Original Research

Mental Health of Pregnant females during COVID-19 Pandemic in Lucknow district

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Abstract
Background: Between 10% and 25% of expectant women have anxiety and/or depressive symptoms. Increased preterm birth, postpartum depression, and behavioural issues in children are all linked to elevated symptoms of anxiety and depression. The current COVID-19 pandemic is an unique stressor that could have broad implications for pregnancy and beyond. Depression and anxiety raise the likelihood of preterm birth, delay the mother-fetus relationship, and slow down the newborn's cognitive development. In order to manage the COVID-19 pandemic effectively, this should be kept in mind.The DASS-21 is a shorter version of the DASS-42 that consists of 21 items and three stress, depression, and anxiety subscales (7 questions for each subscale). Each question obtains a score ranging from not at all (0) to extremely high (3).**Aim:** To evaluate mental health issues in pregnant females during COVID19 pandemic in Lucknow district. **Objectives:** 1.To evaluate mental health issues in pregnant females during COVID-19 pandemic 2. To assess the stress, anxiety and depression in pregnant females during the pandemic. 3. To assess the factors associated with mental issues in pregnant females. **Materials & Method:** A total of 220 pregnant females residing in the urban and rural areas of Lucknow district constitute the study unit. Multi stage random sampling was used. A pre designed and pretested questionnaire using DASS 21 was used to collect data. Data wasanalyzed and tabulated using SPSS-20.0 version software. **Results & Conclusions:** During COVID-19 19 pandemic, very poor mental health was observed among pregnant women. Among them very severe depression, anxiety and stress was found in 47%, 70% and 29% cases respectively while severe level of depression, anxiety and stress was found in 17%, 7% and 25% cases respectively. Significant association of depression was found with place ($p=0.034$), age at marriage ($p=0.029$), no of living children ($p=0.029$), education of RDW ($p=0.004$), education of husband ($p=0.004$), marital life satisfaction ($p<0.001$) and spouse support ($p<0.001$). Significant association of anxiety was found with marital life satisfaction ($p<0.001$). Significant association of stress was found with no of living children ($p=0.025$), education of husband ($p=0.039$), marital life satisfaction ($p<0.001$) and spouse support ($p=0.002$).
Keyword: Mental health, Pregnant females, COVID-19, anxiety, Depression, Stress

Introduction

Around 10 to 25 percent of expectant women experience anxiety and depressive symptoms. Preterm birth, postpartum depression, and behavioural issues in children are all linked to higher risk of depression and anxiety symptoms. The current COVID-19 pandemic is an unique stressor that could have significant effects on pregnancy and other stages of life.[1] The 2019 new coronavirus (COVID-19), which was originally identified in December 2019,

has been rapidly spreading over the world. This virus has severe health effects, including death, overburdened healthcare systems, and instability in the economy. The social and psychological effects can both be dreadful. Schools and day-care centres all throughout the world have been closed, and people have been physically cut off from their families, friends, and communities. Understanding how the COVID-19 pandemic affects mental health is urgently needed in order to prevent the development of severe mental disorder as a secondary effect.[2] Pregnant women may be one group that is much more at risk during a virus outbreak. With up to 22% of women experiencing significant levels of anxiety in late pregnancy and 12% of women suffering depression, mental health disorders are a common cause of morbidity during pregnancy.[3]This study sought to understand how the COVID-19 pandemic affected the anxiety of pregnant women as well as to highlight the elements that were most significantly linked to a greater increase in anxiety. An increased chance of preterm birth, a delayed maternal-fetal attachment, and a delayed cognitive development in the baby are all linked by depression and anxiety. It is important to keep this in mind when controlling the COVID-19 epidemic. Recent studies show that COVID-19 affected several pregnant women and infants, although there is insufficient proof of vertical transmission.[4] According to various studies, depression and anxiety during pregnancy have been estimated to be around 10%, which is significant depending on the circumstances and home environment, especially in the second and third trimesters. It was also significant in women who had a history of depression. Women who are depressed have poor physical health and a poor quality of life.[5]When it comes to altering behavior, beliefs, and attitudes, mental health care must be comprehensive and address the community as a whole. Patients with psychiatric conditions should be the focus of specific management and preventative measures. It's important to address problems like stigma and the segregationist effects it has. One of the pillars of resilience in a society that will face a dizzying array of obstacles as a result of this worldwide pandemic should be the mental health agenda, which is still vital and essential.[6] . It is remarkable that connections between experiences linked to COVID-19 and common mental illnesses in pregnant women are still unknown.People's daily lives are made more stressful, anxious, and depressing by social distance restrictions that make it difficult for them to communicate with friends, family, and other people. Because they must take care of other children and family members, pregnant mothers also confront some unique difficulties. On the other hand, this population is at a higher risk of contracting viruses due to the requirement for routine maternity care.[7] It is remarkable that connections between experiences linked to COVID-19 and common mental illnesses in pregnant women are still unknown.

Aim and objectives

Aim: To evaluate mental health issues in pregnant females during COVID19 pandemic in Lucknow district.

Objectives

1) To evaluate mental health issues in pregnant females during COVID-19 pandemic
2) To assess the stress, anxiety and depression in pregnant females during the pandemic
3) To assess the factors associated with mental issues in pregnant females

Material and methods

Study design and the participants: This cross-sectional study was conducted after obtaining an ethical clearance from the Institutional ethics committee on 220 women who were pregnant during Covid 19. The criteria for entering the study included all females who were pregnant during the pandemic irrespective of their pregnancy outcome. The exclusion criteria were those subjects who are not willing to participate in the study.

