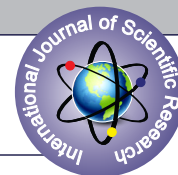


MENTAL HEALTH IMPACT OF COVID-19 PANDEMIC ON PREGNANT WOMEN-A CROSS-SECTIONAL SURVEY STUDY

Obstetrics & Gynaecology

Dr. Mogili Archana Assistant Professor, Department of Obstetrics and Gynaecology, ESIC Medical College and Hospital, Sanathnagar, Hyderabad, Telangana-500038



ABSTRACT

The coronavirus disease 2019(COVID-19) pandemic poses significant risk to public health, including mental health. As a particular group, pregnant women need more attention. During pregnancy, women may experience stress and anxiety associated with potential adverse obstetrical outcomes such as foetal death. **Objectives:** The present study is intended to assess the mental health impact of covid -19 pandemic on pregnant women. **Study Design:** A cross-sectional survey study conducted in the Department of Obstetrics and Gynecology, ESIC Medical College and Hospital, Sanathnagar, Hyderabad for sample size of 150 Antenatal OPD cases from 10-6-2021 to 10-7-2021. **Method Of Study:** After an informed consent, eligible participants were asked to fill two questionnaires. The psychological impact of COVID-19 was measured using an Italian version of the Impact of Event Scale-Revised (IES-R). Anxiety of COVID-19 was measured by an Italian version of the 6-item short form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI), as described by Marteau and Bekker. **Results:** Majority of the study participants (58%) reported no/minimal psychological impact (IES-r score 0-23).20% of the subjects had mild psychological impact (IES-r score 24-32).12% and 10% of the subjects had moderate and severe psychological impact with IES-r score of 33-36 and >36 respectively. Majority of the subjects (46%) reported no/low anxiety level with STAI score of 20-37.30% and 24% of the subjects experienced moderate and severe levels of anxiety with STAI scores of 38-44 and 45-80 respectively. **Conclusion:** This paper illustrated the effect of the COVID-19 pandemic on the mental health of pregnant women and emphasized the psychological impact and anxiety. Since presence of mental disorders is indirectly related to poor pregnancy outcomes, preventive strategies should be developed to reduce the maternal and foetal complications associated with psychological stress.

KEYWORDS

Anxiety, COVID-19, mental health ,psychological impact

INTRODUCTION

Pregnancy is a complex phenomenon which is associated with changes in psychological functioning of women apart from physiological and somatic changes. It is usually associated with ambivalence, frequent mood changes, varying from anxiety, fatigue, exhaustion, sleepiness, depressive reactions to excitement.¹

Mental health issues are witnessed among 5-15% of a pregnant woman in developed countries. Facility based studies in India have estimated the burden of common mental disorders (CMD)during pregnancy to range from 5.8% to 16%. A systematic review of studies conducted among pregnant women in India showed that the prevalence of depression ranged from 10.25% to 55% (1st trimester), 8.4% to 48.4% (2nd trimester), and 11.11% to 30.11% (3rd trimester).²

Pregnancy anxiety is defined as a negative emotional state that is associated with worries about “the health and well- being of one's baby, the impending childbirth, of hospital and health-care experience (including one's own health and survival in pregnancy) during birth and parenting or maternal role. In developing countries, more importance is given towards addressing obstetric complications and reducing the maternal mortality; while a woman's emotional and mental health receives less attention. Symptoms like poor sleep and tiredness which are suggestive of a disturbed mental health are likely to be ignored and attributed to a normal physiological condition associated with pregnancy.³Slade et al. (2009) described “pregnancy is no ordinary time in the life of a woman. At no other point in her life will so much about her change in such a brief period, or will the nature and quality of her adaptations have such far-reaching implications for her own and her child's physical and psychological health.”⁴

There are evidences that suggest anxiety and similar mental conditions during pregnancy could increase the risk of adverse pregnancy outcomes and offspring neurodevelopment.^{5,6} The adverse outcomes include low birth weight, prolonged labour, preterm delivery, and a higher incidence of caesarean section. Therefore, proper assessment of mental health during Pregnancy is necessary.

On March 11, 2020 the WHO (2020) declared a pandemic of coronavirus disease 2019 (COVID-19), caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2).⁷ Rapidly, the disease has spread throughout the world. As a result, governments and public health authorities implemented health policies, including spatial distancing, isolation, and even partial and total lockdown measures to prevent the spread of the virus. Public health systems and world economies were affected with a negative effect on the mental health of the population.⁸ Wang et al. (2020) found that more than half of the respondents reported moderate to severe psychological

symptoms (anxiety, depression, and stress). Furthermore, in general terms, women and young people were the most affected groups (Fullana et al., 2020; Wang et al., 2020).⁹

Also, several studies have been published on the relationship between maternal mental health and COVID-19. These studies have reported an increase in symptoms of depression and anxiety, lower quality of mental life, increase in perceived levels of distress and moderate psychological impact due to isolation (Saccone et al., 2020).¹⁰ Given the potential negative psychological consequences that the pandemic context could have, the aim of this study is to analyse Mental health impact of COVID-19 pandemic on pregnant women. A precise evaluation of pregnant women in this context will represent a valuable input for the subsequent design, planning, and execution of health policies, with the main objective of preventing and counteracting the negative consequences on the mental health of mothers.

