RESEARCH ARTICLE

COVID-19 and Maternal Mental Health: Impact on their Fear and Stress Coping Style and Social Support

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Abstract

Maternal mental health is a major concern worldwide. It is estimated that worldwide around 10–35% of pregnant women suffer from mental disorders during their pregnancy. A descriptive, cross-sectional survey was conducted aimed to assess the fear, coping style, and support system among pregnant women amid the coronavirus disease-2019 (COVID-19) pandemic in Odisha, India from April to May 2020. A web-based tool including the demographic and clinical variables was developed in Hindi and English to collect data from 100 pregnant women. Self-developed Likert scales were used to assess, the fear and stress, coping style, and social support system of pregnant women. The results depicted significant fear and stress among pregnant women with a *z* value of 26.898 and 52.471, respectively. The result was statistically significant at $p < 0.05$. Most (52%) of the pregnant women had severe fear and stress with adaptive coping style (69%). The association between the fear and stress and coping style and social support was found insignificant (R^2–0.0515). The study highlights the vital need for a multifarious health team approach for pregnant women to heed their mental health and to achieve better maternal and neonatal outcomes.

Keywords: Coping style and social support, Coronavirus disease-2019, Pregnant women, Stress and fear.

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Introduction

Pregnancy is joyful for every woman, but unprecedented situations like coronavirus disease-2019 (COVID-19) can turn their joy into anxiety and fear. For a healthy pregnancy, multiple screenings or antenatal visits are essential. Nowadays, the implementation of nationwide lockdown measures to curtail the relentless COVID-19 has caused constricted access to the healthcare facility. Unavailability of medicines, travel restriction, and lack of proper healthcare facilities has left pregnant women anxious across the country.[1]

Variable biological and adaptive changes in women during pregnancy can lead to an immune-compromised state and thereby increases the risk of getting respiratory tract infections like severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS). As COVID-19 is a new and developing health crisis, experts remain unsure whether pregnant women are more at risk of getting COVID-19 or experiencing more severe symptoms. There is limited information available regarding the vertical transmission of COVID-19, assessment, and management of pregnant women infected with COVID-19.[2]

Pregnant women may feel additional stress, anxiety, or depression during the COVID-19 pandemic.[3] As per Sample Registration System (SRS 2015–2017), in India the current infant mortality rate (IMR) is 29 per 1,000 live births and the maternal mortality ratio (MMR) is 113 per lakh live births. The expert's opinion affirms the expected rise in both due to the current pandemic situation in India. In India, about 30% of pregnancies are categorized as high-risk pregnancies, restricted access to inadequate healthcare has raised the concern and threat for increased maternal and neonatal mortality rates.[1]

Maternal mental health is a major concern worldwide. It is estimated that worldwide around 10–35% of pregnant women suffer from mental disorders during their pregnancy. Recent data show that in India more than half of the pregnant women receive antenatal care in private facilities, whereas 25% of pregnant women deliver at private and often in small clinics.[2] Restriction and burden on small clinics due to COVID-19 patients' treatment led to limited maternal health services. Additionally, lack of access to maternal mental healthcare and restricted or absence face-to-face interactions with healthcare providers has raised the chances of stress and depression in pregnant women.[4]

Some women and their partners can experience a range of negative emotions during this period of a pandemic, including anxiety and depression. Globally, the extent and adverse impact of maternal mental health problems are increasingly recognized. As per W.H.O.'s statement, "virtually all women can develop mental disorders during pregnancy and in the first year after delivery". Conditions such as extreme stress, emergency and conflict situations, and natural disasters can increase the risk for specific mental health disorders. It is crucial to know about the clinical impact of COVID-19 in pregnancy and its potential impact on mental health so that the current rapid restructuring of maternity services to cope with the pandemic can take account of all the relevant consequences.[5] This study tends to explore the impact of the COVID-19 crisis on Maternal mental Health in India, their coping styles, and social support during pandemic.