Setting: The study was conducted in the Rural and Urban areas of Lucknow district for total study duration of 6 months.

Sampling: A simple random sampling technique was used to identify the pregnant females.

Sample size: Sample size was estimated as 220 pregnant females on the basis of proportion of depression among pregnant women during the outbreak of COVID-19. Where p = 32.7% proportion of depression among pregnant women during the outbreak of COVID-19 (Ref. FatemahDaryani et al.) [6].

Study Unit: All females who are pregnant during the COVID-19 pandemic

Inclusion Criteria

1. All females who were pregnant during the pandemic irrespective of their pregnancy outcome.
2. Females who were/are pregnant during COVID-19 pandemic including first, second and third wave of COVID-19.

Exclusion Criteria

1. Females who are not willing to participate in the study or not giving consent.
2. Females who are not a resident of Lucknow.

Data collection tools

The information was collected from each participant by filling the socio-demographic and obstetrics characteristics on pretested structured questionnaire and the DASS-21 (Depression, Anxiety and Stress

Scale-21) The socio-demographic characteristics questionnaire included questions on age, level of education, job, spouse's age, level of education and job, sufficiency of monthly income for living expenses and obstetrics questions included the number of pregnancies, gestational age, etc. The DASS-21 is a shortened version of DASS-42 and includes 21 questions and 3 subscales of stress, depression, and anxiety (7 questions for each subscale). The score for each question is a score from not at all (0) to very high (3). The score is calculated for each scale separately and the overall score is not calculated. The minimum score for each subscale is zero and the maximum is 21, and a higher score indicates a worse situation [8]. The DASS21 questionnaire is commonly used in the pregnant population, due to the limited number of questions and simple sentences with simultaneous assessment of stress, anxiety and depression [9].

Data Collection Procedure

The respondents were briefed about the survey in the local language. The questionnaire used will be stated clearly to the participants that the information will be used only for scientific purposes and the participants will sign a consent form. Information from subjects will be collected by using the interview technique. Scales used: DASS-21 will be used to assess the anxiety issues.

Statistical analysis

Data entry and analysis was done using the SPSS-20 version of software. The distribution was mentioned in the terms of frequency and percentage. Chi-square test was applied for testing the association of multiple factors with Depression, Anxiety and Stress. P-value <0.05 was taken as significant.

Results

The study was conducted to find mental health issues in pregnant females during the Covid-19 pandemic and factors associated. A total of 220 pregnant females who fall in the inclusion criteria were randomly selected and interviewed after obtaining consent.

Table 1: Distribution of RDW according to their socio-demographic characteristics (n=220):

Socio-demographic Characteristics		No.	%
Setting	Urban	154	70.0
	Rural	66	30.0
type of family	Nuclear	127	57.7
	Joint	93	42.3
Religion	Hindu	46	20.9
	Muslim	174	79.1
Social class	class 1	40	18.2
	class 2	79	35.9
	class 3	49	22.3
	class 4	32	14.5
	class 5	20	9.1
age at marriage	<18	58	26.4
	18-30	160	72.7
	30-40	2	0.9
no. of living children	0	9	4.1
	1	96	43.6
	2	49	22.3
	=/>3	66	30.0

We found in our study that out of 220 females interviewed 154 (70%) participants were from urban areas and 66 (30%) participants belong to the rural areas. 93 (42.3%) participants were living in joint families whereas 127 (57.7%) participants had nuclear families. In present study, 46 (20.9%) participants were from Hindu community and 174 (79.1%) females belong to the Muslim community. Majority of the participants (35.9%) were from class-II followed by class-III (22.3%), class-I (18.2%), class-IV (14.5%) and class-V (9.1%) according to Modified B.G. Prasad Socioeconomic classification (2021). Most of the participants (72.7%) were married between the ages of 18-30 years, 0.9% participants were married between the ages of 30-40 years. Sadly 26.4% participants told that they were married before the age of 18 years. The results showed that 96 (43.6%) participants had single child, 66 (30%) participants had 3 or more children whereas 49 (22.3%) participants had 2 children and only 9 (4.1%) females had no child and they were primigravidae.

Table 2: Distribution of RDW according to occupation and educational status:

Characteristics		No.	%
education of RDW	Illiterate	61	27.7
	just literate	54	24.5
	Primary	18	8.2
	Middle	18	8.2
	high school	19	8.6
	Intermediate	12	5.5
	Graduate	22	10.0
	Postgraduate	16	7.3
occupation of RDW	Housewife	185	84.1
	Unemployed	2	0.9
	Unskilled	8	3.6
	semi-skilled	4	1.8
	Skilled	4	1.8
	clerical / shop owner/ farmer	9	4.1
	semi professional	4	1.8
	Professional	4	1.8
education of husband	Illiterate	27	12.3
	just literate	39	17.7
	Primary	15	6.8
	Middle	8	3.6
	high school	26	11.8
	Intermediate	56	25.5
	Graduate	29	13.2
	Postgraduate	20	9.1
occupation of husband	Unemployed	6	2.7
	Unskilled	30	13.6
	semi-skilled	57	25.9
	Skilled	27	12.3
	clerical/ shop owner/ farmer	60	27.3
	semi-professional	22	10.0
	Professional	18	8.2

In present study, most of the females (27.7%) were illiterate followed by 24.5% participants who were just literate. 8.2% participants had schooling till primary class, 8.2% participants were educated up till middle school, 8.6% were high school passed, 5.5% females were educated till intermediate. 10% women were graduated and only 7.3% were postgraduate. Majority of the females (84.1%) were housewives. 9 (4.1%) participants were doing clerical jobs for earning and 8 (3.6%) females were unskilled workers. On observing the educational status of Participant's husband most of them 56 (25.5%) were educated till intermediate, 39 (17.7%) people were just literate, 13.2% were graduated, 12.3% were illiterate and 11.8% were high school passed. According to the employment status of participant's husband it was found that 60 (27.3%)were doing clerical jobs, 57 (25.9%) were semi-skilled workers, 30 (13.6%) were unskilled workers and 27 (12.3%) were skilled workers.