MATERIALS & METHODS

Present study is a cross-sectional survey study conducted in the Department of Obstetrics and Gynaecology, ESI Medical College and Hospital, Sanathnagar, Hyderabad for sample size of 150 Antenatal OPD cases from 10 June,2021 to 10 July, 2021. Sample size was calculated by $n = Z^2 PQ/d^2$. The participants were well informed about the purpose of the survey. An informed consent was obtained from each participant before they filled the questionnaires. Confidentiality of information and anonymity of the participants was maintained.

Inclusion Criteria:

- 1.Pregnant women aged >18 years
- 2.Singleton pregnancy
- 3.Any gestational age

Exclusion Criteria:

- 1.Pregnant women aged <18 years
- 2.Multifetal pregnancy
- 3.Women with prior mental health problems
- 4.Women who tested covid positive in the past/ with symptoms of covid positive.

Thorough history taking and general physical and obstetric examination was done. Selection is done based on inclusion and exclusion criteria. The psychological impact of COVID-19 was measured using an Italian version of the Impact of Event Scale-Revised (IES-R). Anxiety of COVID-19 was measured by an Italian version of the 6-item short form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI), as described by Marteau and Bekker. A combination of validated measures in the questionnaires will be used to assess the psychological impact and anxiety. After the

questionnaire, cases were provided with authentic and official health information sources, (ICMR/WHO).

A) PSYCHOLOGICAL IMPACT QUESTIONNAIRE:

By Italian version of Impact of Event Scale-Revised (IES-r). It is one of the most widely used measures of event-specific distress. It is a 22-item self-administered questionnaire composed of 3 subscales aimed to measure the mean avoidance, intrusion, and hyperarousal. Each item is scored from 0-4. Total score of 0-88. Higher score representing high psychological impact.

Table 1: Scores Of IES-R

Scores (IES-r)	Consequences
0-23	Normal
24-32	Mild psychological impact
33-36	Moderate psychological impact
37 or more	Severe psychological impact

B) ANXIETY QUESTIONNAIRE:

By an Italian version of the 6-item short form of the state scale of the Spielberger State-Trait Anxiety Inventory (STAI). It is one of the most frequently used measures of anxiety in applied psychology research. It is reliable and sensitive measure of anxiety.

Table 3: SOCIO Demographic Characteristics Of The Participants (N=150)

VARIABLE	N	%	IES-r				STAI		
			NORMAL	MILD	MODERATE	SEVERE	NORMAL/ LOW	MODERATE	SEVERE
A) AGE (years)									
<20	36	24	15	9	6	6	18	6	12
21-30	75	50	54	12	6	3	33	30	12
>30	39	26	18	9	6	6	18	9	12
B) EDUCATION									
Illiterate	15	10	0	6	6	3	6	0	9
Primary school	30	20	15	3	6	6	18	7	5
Secondary school	60	40	48	6	0	6	51	6	3
Graduate and above	45	30	24	15	6	0	3	33	9
C)OCCUPATION									
Home maker	108	72	66	27	9	6	54	39	15
Business	6	4	3	0	3	0	3	3	0
Private job	18	12	9	3	3	3	6	3	9
Government job	12	8	6	0	3	3	3	0	9
HCW	6	4	3	0	0	3	3	0	3
D)SOCIOECONOMIC STATUS									
Low	69	46	51	6	6	6	39	15	15
middle	45	30	24	9	12	0	21	9	15
upper	36	24	12	15	0	9	9	21	6
E) RESIDENCE									
Urban	60	40	33	12	6	9	33	6	21
Rural	33	22	21	6	3	3	0	24	9
Semiurban	57	38	33	12	9	3	36	15	6

Family Profile:

76% of the subjects belonged to nuclear family. 84% of the subjects claimed psychological support from the family during pregnancy.