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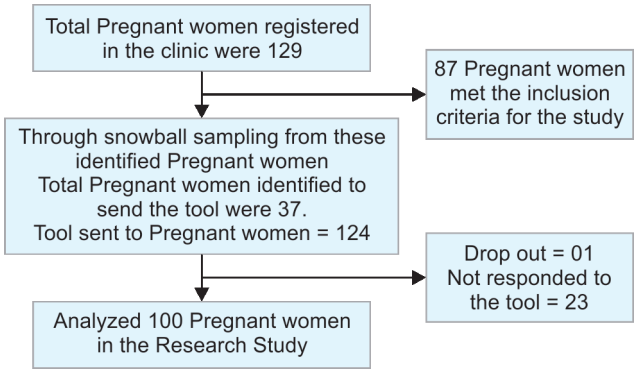
Materials and Methods

A descriptive, cross-sectional survey was conducted to assess the fear, coping style, and support system among pregnant women amid the COVID-19 pandemic in Odisha from April to May 2020. Consequent to lockdown and for maintaining social distancing norms to curb COVID-19, pregnant women could not be called to the maternity clinic in Odisha. Therefore, a web-based tool was developed in Hindi and English. Total enumeration and snowball sampling technique was used as sampling technique. Pregnant women who were registered in the clinic consented to participate, had internet connectivity, and with ability to read in either Hindi or English were included in the study. A total of 129 women registered in the clinic for impending delivery were telephonically contacted, out of which 87 pregnant women met the inclusion criteria. These women were also contacted to identify other pregnant women. Tools were sent to 124 participants and 101 responses were received; 1 response was dropped due to an error in the recording of data, therefore; data from 100 pregnant women were analyzed (Flowchart 1).

A self-developed structured questionnaire was developed to collect the sociodemographic data and clinical data of pregnant women. It included age, education level of the woman and her spouse, occupation of women and her spouse, type of family, No. of family members, and residential type and family's monthly income. Clinical profile of women included: duration of pregnancy, obstetric history, complication during previous pregnancy and childbirth, medical and surgical history, family history, and the symptoms (if any) related to COVID-19. Another tool including a self-developed 5-point Likert scale, containing 20 items was used to assess the fear and stress related to COVID-19. The highest score was 100 and the lowest score was 20. Stress and fear related to COVID-19 among pregnant women were divided into three categories: Mild fear and stress (20–45), moderate fear and stress (46–70), and severe fear and stress (71–100). A self-developed 5-point Likert scale was used to assess the coping style and social support system of pregnant women during the COVID-19 pandemic. The tool consisted of a total of eight questions of which two questions were multiple choice and six questions were on a 5-point Likert scale. The lowest score was 6 and the highest score was 30. Coping style and social support were categorized as adaptive (11–15) or maladaptive (3–10) coping style and good (13–15), moderate (9–12), and poor (3–8) social support, respectively. For the validity and reliability of tools, the tools were validated by five experts from obstetrics and gynecology and psychiatry (three medical and two nursing experts). The reliability of the tool was assessed by the split-half method and found to be reliable with Cronbach's alpha = 0.9. A pilot study was conducted on 19 pregnant women and was found to be feasible.

The web-based survey questionnaire was sent to the pregnant women fulfilling the inclusion criteria and responses were recorded and analyzed using online software. The ethical consideration was maintained via confidentiality and anonymity of participants, informed consent was obtained as agreeing to the participation in the study, directed them toward the questionnaire. The description of the research and contact of researchers was shared with participants. The ethical permission was taken from the Jamia Hamdard and Checklist for Reporting Results of Internet E-Survey (CHERRIES) was made to disseminate the finding and to state the ethical responsibilities of the researcher.

