

Original Research Article

A Study on Knowledge of COVID-19 and Practice of Preventive Measures Among Healthy Pregnant Women Attending a Tertiary Care Hospital in Eastern India**Apurba Mandal¹, Nirmalya Sinha², Sabnam Ara Begum³, Arunava Biswas^{4*}, Sankar Roy⁵, Anjan Adhikari⁶**¹*Associate Professor, Department of Gynaecology & Obstetrics, Maharaja Jitendra Narayan Medical College & Hospital, Coochbehar, West Bengal, India*²*Associate Professor, Department of Community Medicine, Midnapore Medical College, Midnapore, West Bengal India*³*Assistant Professor, Department of Pharmacology, R G Kar Medical College & Hospital, Kolkata, West Bengal, India*⁴*Associate Professor, Department of Pharmacology, Maharaja Jitendra Narayan Medical College & Hospital, Coochbehar, West Bengal, India*⁵*Associate Professor, Department of Anaesthesiology, R G Kar Medical College & Hospital, Kolkata, West Bengal, India*⁶*Professor, Department of Pharmacology, Maharaja Jitendra Narayan Medical College & Hospital, Coochbehar, West Bengal, India***Received: 06-12-2020 / Revised: 14-01-2021 / Accepted: 29-01-2021****Abstract**

Introduction: COVID -19 infection may be a health threat for both mother and the growing child in utero. Appropriate and authentic perception of information on COVID-19 is essential during pregnancy to avoid infection and stay safe and healthy in the changing global situation. **Aim:** The aim of the study was to understand the extent of knowledge and safe preventive practice followed against COVID -19 among non-infected pregnant women. **Materials and Method:** A cross sectional, observational, pre coded, pre validated questionnaire-based study was conducted on pregnant women in a tertiary care hospital attending OPD/IPD. Responses to questions were assessed by using a 5-point Likert scale and interpreted by percentage and chi square test. **Result:** All the mother were aware about the transmission and majority (72%) knew the clinical presentation of COVID-19. There was no significant correlation between age of participants and knowledge of COVID-19 ($p=0.538$) but a strong correlation with educational level and correct knowledge was found ($p<0.0001$). Knowledge on some important aspects like breast feeding of baby, antenatal check-up or effect of lockdown/curfew on spread of infection during covid pandemic was lacking among the study participants.

Conclusion: Most of the pregnant women responded correctly and had fair amount of knowledge on COVID-19 and practicing good preventive measures during their pregnancy. However, good educational programme to sensitize and proper health supervision from the healthcare authority might keep this special population safe and help in bridging the gap in their knowledge.

Keywords: Knowledge, practice, covid-19, pregnancy, questionnaire, Likert scale

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Introduction

The whole world is now encompassed in a pandemic situation and facing the greatest public health challenge in the 21st century. A novel corona virus (SARS-CoV-2) has been presumed to have crossed the interspecies barrier having capabilities of spreading person to person and to some extent killing selectively the elderly population, people with co morbidities, immune compromised individuals etc. Since its emergence the new coronavirus has resulted in 43.7 million infections and over 1 million deaths as of October 25,

2020 among which 20% of deaths are in the United States followed by Brazil (14%), India (10%), Mexico (7.8%), and the United Kingdom (4%).[1]

Pregnant women are also considered to be a special population group because of the unique 'immune suppression' caused by pregnancy.[2] The immunologic and physiologic changes of pregnancy might make pregnant women at higher risk of severe illness or mortality with Covid-19, compared with the general public.[3] However, there is little information on COVID-19 infection during pregnancy.[4] In the current scenario of attack from this novel virus globally, what is the knowledge ,attitude and common practice among the pregnant women is not very clear. Literature does not reveal much regarding the stand point, understanding of pregnant mothers against this deadly virus. In women affected by other coronavirus infections such as Middle East