Table 3: Distribution of RDW according to marital life support and satisfaction:

Characteristics		No.	%
sufficiency of income	completely sufficient	13	5.9
	fairly sufficient	164	74.5
	Insufficient	43	19.5
marital life satisfaction	extremely high	13	5.9
	High	63	28.6
	Moderate	136	61.8
	Poor	8	3.6
spouse support	extremely high	19	8.6
	High	74	33.6
	Moderate	121	55.0
	Poor	6	2.7

In present study, majority of the participants felt that their income is fairly sufficient for their household. 13 (5.9%) participants were satisfied with their income and 43 (19.5%) found their income was insufficient. The results showed that 136 (61.8%) were moderately satisfied with their marital life whereas 63 (28.6%) participants were highly satisfied with their marital life. 13 (5.9%) participants were extremely satisfied in their married life and only 8 (3.6%) participants reported poor marital life satisfaction. About the support of their spouses majority 121 (55%) participants reported moderate support from their spouses. 74 (33.6%) participants described that they had high spouse support. 19 (8.6%) participants had extremely high spouse support and only 6 (2.7%) females had poor spouse support.

Table 4: Different levels of depression, stress, and anxiety in pregnant women during Covid-19 pandemic:

Component		No.	%
Depression	Normal	23	10.5
	Mild	21	9.5
	Moderate	48	21.8
	Severe	34	15.5
	Extremely Severe	94	42.7
Anxiety	Normal	14	6.4
	Mild	9	4.1
	Moderate	36	16.4
	Severe	21	9.5
	Extremely Severe	140	63.6
Stress	Normal	59	26.8
	Mild	21	9.5
	Moderate	32	14.5
	Severe	50	22.7
	Extremely Severe	58	26.4

The study explored the mental status of pregnant women in terms of depression, anxiety and stress. The study found 94 (42.7%) participants extremely severe symptoms of depression, 34 (15.5%) participants reported severe depression, 48 (21.8%) females had moderate depression, 21 (9.5%) had mild depression and only 23 (10.5%) participants were normal. On the assessment of Anxiety majority of the women (63.6%) had symptoms of extremely severe depression. 21 (9.5%) participants had severe anxiety, 36 (16.4%) participants reported moderate anxiety and 36 (16.4%) were found having mild anxiety. 14 (6.4%) women were normal and doesn't had any symptom of anxiety. The present study found that mostly 59 (26.8%) women were normal and does not had any stress. Equally found 58 (26.4%) participants had extremely severe stress. 50 (22.7%) participants had severe stress, 32 (14.5%) women reported moderate stress and 21 (9.5%) women had mild stress.

Table 5: Association of Socio-demographic characteristics with Depression:

Socio-demographic Characteristics		Depression										chi sq	p-value
		Normal		Mild		Moderate		Severe		Extremely Severe			
		No.	%	No.	%	No.	%	No.	%	No.	%		
Setting	Urban	18	16.1%	6	5.4%	26	23.2%	24	21.4%	38	33.9%	20.68	**<0.001**
	Rural	5	4.6%	15	13.9%	22	20.4%	10	9.3%	56	51.9%		
Type of family	Nuclear	12	9.4%	6	4.7%	27	21.3%	26	20.5%	56	44.1%	12.68	0.013
	Joint	11	11.8%	15	16.1%	21	22.6%	8	8.6%	38	40.9%		
Religion	Hindu	7	15.2%	3	6.5%	10	21.7%	8	17.4%	18	39.1%	2.14	0.711
	Muslim	16	9.2%	18	10.3%	38	21.8%	26	14.9%	76	43.7%		
	Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
Social	class 1	4	10.0	6	15.0	1	25.0	1	35.0	6	15.0	55.	**<0.0**

Class			%		%	0	%	4	%		%	46	**01**
	class 2	10	12.7 %	12	15.2 %	23	29.1 %	6	7.6 %	28	35.4 %		
	class 3	9	18.4 %	3	6.1 %	3	6.1%	6	12.2 %	28	57.1 %		
	class 4	0	0.0 %	0	0.0 %	6	18.8 %	6	18.8 %	20	62.5 %		
	class 5	0	0.0 %	0	0.0 %	6	30.0 %	2	10.0 %	12	60.0 %		
Age at marriage	<18	0	0.0 %	15	25.9 %	5	8.6%	6	10.3 %	32	55.2 %	43.95	**<0.001**
	18-30	23	14.4 %	6	3.8 %	43	26.9 %	28	17.5 %	60	37.5 %		
	30-40	0	0.0 %	0	0.0 %	0	0.0%	0	0.0 %	2	100.0%		
	>40	0	0.0 %	0	0.0 %	0	0.0%	0	0.0 %	0	0.0%		
no. of living childdren	0	0	0.0 %	3	33.3 %	2	22.2 %	2	22.2 %	2	22.2 %	45.19	**<0.001**
	1	8	8.3 %	12	12.5 %	28	29.2 %	24	25.0 %	24	25.0 %		
	2	8	16.3 %	0	0.0 %	9	18.4 %	4	8.2 %	28	57.1 %		
	=/>3	7	10.6 %	6	9.1 %	9	13.6 %	4	6.1 %	40	60.6 %		

The study found significant association between Depression and few socio-demographic factors like study setting, social class, marriage age and number of living children with highly significant p-values (table 5). It was seen that women living in rural areas and low socio-economic status were suffering from extremely severe depression. The results revealed that late marriage or early marriage and more number of children are highly associated with extremely severe depression.