Flowchart 1: Description of sample recruitment of pregnant women



Results

Most (38%) of the pregnant women were aged between 26 years and 30 years followed by 31–35 years of age (31%). Most (46%) of the pregnant women were graduated and above followed by secondary education (24%) and senior secondary education (16%). Most of them were residing in the urban area (54%) followed by rural (37%). Most (61%) of the pregnant women belong to the joint family followed by the nuclear family (35%). Most (34%) of pregnant women were having a family of 5–7 members, followed by 2–4 members (29%), 8–9 members (20%), and 9 members and above (17%). Most (59%) of the pregnant women were homemakers followed by doing private jobs (27%), government job (11%), and business (3%). Mostly pregnant mother's husbands were graduate and above (51%) followed by secondary (21%), senior secondary (12%), primary (10%), and illiterate (6%) with working in private jobs (51%) followed by government (22%), business (16%), and others (16%). Most (49%) of the pregnant mother's family income were >20,000 followed by 5,001–10,000 (18%), 15,000–20,000 (15%), 10,001–15,000 (11%), and <5,000 (7%) (Table 1).

Most of the pregnant women were 4–7 months pregnant (50%) followed by 8 and above months (29%) and less or 3 months pregnant (21%). Most of the pregnant women were having Gravida (G) 1 (58%) followed by G2 (28%), G3 (9%), G5 and above (3%), and G4 (2%). Para (P) 0 (61%) and live birth (L) 0 (62%) followed by P1 and L1 (33% both), P2 and L2 (3 and 2%, respectively), P4 and L4 (2% both), and P3 and L3 (1 both). The majority of the pregnant women who had not experienced abortion (A0) is 88% followed by A1 (8%), A2 (3%), and A3 (1). The majority of them had not experienced complications during pregnancy and childbirth in previous pregnancies (82%) followed by 18% who had a history of complications, during pregnancy (15%), and during delivery (3%). In the present pregnancy, the majority of the pregnant women were not experiencing any kind of medical complications (80%) followed by hypertension (7%), thyroid disorders (6%), other (5%), and diabetes mellitus (2%). The majority of the pregnant women were not having any surgical history (98%) and 2% had a history of surgery. Most women do not have any medical history of disease in the family (55%) and 45% had a history of disease in the family. From them others (44%) followed by respiratory diseases (1%). In view of the current situation of COVID-19, the majority of the pregnant women were not experienced specific symptoms of illness (94%) followed by fever (3%), cough and cold, difficult breathing, and sore throat (1% each) (Table 2).

Table 1: Sociodemographic profiles of pregnant women, $n = 100$

S. no.	*Demographic characteristics*	*Category*	*Frequency (f)*	*Percentage*
1	Age (in years)	18–25	30	30
		26–30	38	38
		31–35	31	31
		36 and above	1	1
2	Education	Primary	14	14
		Secondary	24	24
		Senior secondary	16	16
		Graduate and above	46	46
3	Type of family	Nuclear	35	35
		Joint family	61	61
		Extended family	4	4
4	Family members	2–4	29	29
		5–7	34	34
		8-9	20	20
		Above 9	17	17
5	Residency	Urban	54	54
		Rural	37	37
		Semi-urban	9	9
6	Occupation	Homemaker	59	59
		Private job	27	27
		Govt. job	11	11
		Business	3	3
7	Husband's education	Illiterate	6	6
		Primary	10	10
		Secondary	21	21
		Sr. secondary	12	12
		Graduation and above	51	51
8	Husband's occupation	Unemployed	1	1
		Private job	51	51
		Govt. job	22	22
		Business	16	16
		Other	10	10
9	Family's monthly income	<5,000	7	7
		5,001–10,000	18	18
		10,001–15,000	11	11
		15,001–20,000	15	15
		>20,000	49	49

Most (52%) of the pregnant women had severe fear and stress related to COVID-19, followed by moderate fear and stress (31%) and mild fear and stress (17%) (Table 3).

Most of the pregnant women are practicing adaptive coping style (69%), whereas 31% of them were practicing mal-adaptive coping style (Table 4).

Most (28%) used watching T.V. as a method of distraction to cope with the stress followed by using mobile phones (25%), others (18%), reading (11%), playing games and gossips (7%), and stay alone (4%) (Table 5).

