and very few used nothing. Practice of preventive measures was significantly associated with good knowledge score $p < 0.0001$ (Table 5). Under univariate analysis, significant practice of wearing a mask was 6.5625 [OR:6.5625(3.1603,13.6385)]; $p < 0.0001$] times more in

good knowledge score group.

4. Discussion

Pregnant women are placed in clinically vulnerable category for coronavirus infection.¹⁰ Maternal mortality due to coronavirus was seen in woman with pre-existing comorbidities like hypertension, obesity, asthma, diabetes and advanced maternal age.¹¹ As per RCOG update, routine use of COVID-19 vaccines is still not recommended due to insufficient data on its effect on pregnancy.¹² Therefore, it is important to have knowledge about coronavirus infection and how to prevent its spread and protect oneself.

The mean age of the study participants was 21.74 ± 3.82 years and ranged from 15 to 40 years. More than 50% had education of matriculate and above and were from lower socioeconomic status. Majority of them were homemakers and only 3% were working.

This is similar to study done by Adhikari et al., in Nepal where knowledge and practice of post-partum women were assessed.¹³ The median age was 25 years and ranged from 15 years to 40 years.

The most common source of information was television and radio (78.2%). Mobile phone (34%) was the second common mode of information where information is available through social media like Facebook, You Tube, Whatsapp and caller tunes. Other source were friends & family (13.8%) and health worker (8.4%). Similarly, study by Metwally et al., also reported television (45.90%), internet (25.70%), friends and relatives (18.90%) and health worker (9.50%) as the source of information.¹⁴ This highlights the important role of internet and social media in dissemination of information during pandemic.

In the present study all the participants had heard about coronavirus disease. This is in agreement with Metwally et al., and Adhikari et al., where 370 (100%) and 196 (96.6%) participants were aware of the ongoing COVID 19 pandemic, respectively.^{13,14} A majority of the participants had good knowledge, where 401(80.2%) had good score and 99(19.8%) had poor score. Cough was the most common symptom known (85%) followed by fever (84.4%). Study done in Nepal by Adhikari et al., among postpartum patients reported fever (96.6%) and cough (93.6%) as the most common symptoms.¹³ Participants had good knowledge of mode of spread, high risk groups, handwashing and social distancing. This is possible as a result of massive mass campaigns by Indian Government and state government to educate people about the disease and adoption of preventive measures through all possible modes of communication. Furthermore, pandemic was in a peak stage during the study period.

Patients had a positive attitude towards practices of handwashing, social distancing, cough etiquettes. Study by Metwally et al., had similar findings where participants had a favorable attitude towards practice of handwashing, social

Table 2: Variation of knowledge score with socio- demographic variables

Socioeconomic status	Knowledge score	P value
Upper class	10.50±2.12	0.2036
Upper middle class	10.50±2.68	
Middle class	11.45±1.16	
Lower middle class	10.77±2.04	
Lower class	10.56±2.33	
Literacy status		0.0007
Not attended school	9.27±3.04	
Below primary	9.82±3.03	
Primary	10.33±2.48	
Middle	10.33±2.48	
		0.1653
Matriculate	10.90±1.78	
Higher secondary	11.13±1.70	
Graduate and above	11.15±1.38	
15-20	10.87±2.02	
Age group		0.8568
21-25	10.64±2.22	
26-30	10.40±2.49	
31-35	10.30±2.06	
36 above	8.33±4.04	
Occupation		0.8568
Working	10.70±2.16	
Housewife	10.60±2.80	

Table 3: Significant association between knowledge score between literacy status and age-group

Factor	Good Score	Poor score	Chi-square	P value
Age group				
15-20	201(84.1%)	38(15.9%)	9.7066	0.0457
21-25	151(79.1%)	40(20.9%)		
26-30	41(71.9%)	16(28.1%)		
31-35	7(70.0%)	3(30.0%)		
Above 36	1(33.3%)	2(66.7%)		
Literacy				
Not attended school	12(54.5%)	10(45.5%)	16.6927	0.0105
Below primary	24(70.6%)	10(45.5%)		
Primary	47(73.4%)	10(29.4%)		
Middle	93(81.6%)	17(26.6%)		
Matriculate	125(83.3%)	21(18.4%)		
Higher secondary	78(86.7%)	25(16.7%)		
Graduate & above	22(84.6%)	12(13.3%)		

distancing and cough etiquettes.¹⁴

However, 52% had pessimistic attitude towards lockdown and 48% optimistic attitude.