Table 4: Family Profile And Its Relation (N=150)

Variable	N	%	IES-r				STAI		
			NOR MAL	MIL D	MOD ERA TE	SEV ERE	NOR MAL / LOW	MOD ERA TE	SEV ERE
A) TYPE OF FAMILY									
Nuclear	114	76	66	30	6	12	54	36	24
Joint	36	24	21	0	12	3	15	9	12
B) PSYCHOLOGICAL SUPPORT									
Yes	126	84	71	27	19	9	60	45	21
no	24	16	6	3	9	6	9	0	15

Pregnancy Profile:

More than half of the participants were primigravida (62%). Majority were in the third trimester of pregnancy (44%; n=66). A large number of participants (86%) had a spontaneous conception and 78% were planned pregnancies. 86% of the subjects did not have any previous history of abortions. 72% of women reported no effect in relation to the previous pregnancy (covid negative era). 8% of the subjects reported apprehension in comparison to the previous pregnancy (covid negative era).

Score range is 6-24. Score is divided by 6 and multiplied by 20 to get score based on original version (FORM X) of STAI.

Table 2: Scores Of STAI

SCORE	IMPRESSION
20-37	"No or low anxiety"
38-44	"Moderate anxiety"
45-80	"High anxiety"

Statistical Analysis:

Univariate comparisons of dichotomous data will be performed using the chi-square test with continuity correction. Comparisons between groups to test group means with standard deviation will be performed using t-test. Questionnaire scores were analysed according to the gestational age at patient's enrolment.

RESULTS:

Socio Demographic Characteristics:

Most subjects (50%) were in the age group of 21-30 years. Majority (40%) were educated up to secondary school; 30% of subjects were graduated. 28% of the subjects were employed. Almost half of the subjects 46% belonged to low SES. 40% were urban residents. (Table .3)

era). 16% had fear regarding foetal outcome.

Variable	N	%	IES-r				STAI		
			NOR MAL	MIL D	MOD ERA TE	SEV ERE	NOR MAL / LOW	MOD ERA TE	SEV ERE
A) PARITY									
Primigravida	93	62	48	30	12	3	36	36	21
Multigravida	57	38	39	0	6	12	33	9	15
B) GESTATIONAL AGE									
Trimester-1	33	22	12	9	9	3	15	9	9
Trimester-2	51	34	42	3	3	3	42	3	6
Trimester-3	66	44	33	18	6	9	12	33	21

C) Type Of Conception

	n	%	Psychological Impact (mild-severe)	Anxiety (moderate-severe)
Planned pregnancy	117	78	36	39
Accidental pregnancy	33	22	12	15
Spontaneous conception	129	86	33	57
Fertility treatment	21	14	9	9
Previous abortions	21	14	12	18

D) Comparison To Previous Pregnancy

Experience in relation to previous pregnancy	n	%
No effect	108	72
Apprehension	12	8
Depression	0	0
Mood swings	3	2
Easily tearful	3	2
Fear regarding foetal outcome	24	16

Table 5: Pregnancy Profile And Its Relation(N=150)**General Health Profile And COVID 19 Awareness:**

Majority of the subjects 76% did not have any co-morbidities in pregnancy. 88% of the study participants were aware of COVID-19.

Variable	N	%	IES-r				STAI		
			NOR MAL	MIL D	MOD ERA TE	SEV ERE	NOR MAL / LOW	MOD ERA TE	SEV ERE
General Health Profile									
Without comorbidities	114	76	72	30	12	0	57	30	27
With comorbidities	36	24	15	0	6	15	12	15	9

COVID-19 Awareness

COVID 19 AWARENESS		n	%
Awareness and attitude regarding COVID-19	yes	132	88
	no	18	12

Table 6: General Health Profile And COVID-19 Awareness During Prenenry(N=150)**PSYCHOLOGICAL IMPACT:**

The psychological impact of the COVID-19 was measured by IES-r scale, which showed that the mean IES-r score was 12.5±9.71. Majority of the study participants (58%) reported no/minimal psychological impact (IES-r score 0-23). 20% of the subjects had mild psychological impact (IES-r score 24-32). 12% and 10% of the subjects had moderate and severe psychological impact with IES-r score of 33-36 and >36 respectively.

Table 7: Psychological Impact Score(N=150)

PSYCHOLOGICAL IMPACT SCORE	n	%
Normal (0-23)	87	58
Mild (24-32)	30	20
Moderate (33-36)	18	12
Severe (>=37)	15	10
MEAN IES-r	12.5±9.71. (P value <0.01))	

ANXIETY SCALE STAI SCORE:

The anxiety level was measured by 6 item short form of STAI scale which showed that the mean score was 16.67±4.64. Majority of the subjects (46%) reported no/low anxiety level with STAI score of 20-37.30% and 24% of the subjects experienced moderate and severe levels of anxiety with STAI scores of 38-44 and 45-80 respectively.