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Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV), the case fatality rate appeared higher in women affected in pregnancy compared with non-pregnant women.[5] India as of now is still lacking such hard data. To curtail the continued spread of the coronavirus disease and its associated mortality, World Health Organisation has recommended series of preventive measures including regular hand washing with water and soap, social distancing, covering hand and mouth while coughing and avoiding touch on eyes, nose and mouth.[6] However, the extent of such knowledge, and the preventive measures against COVID-19 infection among healthy pregnant women, which constitute a vulnerable group, are still to be assessed. Therefore, this study was aimed to determine the knowledge and practice of preventive measures against COVID-19 infection during antenatal, intranatal and post-natal period among healthy pregnant women attending the OPD/IPD Department of Obstetrics and Gynaecology at a tertiary care hospital in eastern India.

Materials & Method

A cross sectional, observational, pre coded, pre validated questionnaire based, interview oriented study was conducted on (n=150) healthy pregnant women attending OPD/IPD of the Department of Obstetrics and Gynaecology at Maharaja Jitendra Narayan Medical College & Hospital, Coochbehar, West Bengal, India for antenatal check-up after obtaining prior institutional ethics committee approval during the period of September-October 2020. The sample size of (n=150) was calculated based on the average monthly pregnant women attending the antenatal clinic of the hospital with a confidence interval of 95% and a margin of error of 8% considering 50% population proportion using online calculator Calculator.net@. A pilot study was conducted on (n=10) pregnant women to test the questionnaire suitability and better understanding. These mothers were not included in this study. The Cronbach's α test for reliability of the questionnaire was 0.70 and internal consistency level was found adequate. Pregnant women attending the antenatal clinic consented to participate in writing included. The study participants were selected by using simple random sampling method. The same investigator approached all the recruited participants with a pre

validated questionnaire written in English and explained the various questions in local vernacular language. The questionnaire contains four segments to capture the data i.e the demographic profile and separate set of questions based on antenatal, intranatal and post-natal stages of pregnancy. The items of the questionnaire were in the form of multiple-choice questions, and 5-point Likert scale-based questions with a scoring system where 1 denotes strongly disagree, 2- disagree, 3- undecided, 4- agree and 5 denotes strongly agree. [7] The real time data of the respondents were captured in the questionnaire and subsequently analysed at the end of the study. The responses of the participants were captured by the investigator according to 5-point Likert scale were applicable and presented as their frequency and percentage. Number of correct/incorrect answers were analysed by chi square test using the Statistical Package for the Social Sciences (SPSS), version 26. A p value <0.05 was considered statistically significant.

Results

A total (n=150) pregnant mothers attending the ante natal clinic / IPD were included in this study. Their mean age was found to be 23.40± 4.44 (youngest 18 years and eldest 38 years), majority of them having gravida and parity 1 i.e., 80 (53.3%) followed by gravida and parity 2 i.e., 55 (36.7%). Most of the would-be mothers were educated upto the level of higher secondary 63 (42%) followed by secondary 39 (26%). The average education of their husbands was found to be under graduates 61 (40.7%) followed by higher secondary 37 (24.7%). It was observed that majority of the participants were homemakers 68 (45.3%) followed by agricultural workers 32 (21.3%) mostly residing in rural areas 77 (51.3%) followed by urban 43 (28.7%). Data revealed that most of the participants acquired their knowledge on COVID-19 from their husband and health care workers visiting their homes 43 (28.7%). In Table -1 the general knowledge on mode of transmission of COVID -19 shows that the all 150 (100%) of the mothers expressed immunodeficiency and spread from an infected to uninfected person as the main reason behind it.

Table 1: Knowledge of the study participants regarding modes of transmission of COVID-19 [n=150]

Sr.No	Various modes of transmission**	Number	Percentages
1	Genetic disease	0	0
2	Immunodeficiency	28	18.7
3	Through infected person to non-infected person	150	100
4	Through biting of animals / insects	0	0
5	Both Immunodeficiency & through infected person to non-infected person	122	81.3

** multiple response, thus total cumulative percentages may exceed 100%

When enquired about the mode of transmission of COVID-19 based on individual activities using multiple choice question (MCQ), the physical touching & handshake, hugging with others, touching own eyes or mouth with unclean hands and showering of droplet/aerosol in combination got the maximum response 29 (19.3%) as shown in Table -2.