Pessimistic attitude can be attributed to fear of contacting infection and financial losses due to lockdown. Despite, good knowledge and positive attitude, a big number of pregnant women feared for their new born that they might contact COVID-19 infection. This is corroborated by Adhikari et al., where 70.9% were worried of contacting coronavirus infection and 79.8% said that coronavirus infection can be vertically transmitted.¹³

Majority of participants practiced handwashing regularly and social distancing. Pregnant women, who are mostly non-working, occasionally go out of the house and thus, stay indoors. Practice of wearing mask was slightly low. Study by Adhikari et al., showed similar result where 97%

of Post-partum women wore face mask and 100% practiced handwashing after coming in contact with objects.¹³ Study in China by Zhong et al., most of them avoided going to crowded places (96.4%) and used mask (98%) when going out.¹⁵ Study by Asraf et al., among Nepalese residents had also similar finding where practice of social distancing (94.7%) wearing mask (90.3%) hand washing (93.7%) was seen.¹⁴

Knowledge score was significantly associated with literacy and age group. Attitude and practice of preventive measures were significantly associated with good knowledge score and literacy status. Higher knowledge score is associated with greater likelihood of answering yes to question A1, A2, P1, P2, P3. Similar significant association was demonstrated by Zhong et al., where higher knowledge score was associated optimistic attitude and

Table 4: Association between attitude and knowledge, socio-demographic variables

	Odds ratio (95% CI)	p-value
A1. Do you think handwashing is effective ? (yes v/s no)		
Good score v/s poor score	4.6957 (2.4914,8.8501)	<0.0001*
Middle class v/s lower class	1.9111 (0.4446,8.2143)	0.3760
Secondary or above v/s below secondary	1.7971 (0.9626,3.3551)	0.0628
Working v/s housewife	1.3968 (0.1794,10.8756)	0.7484
>30 years v/s <=30		
A2. Do you think social distancing is effective? (yes v/s no)		
Good score v/s poor score	11.1714 (5.0882,24.5277)	<0.0001*
Middle class v/s lower class	-	0.0882
Secondary or above v/s below secondary	3.6857 (1.6223,8.3738)	0.0009*
Working v/s housewife	0.9559 (0.1217,7.5090)	0.9658
>30 years v/s <=30	-	0.3394
A3. How do you felt during period of lockdown (optimistic v/s pessimistic)		
Good score v/s poor score	1.1359 (0.7305,1.7663)	0.5713
Middle class v/s lower class	0.9753 (0.5025,1.8932)	0.9411
Secondary or above v/s below secondary	1.5892 (1.1152,2.2648)	0.0102*
Working v/s housewife	1.2463 (0.4450,3.4907)	0.6746
>30 years v/s <=30	1.2718 (0.4213,3.8393)	0.6690
A4. Cough etiquette (both v/s none)		
Good score v/s poor score	-	<0.0001*
Middle class v/s lower class	-	0.5586
Secondary or above v/s below secondary	3.4416 (0.3555,33.3149)	0.2564
Working v/s housewife	-	0.7239
>30 years v/s <=30	-	0.7428
A5. Do you fear your new born might get infected? ? (yes v/s no)		
Good score v/s poor score	0.8140 (0.5086,1.3029)	0.3907
Middle class v/s lower class	0.6054 (0.2705,1.3545)	0.2177
Secondary or above v/s below secondary	0.9898 (0.6741,1.4532)	0.9581
Working v/s housewife	0.8527 (0.2671,2.7221)	0.7876
>30 years v/s <=30	0.4205 (0.0921,1.9209)	0.2495

Table 5: Association between practice and knowledge and other factors

	Odds ratio(95% CI)	p-value
P1. Practice handwashing? (yes v/s no)		
Good score v/s poor score	7.9200 (2.5921,24.1994)	<0.0001*
Middle class v/s lower class	-	0.2688
Secondary or above v/s below secondary		
Working v/s housewife	0.3856 (0.0471,3.1561)	0.3566
>30 years v/s <=30	0.3291 (0.0398,2.7231)	0.2786
P2. Practice social distancing? (yes v/s no)		
Good score v/s poor score	12.4063 (3.8603,39.8715)	<0.0001*
Middle class v/s lower class		0.2518
Secondary or above v/s below secondary	3.2309 (1.0146,10.2884)	0.0365*
Working v/s housewife		0.4892
>30 years v/s <=30	-	0.5205
P3. Wear a facemask? (yes v/s no)		
Good score v/s poor score	6.5652 (3.1603,13.6385)	<0.0001*
Middle class v/s lower class	1.2458 (0.2856,5.4336)	0.7694
Secondary or above v/s below secondary	1.3944 (0.6863, 2.8333)	0.3561
Working v/s housewife	0.4438 (0.0959,2.0549)	0.2862
>30 years v/s <=30	-	0.3314

*significant p value

practice.¹⁵ In line with above results, study by Nwafor et al., in Nigeria showed respondents with no formal education were significantly associated with inadequate knowledge and poor practice of preventive measures.¹⁶

4.1. Strength of the study

This study had in-depth assessment as it was carried by personal interview method whereas most study carried on above topic was done through online survey form fill-up.

5. Limitations of the study

A larger sample size is needed to generalize the results. A multi-centric trial will help to have a more representative sample. Subjects from higher socioeconomic status were very few in number and thus less represented.