Table 6: Association of Occupation and Educational status with Depression:

Characteristics		**Depression**										**chi sq**	**p-value**
		Normal		**Mild**		**Moderate**		**Severe**		**Extremely Severe**			
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		
Education of RDW	Illiterate	7	11.5 %	3	4.9 %	9	14.8 %	4	6.6 %	38	62.3 %	117.46	**<0.001**
	just literate	0	0.0 %	15	27.8 %	21	38.9 %	4	7.4 %	14	25.9 %		
	Primary	2	11.1 %	3	16.7 %	3	16.7 %	0	0.0 %	10	55.6 %		
	Middle	4	22.2 %	0	0.0 %	6	33.3 %	0	0.0 %	8	44.4 %		
	high school	2	10.5 %	0	0.0 %	3	15.8 %	4	21.1 %	10	52.6 %		
	Intermediate	2	16.7 %	0	0.0 %	0	0.0%	6	50.0 %	4	33.3 %		
	graduate	2	9.1 %	0	0.0 %	6	27.3 %	6	27.3 %	8	36.4 %		
	postgraduate	4	25.0 %	0	0.0 %	0	0.0%	10	62.5 %	2	12.5 %		
Occupation of RDW	housewife	21	11.4 %	21	11.4 %	43	23.2 %	30	16.2 %	70	37.8 %	45.14	**0.021**
	unemployed	0	0.0 %	0	0.0 %	0	0.0%	0	0.0 %	2	100.0 %		
	unskilled	0	0.0	0	0.0	0	0.0%	0	0.0	8	100.0		

			%		%				%		%		
	semi-skilled	0	0.0 %	0	0.0 %	0	0.0%	0	0.0 %	4	100.0 %		
	Skilled	0	0.0 %	0	0.0 %	0	0.0%	0	0.0 %	4	100.0 %		
	clerical / shop owner/ farmer	0	0.0 %	0	0.0 %	3	33.3 %	4	44.4 %	2	22.2 %		
	semi professional	0	0.0 %	0	0.0 %	2	50.0 %	0	0.0 %	2	50.0 %		
	professional	2	50.0 %	0	0.0 %	0	0.0%	0	0.0 %	2	50.0 %		
Education of husband	Illiterate	3	11.1 %	3	11.1 %	3	11.1 %	0	0.0 %	18	66.7 %	119 .91	**<0.001**
	just literate	0	0.0 %	0	0.0 %	13	33.3 %	4	10.3 %	22	56.4 %		
	Primary	0	0.0 %	3	20.0 %	0	0.0%	4	26.7 %	8	53.3 %		
	Middle	0	0.0 %	0	0.0 %	0	0.0%	2	25.0 %	6	75.0 %		
	high school	4	15.4 %	0	0.0 %	6	23.1 %	4	15.4 %	12	46.2 %		
	intermediate	8	14.3 %	12	21.4 %	22	39.3 %	2	3.6 %	12	21.4 %		
	graduate	4	13.8 %	3	10.3 %	4	13.8 %	4	13.8 %	14	48.3 %		
	postgraduate	4	20.0 %	0	0.0 %	0	0.0%	14	70.0 %	2	10.0 %		
Occupation of Husband	unemployed	0	0.0 %	0	0.0 %	0	0.0%	0	0.0 %	6	100.0 %	80. 77	**<0.001**
	unskilled	6	20.0 %	3	10.0 %	5	16.7 %	4	13.3 %	12	40.0 %		
	semi skilled	5	8.8 %	12	21.1 %	14	24.6 %	6	10.5 %	20	35.1 %		
	Skilled	0	0.0 %	3	11.1 %	10	37.0 %	0	0.0 %	14	51.9 %		
	clerical/ shop owner/ farmer	8	13.3 %	3	5.0 %	17	28.3 %	6	10.0 %	26	43.3 %		
	semi-professional	2	9.1 %	0	0.0 %	0	0.0%	14	63.6 %	6	27.3 %		
	professional	2	11.1 %	0	0.0 %	2	11.1 %	4	22.2 %	10	55.6 %		

In present study, significant association was found between Depression and education of participant, occupation of participant, educational status of their husband and occupation of their husband and occupational status of females and their husband (table 6). It was seen that females who were less educated or illiterate had high chances of having severe depression.