Table 2: Knowledge of the study participants regarding transmission of COVID-19 due to individual activities

Sr.No	Activities	Frequency(n)	%
1	• Physical touching & handshake	15	10.0
2	• Physical touching & handshake • Hugging with others	14	9.3
3	• Physical touching & handshake • Hugging with others • Touching own eyes or mouth with unclean hands	19	12.7
4	• Physical touching & handshake • Hugging with others • Touching own eyes or mouth with unclean hands • Using an infected person towel/ cloth/belonging	2	1.3
5	• Physical touching & handshake • Hugging with others • Touching own eyes or mouth with unclean hands • Using an infected person towel/ cloth/belonging • Droplet/aerosol infection	4	2.7
6	• Physical touching & handshake • Hugging with others • Touching own eyes or mouth with unclean hands • Droplet/aerosol infection	29	19.3
7	• Physical touching & handshake • Hugging with others • Using an infected person towel/ cloth/belonging	2	1.3
8	• Physical touching & handshake • Hugging with others • Droplet/aerosol infection	8	5.3

9	• Physical touching & handshake • Touching own eyes or mouth with unclean hands	10	6.7
10	• Physical touching & handshake • Touching own eyes or mouth with unclean hands • Droplet/aerosol infection	12	8.0
11	• Physical touching & handshake • Droplet/aerosol infection	17	11.3
12	• Hugging with others	4	2.7
13	• Hugging with others • Droplet/aerosol infection	12	8.0
14	• Touching own eyes or mouth with unclean hands	2	1.3
	Total	150	100.0

While enquiring the general knowledge of the participants regarding clinical presentation of COVID-19 using MCQ, maximum of them 108(72%) expressed cough, fever, sore throat as most common problems of these patients. (Table -3)

Table 3: Knowledge of the study participants regarding clinical presentation of COVID-19

S. No.	Clinical Presentation	Frequency(n)	Percentage
1	• Cough, fever, sore throat	108	72.0
2	• Cough, fever, sore throat • Runny nose, muscle pain, diarrhea	40	26.7
3	• Cough, fever, sore throat • Runny nose, muscle pain, diarrhea • Loss of taste, smell and appetite	2	1.3
	Total	150	100.0

While exploring the specific knowledge on COVID-19 during the antenatal period of pregnancy the most frequent response observed based on 20 items 5-point Likert scale are depicted in Table - 4. Most of the responses were between agree to strongly agree and 25 % approx. responses were the mothers remained undecided.

Table 4: Knowledge of the study participants on COVID-19 related to antenatal period based on 5-point Likert scale (n=150)

* CODING: Strongly disagree =1, Disagree = 2, Undecided = 3, Agree = 4, Strongly Agree = 5 on Likert scale

S No.	Items	Likert point	Number(n)	Percentage
1	The virus can infect a person more than once	3	117	78.0
2	Children are not infected with the virus that causes COVID-19	3	93	62.0
3	Elderly and people with chronic diseases are more vulnerable to get the COVID-19 disease	4	124	82.7
4	Isolating the infected people for at least 14 days can help to limit the spread of disease	4	96	64.0
5	There is a vaccine for COVID-19 disease	3	116	77.3
6	There is currently no effective cure for COVID -19, but early symptomatic and supportive treatment can help most patients recover from the infection	4	109	72.7
7	Social distancing with family and friends can limit the spread of the virus	4	87	58.0
8	Stopping going to schools and universities can reduce the spread of the virus	4	96	64.0
9	Wearing masks while going to public places can reduce the spread of the virus	5	99	66.0
10	Washing fruit and vegetables with soap and water before consumption can reduce the spread of the virus	5	110	73.3
11	Avoiding public transportation can control the spread of the disease	4	76	50.7
12	Curfew/lockdown can reduce the spread of the virus	3	76	50.7
13	Pregnant women with or without diabetes / hypertension etc. are more vulnerable to get the COVID-19 disease	4	121	80.7
14	COVID-19 test is mandatory for all newly pregnant women	3	95	63.3
15	During pregnancy stay at home and limiting exposure to other relatives and medical staff helps to reduce the spread of the virus	5	82	54.7
16	Mild cough and fever during pregnancy will need COVID -19 testing	4	72	48.0
17	Frequency of antenatal check-up should be reduced during COVID -19 pandemic	2	70	46.7
18	Washing hands carefully with soap and alcohol-based sanitizer for at least 20 seconds during pregnancy can reduce the spread of the virus	5	122	81.3
19	Drinking hot water is a positive practice that can reduce the spread of the virus	5	125	83.3
20	Cleaning and sanitizing surfaces of the house can reduce the spread of the virus to mother and others	5	125	83.3