Table 2: Clinical profiles of pregnant women, $n = 100$

S. no.	*Clinical characteristics*	*Categories*	*Frequency (f)*	*Percentage*
1	Duration of pregnancy	<3 or 3 months	21	21
		4–7 months	50	50
		8 and above	29	29
2	Obstetric history (Gravida "G")	Gravida 1	58	58
		Gravida 2	28	28
		Gravida 3	9	9
		Gravida 4	2	2
		Gravida 5	3	3
	Para (P)	Para 0	61	61
		Para 1	33	33
		Para 2	3	3
		Para 3	1	1
		Para 4	2	2
	Live births (L)	Live birth 0	62	62
		Live birth 1	33	33
		Live birth 2	2	2
		Live birth 3	1	1
		Live birth 4	2	2
	Abortions (A)	Abortion 0	88	88
		Abortion 1	8	8
		Abortion 2	3	3
		Abortion 3	1	1
3	Prev. complication pregnancy and child	Yes	18	18
		No	82	82
	If YES specific	During pregnancy	15	15
		During delivery	3	3
4	Medical complication	Hypertension	7	7
		Diabetes mellitus	2	2
		Thyroid	6	6
		Other	5	5
		No complaints	80	80
5	Surgical history	Yes	2	2
		No	98	98
6	Family history of disease	Yes	45	45
		No	55	55
	If yes then specify	Respiratory disease	1	1
		Others	44	44
7	Symptoms experiencing	Fever	3%	3
		Cough and cold	1	1
		Difficult breathing	1	1
		Sore throat	1	1
		No symptoms	94	94

Most (54%) of the pregnant women were having a moderate social support system followed by good (39%) and poor (7%) (Table 6).

The majority (75%) of the pregnant women were getting social support from their husbands followed by their mother (9%), others 8%, friends 5%, and mother-in-law (3%) (Table 7).

Table 3: Stress and fear of pregnant women related to COVID-19, $n = 100$

S. no.	*Fear and stress*		*Frequency (f)*	*Percentage*
1	Mild	20–45	17	17
2	Moderate	46–70	31	31
3	Severe	71–100	52	52

Table 4: Coping styles of pregnant women during COVID-19, $n = 100$

S. no.	*Coping style*		*Frequency (f)*	*Percentage*
1	Positive/ adaptive	11–15	69	69
2	Negative/Mal-adaptive	3–10	31	31

Table 5: Coping style (method of distraction) of the pregnant women during COVID-19, $n = 100$

S. no.	*Method of distractions*	*Frequency (f)*	*Percentage*
1	Watching T.V.	46	28
2	Reading	18	11
3	Playing games	12	7
4	Gossips	12	7
5	Stay alone	7	4
6	Using mobile	42	25
7	Others	30	18

Table 6: Social support to pregnant women during COVID-19, $n = 100$

S. no.	*Social support*		*Frequency*	*Percentage*
1	Good	13–15	39	39
2	Moderate	9–12	54	54
3	Poor	3–8	7	7

Table 7: Social support to pregnant women from relations in COVID-19, $n = 100$

S. no.	*Social support system*	*Frequency (f)*	*Percentage*
1	Husband	88	75
2	Mother	11	9
3	Mother-in-law	4	3
4	Friends	6	5
5	Others	9	8

Fear and stress, which were found significant at $p < 0.05$ is 26.89. Coping style and social support were found significant at $p < 0.05$ is 52.47. Association between these two variables (fear and stress and coping style and social support) stated insignificant through Pearson's correlation with the use of SPSS (−0.0515) and p value was 0.61432 (Table 8).

Discussion

The present study's results showed that there is significant stress and fear among pregnant women due to the COVID-19 crisis in India. The study offers insight into the factors that can actually affect the mental health of pregnant women. Identifying the coping style and social support systems can help to set some priorities to overcome fear and stress or lower the stress factors which can help into better neonatal and maternal health in India.