Table 7: Association of Marital life support &satisfaction with Depression:

Characteristics		**Depression**										**chi sq**	**p-value**
		Normal		**Mild**		**Moderate**		**Severe**		**Extremely Severe**			
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		
Sufficiency of income	completely sufficient	3	23.1 %	3	23.1 %	3	23.1 %	0	0.0 %	4	30.8 %	27. 33	**0.001**
	fairly sufficient	18	11.0 %	15	9.1 %	37	22.6 %	34	20.7 %	60	36.6 %		

	insufficient	2	4.7 %	3	7.0 %	8	18.6 %	0	0.0 %	30	69.8 %		
Marital life satisfaction	extremely high	11	84.6 %	0	0.0 %	0	0.0%	0	0.0 %	2	15.4 %	153 .63	**<0.001**
	High	10	15.9 %	18	28.6 %	19	30.2 %	8	12.7 %	8	12.7 %		
	moderate	2	1.5 %	3	2.2 %	29	21.3 %	26	19.1 %	76	55.9 %		
	Poor	0	0.0 %	0	0.0 %	0	0.0%	0	0.0 %	8	100.0 %		
Spouse support	extremely high	9	47.4 %	3	15.8 %	3	15.8 %	0	0.0 %	4	21.1 %	80. 79	**<0.001**
	High	2	2.7 %	15	20.3 %	19	25.7 %	22	29.7 %	16	21.6 %		
	moderate	12	9.9 %	3	2.5 %	24	19.8 %	12	9.9 %	70	57.9 %		
	Poor	0	0.0 %	0	0.0 %	2	33.3 %	0	0.0 %	4	66.7 %		

The study established highly significant association between extremely severe Depression and insufficient income, poor marital life satisfaction and poor spouse support (table 7).

Table 8: Association of Socio-demographic characteristics with Anxiety:

Socio-demographic Characteristics		**Anxiety**										**chi sq**	**p-value**
		Normal		**Mild**		**Moderate**		**Severe**		**Extremely Severe**			
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		
Setting	Urban	12	10.7 %	6	5.4%	12	10.7 %	12	10.7 %	70	62.5%	12.50	**0.014**
	Rural	2	1.9%	3	2.8%	24	22.2 %	9	8.3%	70	64.8%		
Type of family	Nuclear	10	7.9%	2	1.6%	12	9.4%	15	11.8 %	88	69.3%	17.63	**0.001**
	joint	4	4.3%	7	7.5%	24	25.8 %	6	6.5%	52	55.9%		
Religion	hindu	2	4.3%	5	10.9 %	3	6.5%	6	13.0 %	30	65.2%	11.12	**0.025**
	muslim	12	6.9%	4	2.3%	33	19.0 %	15	8.6%	110	63.2%		
	other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
Social class	class 1	2	5.0%	2	5.0%	9	22.5 %	3	7.5%	24	60.0%	24.17	0.086
	class 2	6	7.6%	4	5.1%	15	19.0 %	12	15.2 %	42	53.2%		
	class 3	6	12.2 %	3	6.1%	3	6.1%	3	6.1%	34	69.4%		
	class 4	0	0.0%	0	0.0%	6	18.8 %	0	0.0%	26	81.3%		
	class 5	0	0.0%	0	0.0%	3	15.0 %	3	15.0 %	14	70.0%		
Age at marriage	<18	0	0.0%	0	0.0%	15	25.9 %	3	5.2%	40	69.0%	15.83	**0.045**
	18-30	14	8.8%	9	5.6%	21	13.1 %	18	11.3 %	98	61.3%		
	30-40	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0 %		
	>40	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
no. of	0	0	0.0%	0	0.0%	3	33.3	0	0.0%	6	66.7%	15.9	0.19

living children							%					7	3
	1	4	4.2%	4	4.2%	15	15.6 %	15	15.6 %	58	60.4%		
	2	6	12.2 %	2	4.1%	9	18.4 %	0	0.0%	32	65.3%		
	=/>3	4	6.1%	3	4.5%	9	13.6 %	6	9.1%	44	66.7%		

On observation of study results, significant association was found between place, type of family and age of marriage with anxiety (table 8).

Table 9: Association of Occupation and Educational status with Anxiety:

Characteristics		Anxiety										chi sq	p-value
		Normal		Mild		Moderate		Severe		Extremely Severe			
		No.	%	No.	%	No.	%	No.	%	No.	%		
Education of RDW	Illiterate	2	3.3%	5	8.2%	6	9.8%	6	9.8%	42	68.9%	95.06	**<0.001**
	just literate	0	0.0%	0	0.0%	24	44.4 %	6	11.1 %	24	44.4%		
	Primary	2	11.1 %	0	0.0%	3	16.7 %	3	16.7 %	10	55.6%		
	Middle	2	11.1 %	2	11.1 %	0	0.0%	6	33.3 %	8	44.4%		
	high school	0	0.0%	2	10.5 %	3	15.8 %	0	0.0%	14	73.7%		
	Intermediate	2	16.7 %	0	0.0%	0	0.0%	0	0.0%	10	83.3%		
	Graduate	2	9.1%	0	0.0%	0	0.0%	0	0.0%	20	90.9%		
	Postgraduate	4	25.0 %	0	0.0%	0	0.0%	0	0.0%	12	75.0%		
Occupation of RDW	housewife	12	6.5%	9	4.9%	36	19.5 %	18	9.7%	110	59.5%	35.49	0.156
	Unemployed	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0%		
	Unskilled	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%		
	semi-skilled	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	100.0%		
	Skilled	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	100.0%		
	clerical / shop owner/ farmer	0	0.0%	0	0.0%	0	0.0%	3	33.3 %	6	66.7%		
	semi professional	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	100.0%		
	Professional	2	50.0 %	0	0.0%	0	0.0%	0	0.0%	2	50.0%		
Education of husband	illiterate	0	0.0%	3	11.1 %	3	11.1 %	3	11.1 %	18	66.7%	87.00	**<0.001**
	just literate	0	0.0%	0	0.0%	3	7.7%	6	15.4 %	30	76.9%		
	primary	0	0.0%	0	0.0%	3	20.0 %	0	0.0%	12	80.0%		
	middle	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%		
	high school	2	7.7%	2	7.7%	0	0.0%	6	23.1 %	16	61.5%		
	Intermediate	4	7.1%	4	7.1%	24	42.9 %	6	10.7 %	18	32.1%		