The optimal treatment of coronavirus disease is still to be established, so it is important to protect the pregnant women from infection. Furthermore, measures need to be adopted by health care providers to allay the stress in pregnant women during the difficult time of pandemic. Till date, there is no data on effects of vaccines on pregnancy and its outcome. Therefore, pregnant women must be counselled to follow safety measures which still needs to be followed even if vaccinated. Practice of preventive measures reduces the chances of contacting the viral infection, decreasing the maternal morbidity and mortality.

6. Recommendations

Characteristics of KAP factors was studied in relation to COVID 19 which will guide the policy makers to focus on the loopholes and further strengthen the awareness. Informative sessions on COVID 19 developments directed towards the antenatal women needs to be carried out. This will in reduction of maternal stress and anxiety.

7. Source of Funding

None.

8. Conflict of Interest

The authors declare no conflict of interest.

References

1. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. *Acta Biomed.* 2020;91(1):157–60.
2. Coronavirus Disease (COVID-19) Situation Reports [Internet]. Who.int. 2021. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.
3. Hui D, Azhar E, Madani T, Ntoumi F, Kock R, Dar O, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health - The latest 2019 novel coronavirus outbreak in Wuhan, China. *Int J Infect Dis.* 2020;91:264–6.
4. Novel Coronavirus 2019 (COVID-19) [Internet]. Acog.org. 2021. Available from: <https://www.acog.org/en/Clinical/Clinical%20Guidance/Practice%20Advisory/Articles/2020/03/Novel%20Coronavirus%202019>.
5. Bhatia R. Public engagement is key for containing COVID-19 pandemic. *Indian J Med Res.* 2020;151(2 & 3):118–20.
6. Bootsma MC, Ferguson NM. The effect of public health measures on the 1918 influenza pandemic in U.S. cities. *Proc Natl Acad Sci.* 2007;104(18):7588–93.
7. WHO | WHO checklist for influenza pandemic preparedness planning [Internet]. Who.int. 2021 [cited 2021 Jan 2]. Available from: https://www.who.int/influenza/resources/documents/checklist_pandemic_preparedness/en/.
8. Mappa I, Distefano FA, Rizzo G. Effects of coronavirus 19 pandemic on maternal anxiety during pregnancy: a prospective observational study. *J Perinat Med.* 2020;48(6):545–50.
9. Coronavirus (COVID-19) infection and pregnancy [Internet]. Royal College of Obstetricians & Gynaecologists. 2021 [cited 2021 Jan 5]. Available from: <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/>.
10. Coronavirus infection and pregnancy [Internet]. Royal College of Obstetricians & Gynaecologists. 2021 [cited 2021 Jan 10]. Available from: <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/covid-19-virus-infection-and-pregnancy>.
11. Hessami K, Homayoon N, Hashemi A, Vafaei H, Kasraeian M, Asadi N. COVID-19 and maternal, fetal and neonatal mortality: a systematic review. *J Matern Fetal Neonatal Med.* 2020;16:1–6. doi:10.1080/14767058.2020.1806817.
12. Updated advice on COVID-19 vaccination in pregnancy and women who are breastfeeding [Internet]. Royal College of Obstetricians & Gynaecologists. 2021 [cited 2021 Jan 17]. Available from: https://www.rcog.org.uk/en/news/updated-advice-on-covid-19-vaccination-in-pregnancy-and-women-who-are-breastfeeding/?_t_ip=13.66.139.80&_t_hit.id=EPiServer_Templates_RCOG_Models_Pages_NewsArticleType/_edf0f93b-e4fd-4d13-8a65-b1360f76246f_en.
13. Adhikari S, Pariyar J, Sapkota K, Gurung T, Adhikari S. Evaluation of Knowledge, Attitude, Practice and Hospital Experience Regarding COVID-19 among Post-partum Mothers at a Tertiary Care Center: A Cross-sectional Study. *Kathmandu Univ Med J.* 2020;18(2):10–4.
14. Metwally HM, Desoky M. Knowledge, Practice and Attitudes of Preventive Measures against Coronavirus Infection among Pregnant Women in Egypt. 2020;doi:10.36348/sjnhc.2020.v03i06.001.
15. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci.* 2020;16(10):1745–52.
16. Nwafor JI, Anikwu JK, Anozie BO, Ikeotuonye AC, Okedo-Alex IN. Pregnant women's knowledge and practice of preventive measures against COVID-19 in a low-resource African setting. *Int J Gynaecol Obstet.* 2020;150(1):121–3.

Author biography

Sabyasachi Ray, Associate Professor  <https://orcid.org/0000-0002-0070-4062>

Jagriti Pandey, Post Graduate Trainee

Cite this article: Ray S, Pandey J. Knowledge, attitude and practices about coronavirus disease (COVID-19) and its spread among pregnant females in rural West Bengal, India. *Indian J Obstet Gynecol Res* 2021;8(4):476–481.