Presence of specific knowledge on COVID-19 related the intranatal period of pregnancy is shown in **Table -5** based on 4 items 5-point Likert scale. The respondents remained undecided when enquired about covid positive pregnant mother and termination of pregnancy.

Table 5: Knowledge of the study participantson COVID -19 related to intranatal period based on 5-point Likert scale

* **CODING:** Strongly disagree =1, Disagree = 2, Undecided = 3, Agree = 4, Strongly Agree = 5 on Likert scale

S.No.	Items	Likert point	Number (n)	Percentage
1	The virus can lead to early miscarriage	4	90	60.0
2	The virus can affect the baby in your womb during parturition	4	84	56.0
3	A COVID-19 positive mother should terminate her pregnancy	3	81	54.0
4	A COVID-19 positive mother could not undergo caesarean section or normal delivery	2	85	56.7

In **Table -6** the knowledge of COVID-19 related to postnatal period based on 10 items 5-point Likert scale illustrates majority of the responders either strongly or just agree with the specific issues and almost 30% were uncertain on various aspects of covid situation.

Table 6: Knowledge and practicein COVID -19 related topostnatal period among the study participants based on 5-point Likert scale

* **CODING:** Strongly disagree =1, Disagree = 2, Undecided = 3, Agree = 4, Strongly Agree = 5 on Likert scale

Sl No.	Items	Likert point	Number(n)	Percentage
1	The virus can enter the baby via breast milk of a COVID-19 positive mother	4	111	74.0
2	Woman earlier suffered from COVID -19 infection and recovered completely should not get pregnant in future	3	77	51.3
3	Wearing a mask during sickness can reduce the spread of the virus to baby and mother	5	80	53.3
4	The baby should be restricted from handling by other family members	5	87	58.0
5	Covering mouth and nose during sneezing and coughing can reduce the spread of the virus	5	96	64.0
6	New born baby can be breast feed by a COVID -19 positive mother putting face mask and practice hand hygiene	4	85	56.7
7	The new born baby should be worn face mask all the time	3	79	52.7
8	The new born baby cannot be vaccinated during COVID -19 pandemic	3	115	76.7
9	The father of the baby should not handle as he goes out for work	4	87	58.0
10	Intercourse with husband is prohibited during COVID-19 pandemic	4	80	53.3

It was observed in this study with increasing age of the pregnant mothers the total number of correct responses had a positive co relation though it was statistically insignificant as depicted in **Table 7**.

Table 7: Type of knowledge regarding cause of COVID-19 transmission according to agedistributionin the study population

COVID-19 Age Group	Knowledge				Chi-square value (χ^2)	p value	
	Correct		Incorrect				Total N
	N	%	N	%			
18 - 21 years	56	83.58	11	16.42	0.403	0.538	
22 - 38 years	66	79.52	17	20.48			
Total	132		28				150

It was observed that higher the level of education of the pregnant mothers (up to undergraduate) more was the number of correct answers delivered by them (**Table 8**) and it was statistically highly significant ($p < 0.0001$).