	graduate	4	13.8 %	0	0.0%	3	10.3 %	0	0.0%	22	75.9%		
	Postgraduate	4	20.0 %	0	0.0%	0	0.0%	0	0.0%	16	80.0%		
Occupation of Husband	Unemployed	0	0.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%	52.66	**0.001**
	Unskilled	2	6.7%	4	13.3 %	6	20.0 %	0	0.0%	18	60.0%		
	semi skilled	2	3.5%	3	5.3%	18	31.6 %	6	10.5 %	28	49.1%		
	Skilled	0	0.0%	0	0.0%	3	11.1 %	6	22.2 %	18	66.7%		
	clerical/ shop owner/ farmer	6	10.0 %	2	3.3%	9	15.0 %	9	15.0 %	34	56.7%		
	semi-professional	2	9.1%	0	0.0%	0	0.0%	0	0.0%	20	90.9%		
	Professional	2	11.1 %	0	0.0%	0	0.0%	0	0.0%	16	88.9%		

Significant association was also found between educational status of participants, their husband and the occupation of their husband with anxiety (table 9).

Table 10: Association of Marital Life status and satisfaction with Anxiety:

Characteristics		**Anxiety**										**chi sq**	**p-value**
		Normal		**Mild**		**Moderate**		**Severe**		**Extremely Severe**			
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**		
Sufficiency of income	completely sufficient	0	0.0%	3	23.1 %	6	46.2 %	0	0.0%	4	30.8%	29.75	**<0.001**
	fairly sufficient	14	8.5%	4	2.4%	24	14.6 %	18	11.0 %	104	63.4%		
	Insufficient	0	0.0%	2	4.7%	6	14.0 %	3	7.0%	32	74.4%		
Marital life satisfaction	extremely high	6	46.2 %	5	38.5 %	0	0.0%	0	0.0%	2	15.4%	135.92	**<0.001**
	High	6	9.5%	4	6.3%	24	38.1 %	9	14.3 %	20	31.7%		
	moderate	2	1.5%	0	0.0%	12	8.8%	12	8.8%	110	80.9%		
	Poor	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%		
Spouse support	extremely high	6	31.6 %	3	15.8 %	3	15.8 %	3	15.8 %	4	21.1%	44.76	**<0.001**
	High	0	0.0%	2	2.7%	18	24.3 %	6	8.1%	48	64.9%		
	Moderate	8	6.6%	4	3.3%	15	12.4 %	12	9.9%	82	67.8%		
	Poor	0	0.0%	0	0.0%	0	0.0%	0	0.0%	6	100.0%		

In table 10, sufficiency of income, marital life satisfaction and spouse support all three were found significantly associated with anxiety.

Table 11: Association of Socio-demographic Characteristics with Stress:

Socio-demographic Characteristics		Stress										chi sq	p-value
		Normal		Mild		Moderate		Severe		Extremely Severe			
		No.	%	No.	%	No.	%	No.	%	No.	%		
Setting	Urban	30	26.8 %	12	10.7 %	22	19.6 %	26	23.2 %	22	19.6%	8.34	0.080
	Rural	29	26.9 %	9	8.3%	10	9.3%	24	22.2 %	36	33.3%		
Type of family	Nuclear	24	18.9 %	15	11.8 %	20	15.7 %	36	28.3 %	32	25.2%	13.27	0.010
	Joint	35	37.6 %	6	6.5%	12	12.9 %	14	15.1 %	26	28.0%		
Religion	Hindu	10	21.7 %	6	13.0 %	10	21.7 %	6	13.0 %	14	30.4%	6.14	0.189
	Muslim	49	28.2 %	15	8.6%	22	12.6 %	44	25.3 %	44	25.3%		
	Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
Social class	class 1	13	32.5 %	3	7.5%	10	25.0 %	12	30.0 %	2	5.0%	38.26	**0.001**
	class 2	25	31.6 %	12	15.2 %	12	15.2 %	10	12.7 %	20	25.3%		
	class 3	12	24.5 %	3	6.1%	4	8.2%	10	20.4 %	20	40.8%		
	class 4	6	18.8 %	0	0.0%	6	18.8 %	12	37.5 %	8	25.0%		
	class 5	3	15.0 %	3	15.0 %	0	0.0%	6	30.0 %	8	40.0%		
Age at marriage	<18	15	25.9 %	3	5.2%	6	10.3 %	18	31.0 %	16	27.6%	10.74	0.217
	18-30	44	27.5 %	18	11.3 %	26	16.3 %	32	20.0 %	40	25.0%		
	30-40	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	100.0 %		
	>40	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%		
no. of living children	0	3	33.3 %	0	0.0%	2	22.2 %	2	22.2 %	2	22.2%	41.10	**<0.001**
	1	23	24.0 %	15	15.6 %	24	25.0 %	16	16.7 %	18	18.8%		
	2	17	34.7 %	0	0.0%	4	8.2%	18	36.7 %	10	20.4%		
	=/>3	16	24.2 %	6	9.1%	2	3.0%	14	21.2 %	28	42.4%		

The present study found significant association of social class and no.of children with stress (table 11).