The findings of the present study show that the fear and stress among pregnant women in India were severe (52%) with a mean of 72.86. A similar study was done by Zanardo et al. in northeastern Italy found that the women who gave birth during the COVID-19 quarantine period as compared to the women who delivered in 2019 at the same time with the use of EPDS scale it was significantly higher mean in the COVID-19 group as compared to non-COVID-19 group (8.5 ± 4.6 vs 6.34 ± 4.1; $p < 0.001$). In which 26% of the women in the COVID-19 group had a global EPDS score above 12.[6]

In addition to this, the present study found that the pregnant women in India are having fear from the COVID-19 and they have significant stress also, their coping style is good still they are experiencing the fear and stress. Interestingly, a similar finding was presented in a study conducted by Zeng et al. in China found that there were 28.5% of Chinese pregnant women with depressive symptoms during the late pregnancy, those who have to go to the hospitals regularly for the inspection letting them a fear of infection, which could lead to worsening anxiety and mental distress.[7] Another study conducted by Wu et al. in China found that in the pregnant women assessed after the declaration of COVID-19 there are significantly higher rates of depressive symptoms (26.0 vs 29.6%, $p = 0.02$) than women assess pre-epidemic announcement.[8]

In the present study, coping style and social support system together were good (average 50%) which is not significant to the fear and stress ($r^2 = 0.0027$) the pregnant women experiencing during the crisis. A similar study was done by Faramarzi et al. in Iran found that pregnancy-specific stress and ways of coping were not significant.[9]

In the social support system, moderate was 54% with a total average of social support and standards deviation were 11.92% and 2.379, respectively, in which major support was from husband side (average 75%) and the lowest is from the mother-in-law's side (average 3%). Interestingly, the same study was done by Mohammadpour et al. in Iran in which the inverse correlation was

Table 8: Research variables and their descriptive, central tendency, and inferential statistics' score

S. no.	*Research variables*	*Mean*	*Standard deviation*	*Z-test*	*Result*	*p value*	*Pearson's correlation (R)*
1	Fear and stress	72.86	24.5015	26.89809	Significance at $p < 0.05$	0.61432	−0.0515 Insignificant relationship
2	Coping style and social support	23.76	4.075351	52.47169	Significant at $p < 0.05$		

found in-between the perceived social support and perceived stress ($r = -0.34$, $p < 0.001$).[10]

In the present study, the researcher found that there is significant stress and fear among pregnant women in India and a week correlation with the good coping style and social support system. The positive/adaptive coping style is found in them (average 69%). Interestingly, the similar study done by Basharpoor et al. in Iran found that there is negative correlation with positive perception of stress ($r = -0.36$; $p < 0.001$), the support of friends ($r = 0.42$; $p < 0.0001$), and family support ($r = -0.52$; $p < 0.001$).[11]

The total enumeration and snowball sampling method were used to enroll maximum participants in the study. There was no direct contact with the participants, so fewer chances of bias. Cost and time-effective for the researchers. Confidentiality and anonymity maintained were very well throughout the study. The participants were having the freedom to leave the study at any point in time.

The findings of our study were interpreted within its limitations. Small sample size due to COVID-19 pandemic situation researcher could not reach to the community people. The errors can be there because of a habit of extreme answering for all. Data may be affected as per the mood and time of the participant. Submission of more than 1 response by 1 respondent mistakenly or intentionally. Error due to less understandability of the tool because of no face-to-face interaction with the researcher.

Conclusion

It has been concluded from the study that COVID-19 crises adversely affect the thoughts and emotions of pregnant women in India which leads to severe fear and stress among them. To overcome the mental health issues in pregnant women, it is vital to have a multiple team approach for pregnant women for better maternal and child outcomes. The study concludes that the social support they are getting from the husband is the highest support, so the pregnant women and their husbands can be trained during pregnancy by using various communication methods such as written materials and individual or group counseling.

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