Table 8: Type of knowledge of the study participants regarding cause of COVID-19 transmission according to the level of education

COVID-19 Educational Level*	Knowledge				Chi-square value (χ^2)	p value	
	Correct		Incorrect				Total N
	N	%	N	%			
Just literate	4	3.27	0	0.0	36.039a	<0.0001	
Primary level	9	7.37	0	0.0			
Secondary level	36	29.50	3	10.71			
Higher Under	55	45.08	8	28.57			
Graduate	18	14.75	13	46.42			
Post Graduate	0	0.0	4	14.28			
Total	122		28		150		

Discussion

This study was conducted to have a perception of the level of knowledge and practice on COVID-19 among healthy pregnant mother visiting OPD/IPD of Department of Obstetrics & Gynaecology in a peripheral tertiary care hospital almost 6 months after declaration of nationwide lockdown by the government of India. In the study a total 150 pregnant mothers participated of different parity and gravida. Most of them were residing in rural areas having educational knowledge of higher secondary level. Their husbands were also found to be educated at various levels, mostly undergraduates. Most of the mothers were homemakers followed by agricultural workers. It is not surprising that most of the study participated acquired their preliminary knowledges regarding COVID-19 from their husbands and health care workers of their localities. It was observed that all the mothers were well aware of the mode of transmission of the disease. They also had a correct knowledge about the spread of the disease from person to person. The knowledge about signs/symptoms of clinical presentation of COVID-19 was appropriate in most of the participants as evident in this study. These finding probably reflects to some extent the efficient public awareness programmes and activities of the local healthcare workers in the form of timely dispersion of essential information on COVID-19 through their respective field activities. While assessing the knowledge of COVID-19 in pregnant mother using 5-point Likert scale related to antenatal, intranatal and postnatal period, their most responses were correct leaving few areas where there was lack of proper knowledge like whether curfew/lockdown can reduce the spread of virus, whether new born baby can be breast fed by covid positive mother or the new born baby whether be handled by father who goes out for work etc. were some examples which indicates their gap in knowledge to understand the disease specially during pregnancy. Whether scarcity of knowledge or failure in getting cleared of their confusions lead to such gap in their understanding cannot be concluded from this study. Similar findings were evident in an earlier study in India conducted by Kamal D et al.[8] Other countries like Bangladesh, Nigeria who have done similar studies found acceptable level of knowledge of COVID-19 among pregnant women. [9,10] The current study also revealed that the correctness of response has a direct relationship with the age of the participants though statistically insignificant ($p = 0.538$). Younger mothers were found to responding correctly more than the elder participants and reason probably could be that they were more mature and less anxious in answering the question of the investigator. A statistically significant finding of this study was a positive correlation between the level of education and correct responsiveness ($p < 0.0001$). With higher the level of educational in mother more correct answers were documented. Educational status of husband, occupation of the pregnant mothers and residential area where they stayed did not influence the quality of response of the study participants ($p > 0.05$). Having proper knowledge and practice of preventive measures against COVID-19 among the pregnant women can avoid missing prenatal check-ups and risk of getting infected as well. At the same time covid related symptomatic pregnant mothers should go for test and receive appropriate treatment and enact self-isolation to reduce the risk of vertical transmission. [11,12] One of the most important strengths of this study was the time of its implementation when covid pandemic was at its peak in all parts of West Bengal, India.

Limitations: Data from a single centric study in a convenience sample as in this study was not generalizable thus multicentric studies involving larger sample size is required to establish the current study findings. Secondly, possibility of participants having

answered most of their questions positively based on what they have perceive to be expected from them. Thirdly, the questionnaire was tailor made for pregnant population so limited to a certain vulnerable section of the society only and thus generalizability of the study outcome cannot be established.

Conclusion

The study concludes that most of the pregnant women had some knowledge on COVID-19 and exercised safe practice during this pandemic with some unclear ideas. The current study, in fact exposes the need for more extensive mass education programmes required for vulnerable population like pregnancy, giving attention to consistency of information from the healthcare authority. COVID-19 education endeavour should take a proactive outlook and focus on eliminating misinformation in such critical state of affairs.

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