Table 12: Association of Occupation and Educational status with Stress:

Characteristics		Stress										chi sq	p-value
		Normal		Mild		Moderate		Severe		Extremely Severe			
		No.	%	No.	%	No.	%	No.	%	No.	%		
Education of RDW	Illiterate	13	21.3 %	6	9.8 %	4	6.6 %	18	29.5 %	20	32.8%	90.80	**<0.001**
	just literate	24	44.4 %	6	11.1 %	6	11.1 %	6	11.1 %	12	22.2%		
	Primary	5	27.8 %	3	16.7 %	0	0.0 %	6	33.3 %	4	22.2%		

	Middle	4	22.2 %	6	33.3 %	0	0.0 %	2	11.1 %	6	33.3%		
	high school	5	26.3 %	0	0.0 %	2	10.5 %	6	31.6 %	6	31.6%		
	Intermediate	2	16.7 %	0	0.0 %	6	50.0 %	0	0.0%	4	33.3%		
	Graduate	2	9.1 %	0	0.0 %	12	54.5 %	4	18.2 %	4	18.2%		
	Postgraduate	4	25.0 %	0	0.0 %	2	12.5 %	8	50.0 %	2	12.5%		
Occupation of RDW	housewife	57	30.8 %	18	9.7 %	26	14.1 %	48	25.9 %	36	19.5%	82.39	**<0.001**
	Unemployed	0	0.0 %	0	0.0 %	0	0.0 %	2	100.0 %	0	0.0%		
	Unskilled	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0%	8	100.0%		
	semi-skilled	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0%	4	100.0%		
	Skilled	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0%	4	100.0%		
	clerical / shop owner/ farmer	0	0.0 %	3	33.3 %	4	44.4 %	0	0.0%	2	22.2%		
	semi professional	0	0.0 %	0	0.0 %	2	50.0 %	0	0.0%	2	50.0%		
	Professional	2	50.0 %	0	0.0 %	0	0.0 %	0	0.0%	2	50.0%		
Education of husband	Illiterate	6	22.2 %	3	11.1 %	0	0.0 %	10	37.0 %	8	29.6%	98.70	**<0.001**
	just literate	3	7.7 %	6	15.4 %	8	20.5 %	6	15.4 %	16	41.0%		
	Primary	3	20.0 %	0	0.0 %	0	0.0 %	8	53.3 %	4	26.7%		
	Middle	0	0.0 %	0	0.0 %	0	0.0 %	4	50.0 %	4	50.0%		
	high school	4	15.4 %	6	23.1 %	4	15.4 %	0	0.0%	12	46.2%		
	Intermediate	32	57.1 %	6	10.7 %	6	10.7 %	6	10.7 %	6	10.7%		
	Graduate	7	24.1 %	0	0.0 %	8	27.6 %	8	27.6 %	6	20.7%		
	Postgraduate	4	20.0 %	0	0.0 %	6	30.0 %	8	40.0 %	2	10.0%		
Occupation of Husband	Unemployed	0	0.0 %	0	0.0 %	0	0.0 %	2	33.3 %	4	66.7%	60.40	**<0.001**
	Unskilled	12	40.0 %	0	0.0 %	4	13.3 %	12	40.0 %	2	6.7%		
	semi skilled	23	40.4 %	6	10.5 %	6	10.5 %	10	17.5 %	12	21.1%		
	Skilled	3	11.1 %	6	22.2 %	4	14.8 %	6	22.2 %	8	29.6%		
	clerical/ shop owner/ farmer	17	28.3 %	9	15.0 %	6	10.0 %	6	10.0 %	22	36.7%		
	semi-professio	2	9.1 %	0	0.0 %	6	27.3 %	8	36.4 %	6	27.3%		

	nal												
	Professional	2	11.1%	0	0.0%	6	33.3%	6	33.3%	4	22.2%		

On the assessment of education and occupational status of candidate and their husband all of them were found significantly associated with stress (table 12).

Table 13: Association of Marital Life status and satisfaction with Stress:

Characteristics		Stress										chi sq	p-value
		Normal		Mild		Moderate		Severe		Extremely Severe			
		No.	%	No.	%	No.	%	No.	%	No.	%		
Sufficiency of income	completely sufficient	9	69.2%	0	0.0%	0	0.0%	2	15.4%	2	15.4%	27.45	**0.001**
	fairly sufficient	42	25.6%	18	11.0%	30	18.3%	30	18.3%	44	26.8%		
	Insufficient	8	18.6%	3	7.0%	2	4.7%	18	41.9%	12	27.9%		
Marital life satisfaction	extremely high	11	84.6%	0	0.0%	0	0.0%	0	0.0%	2	15.4%	105.05	**<0.001**
	High	34	54.0%	9	14.3%	12	19.0%	4	6.3%	4	6.3%		
	Moderate	14	10.3%	12	8.8%	20	14.7%	46	33.8%	44	32.4%		
	Poor	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	100.0%		
Spouse support	extremely high	12	63.2%	3	15.8%	0	0.0%	0	0.0%	4	21.1%	62.70	**<0.001**
	High	20	27.0%	6	8.1%	24	32.4%	16	21.6%	8	10.8%		
	Moderate	27	22.3%	12	9.9%	6	5.0%	34	28.1%	42	34.7%		
	Poor	0	0.0%	0	0.0%	2	33.3%	0	0.0%	4	66.7%		

The above table shows significant association of stress with sufficiency of income, marital life satisfaction and spouse support (table 13).