Table 8: ANXIETY SCORE(N=150)

Anxiety Score	N	%
Normal/Low Anxiety (20-37)	69	46
Moderate (38-44)	45	30
High (45-80)	36	24
MEAN ±SD	16.67±4.64 (P value <0.01))	

DISCUSSION:

The magnitude of the impact of the coronavirus disease 2019 (COVID-19) pandemic on the mental health of pregnant and postpartum women remained unclear since the beginning of the pandemic. As a result, various quality assessments of studies, random-effects meta-analysis, sensitivity analysis, and planned subgroup analysis have been performed in different regions of the world for the assessment of the mental health impact, which have come out with varying results.

This was a cross-sectional survey to assess the psychological impact and anxiety in pregnant women during the COVID-19 pandemic. Women who were pregnant during the pandemic showed higher levels of depression and phobic anxiety. These results support the data

obtained in another similar situation: that of the previous 2003 pandemic caused by SARS, during which an increase in anxiety and depression morbidity was found (Liu et al., 2003; Maunder et al., 2003).^{11,12} The studies carried out in other countries showed an increase in anxiety and depression levels as well as an increase in the severity of symptoms in this population. (Hessami et al., 2020; Liu et al., 2020; Wu et al., 2020).^{13,14} The radical change of life caused by lockdown could increase these stress levels in especially vulnerable populations such as that of pregnant women (Smith et al., 2020; Cuiyan Wang et al., 2020).¹⁵ Furthermore, it is worth noting that increases in these types of symptoms during pregnancy could lead to an increased risk of preeclampsia and hypertension, low foetal weight, premature delivery, and a greater risk of spontaneous abortion and postpartum depression (Woods et al., 2010; Christian, 2012; Caparros-Gonzalez et al., 2017; Kaboli et al., 2017).^{16,17}

For pregnant women, there may be an even greater source of anxiety and stress, since awareness of a direct biological connection to the foetus could lead to a higher state of alertness and self-protection (Wu et al., 2020).¹⁴ Moreover, concerns linked to the economic crisis deriving from the COVID-19 health crisis may affect pregnant women's future prospects of quality of life and the upbringing of their children, an uncertainty that could increase these depressive symptoms. Fear and psychological impact of the disease may be as harmful as the infection, with suicidal cases also reported.

The results of the present study showed that the COVID-19 outbreak had a minimal-to-mild psychological impact on pregnant women with a mean IES-R score of 12.5±9.71. Around 58% of pregnant women have reported no/ minimal psychological impact, whereas 20% had a mild psychological impact, 12% had moderate and 10% reported severe psychological impact due to COVID-19 pandemic. Majority of the subjects (46%) reported no/low anxiety level with STAI score of 20-37.30% and 24% of the subjects experienced moderate and severe levels of anxiety with STAI scores of 38-44 and 45-80 respectively and the mean score was 16.67±4.64.

Supporting the findings of our study by the conclusions of a cross-sectional survey study conducted from July 15, 2020, to September 15, 2020, in Dehradun, Haridwar, and Nainital districts of Uttarakhand, The survey results revealed that around three-fourths (73.6%) of the pregnant women reported minimal psychological impact, with a mean IES-R score of 16.93±11.23, whereas 69.4% of respondents had a minimal level of anxiety, with a mean GAD-7 score of 3.09±3.73.¹⁸ A similar study in Italy found that the COVID-19 outbreak caused a moderate psychological impact on pregnant women, and around 53% of respondents reported severe psychological impact.¹⁹ A study done in Bosnia and Herzegovina and Serbia reported that around that 34.2% of respondents experienced a severe psychological impact, 9.9% experienced moderate, and 23.0% of respondents had mild psychological impact due to the COVID-19 outbreak.¹⁹ Another study done in China showed that the mean IES score of pregnant women was higher than the present study, with 67.1% of pregnant women had an IES ≥26, indicating moderate-to-severe psychological impact during the outbreak of the COVID-19 pandemic.²⁰

Several other studies estimated that the prevalence of anxiety and depression symptoms during COVID-19 was 42% and 25% respectively,²¹ with a more severe psychological impact observed in the early pregnancy²² possibly due to uncertainty about foetal development, given the higher likelihood of miscarriage.

A study done by Davenport MH et al²³ assessed the impact of covid 19 pandemic on the psychological status and found higher State Trait Anxiety Inventory scores during the pandemic times. Another meta-analysis of a subgroup of 13 studies done by Fan et al²⁴ on anxiety of pregnant women during covid 19 pandemic found an overall anxiety prevalence of 42%.

CONCLUSION:

In summary, 10-12% of the study participants reported moderate and severe psychological impact in pregnancy. 25-30% experienced moderate and severe anxiety levels. These results underscore the relevance of providing adequate support from the early stages of pregnancy, in order to enhance women well-being. Our findings can be used to formulate psychological interventions to improve mental health and psychological resilience during the COVID-19 epidemic.

The health staff and family members should be prepared to provide health education and conduct awareness programs about the psychological impact on pregnant mothers.

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