Discussion

The present study was conducted on 220 pregnant females for the assessment of their mental health during the time of Covid-19 pandemic. With the help of DASS-21 tool the assessment was done for Depression, Anxiety and stress in the participants. Pregnant women are known to be more vulnerable to psychological instability and stress, according to a number of studies. Pregnancy could thereby enhance the already adverse consequences of the present COVID-19 epidemic.The results revealed During Covid 19 pandemic, very poor mental health was observed among pregnant women. Among them very severe depression, anxiety and stress was found in 42.7%, 63.6% and 26.4% cases respectively while severe level of depression, anxiety and stress was found in 15.5%, 9.5% and 22.7% cases respectively.**Effati-Daryani F et al.[14]**quoted in his study in Iran "The mean (SD) score of depression, stress, and anxiety were 3.91 (3.9), 6.22 (4.25), and 3.79 (3.39), respectively; the score range of 0 to 21. Depression, stress, and anxiety symptoms were observed in 32.7, 32.7, and 43.9% of the participants, respectively, with varying degrees from mild to very severe".[14] In an online survery conducted by **Khoury JE et al.**[11] stated "57% of the sample reported clinically elevated depression, >30% reported elevated worries, and 19% reported elevated insomnia. Depression ($t = 25.14$, $p < .0001$) and anxiety ($t = 17.21$, $p < .0001$) levels were higher than non-COVID pregnant samples".[11]**Ayaz R et al.[13]** reported"The mean total IDAS II score was found to increase from 184.8±49.8 (109–308) pre-pandemic to 202.6±52.9 (104–329) during the SARS-CoV-2 pandemic, the difference in anxiety and depression of participating patients between the periods was statistically significant ($p<0.001$)".[12]Significant association of depression was found with place ($p<0.001$), social class ($p<0.001$), age at marriage ($p<0.001$), no of living children ($p<0.001$), education of RDW ($p<0.001$), occupation of RDW ($p=0.021$), education of husband ($p<0.001$), occupation of

husband (p<0.001), sufficiency of income (p=0.001), marital life satisfaction (p<0.001) and spouse support (p<0.001). **Effati-Daryani F et al.[14]**cited "Based on the adjusted general linear model, variables of education level, spouse's job and marital life satisfaction were the predictors of depressive symptoms. Variables of spouse's education level, spouse's support, marital life satisfaction and the number of pregnancies were the predictive factors of anxiety symptoms and the variables of spouse's education level, household incme sufficiency, spouse's support and marital life satisfaction were predictors of stress symptoms".[14]Significant association of anxiety was found with type of family (p=0.001), marriage age (p=0.045), education of RDW (p<0.001), education of husband (p<0.001), occupation of husband (p=0.001), sufficiency of income (p<0.001), marital life satisfaction (p<0.001) and spouse support (p<0.001). Significant association of stress was found with social class (p=0.001), no of living children (p<0.001), education of RDW (p<0.001), occupation of RDW (p<0.001), education of husband (p<0.001), occupation of husband (p<0.001),sufficiency of income (p=0.001), marital life satisfaction (p<0.001) and spouse support (p<0.001). **Lin W et al. [11]** published in his study conducted in China "It was observed that 62.7% and 71.4% of the participants got strong supports from their husbands and family members, respectively. Among these women, lower prevalence of anxiety and depression symptoms was showed than those receiving weak or moderate supports (all P < 0.001)".[11] **Khoury JE et al.**[10] has also reported "Social isolation, financial trouble, relationship difficulties and threat of COVID-19 were associated with mental health. Social support (rrange − .24 to − .38, p < .05), such that higher social support acted as a protective factor, particularly for those who appraise the impact of COVID-19 to be more negative."[10]. **Moyer CA et al.[13]** foundthe interaction term is significant for women with less education than a high school degree, indicating that these women are more affected by anxiety over losing their jobs or their jobs in general in his study [13]It appears that using strategies to promote marital life satisfaction and socioeconomic status can play an effective role in controlling anxiety and reducing stress and depression in pregnant women. Given the role of marital life satisfaction, high level of spouse's education, and income in reducing symptoms of stress, anxiety, and depression in pregnant women in critical situations like the prevalence of COVID-19.

Conclusions & Recommendation: During the COVID-19 epidemic, we noticed considerably greater instances of maternal depression and anxiety. According to this study, the COVID-19 outbreak severely impacts pregnant women's mental health, which has a detrimental impact on the outcome of their babies' delivery. Pregnant women experienced significantly more anxiety and depressive symptoms throughout the COVID-19 infection. To minimise mental trauma during infectious disease outbreaks, healthcare providers should formulate appropriate treatment strategies for pregnant women who are a highly vulnerable group. The results of this study indicate that screening and evidence-based therapies for depression and anxiety in pregnancy are still necessary. It is essential to continue keeping an eye on mother, family, and child outcomes that are connected to these alarming increases in depression and anxiety, as well as health care system-wide monitoring of birth outcomes and postpartum mood in parents.

Strength and Limitations of the study

According to the available information the study is one of its own to find out the depression, stress and anxiety of pregnant females and associated factors during pandemic in Lucknow, Uttar Pradesh. Since it was a community based study, the random sampling of the participants was another strength of the study. Conducting face to face survey is also another strength of the study which gives good level of perception in making the participants understand and obtaining accurate results from them. One of the limitation is that study is cross-sectional means that it cannot correctly reflect the causal association between socio-demographic factors and symptoms of stress, sadness, and anxiety. For more precise information prolong studies are needed which can follow up the mental health status of participants.

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