ORIGINAL ARTICLE

Impact of COVID-19 on mental health of pregnant women in Punjab, Pakistan

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ABSTRACT

Background: Maternal depression and anxiety can predispose the women to higher risk of complications. The COVID-19 pandemic is a unique stressor which may affect the mental and psychological well-being of pregnant women.
Aim: To determine prevalence of depression and anxiety and related factors in pregnant women during COVID-19.
Methods: This multicenter analytical cross-sectional study was carried out from August 2021 to December 2021 in six cities of Pakistan. Two stage sampling technique was used to include sample of 400 pregnant women. Patient Health Questionnaire-9 (PHQ-9) and Corona virus Anxiety Scale (CAS) were used to measure depression and anxiety level along with self-constructed questionnaire to record socio-demographic profile. Data entry and analysis was done in SPSS version 23. Association between variables was assessed by applying Chi square test and strength of association was measured by binary logistic regression. p-value ≤ 0.05 was taken as statistically significant.
Results: Mean age of participants was 27.25±5.22 years. The mean gestational age was 23.5±9.6 weeks. About 37.1% had mild depression. Moderate depression was found in 7.8% and moderately severe depression in 0.5% participants. Significant association was found between depression and no physical activity (p value=0.02), not having spouse support (p value=0.03), perceived vulnerability to get COVID (p value=0.004) and fear of infection to baby (p value=0.05). Only 3.25% participants had dysfunctional anxiety.
Conclusion: Findings of the study would be helpful for policy makers to launch health awareness campaigns about regular physical activity, role of social support and seeking medical advice for mental well-being during pregnancy.
Keywords: COVID-19, Anxiety, Depression, Mental health, Pregnancy

INTRODUCTION

COVID-19 not only pose risks to physical health but also has impact on mental health of the human beings.[1] Physiological, hormonal and temperament changes occurring in pregnancy may affect the mental wellbeing resulting in depression and anxiety in the pregnant mother[2]. Besides the pregnancy related psychological challenges, there are some risk factors which may lead to the elevated levels of anxiety and depression[3]. Pregnant women are emotionally vulnerable to suffer from psychological impacts of catastrophic events too[2].

Some factors contribute in increasing the anxiety and depression, thus adversely affecting the health of pregnant women and developing fetuses. Social restrictions which prevent the close interaction with relatives, friends and family increase stress, anxiety and depression level in people's lives[4]. Mandatory contact tracing and fourteen days quarantine during this period may result in feelings of being isolated, anxiety, and depression[5]. Pregnant women need to receive regular care from obstetric services and predisposes them to the risk of infection.

A systematic review described that prevalence of maternal anxiety in Asian countries during the COVID-19 outbreak ranged between 3.8 to 17.5%. Lowest (3.8%) was observed in Iran and the highest (17.5%) in Sri Lanka[6]. While in western countries, prevalence of anxiety was the lowest in the United States (23.9%) and highest (72%) in Canada[7]. According to a study conducted in China, pregnant women had significantly higher rates of depressive symptoms (29.6%) during pandemic as compared to women assessed before the pandemic (26%)[8]. A similar study conducted in Karachi revealed that all women showed various degree of depression ranging from minimum depression (23.2%), mild (23.4%), moderate (21.1%), moderately severe (14.5%) and severe depression (17.8%). Mild anxiety was found in 27% respondents while 20% had moderate and 21.9% had severe anxiety[9].

Depression leads to poor physical health and negatively affects the quality of life. Elevated level of anxiety result in adverse

maternal and fetal outcomes like low birth weight, intra uterine growth retardation, preeclampsia, preterm labor, miscarriage or post-natal depression[10]. Providing social support during the pandemic, appropriate communication and counseling by health care provider are particularly beneficial for promotion of mental health of pregnant women and well-being of developing baby.

Timely recognition of the psychological problems in pregnant women and analysis of related factors is essential to determine the impact of COVID- 19. Targeted psychological interventions must be applied to improve the mental state of mothers and to prevent unwanted complications.

The present study aimed to assess the prevalence of anxiety and depression with associated factors in pregnant women during the novel corona virus pandemic.

MATERIALS & METHODS

This analytical cross-sectional study was conducted in Gynae Obstetric department of Farooq Hospital West Wood Lahore, Akhtar Saeed Trust Hospital Lahore, Khurram Hospital Vehari, Sophia Clinic Rahim Yar Khan, Hawwa Memorial Hospital Wazirabad, DHQ Hospital Sahiwal, THQ Hospital Muridke and Family Health Hospital Johar Town Lahore from August 2021 to December 2021. Ethical approval was granted by institutional review board of Akhtar Saeed Medical College (IRB no M-21/065/CM-27).

Raosoft sample size calculator was used to estimate sample size. Keeping 5% margin of error and 95% confidence level, a sample size of 377 was calculated. After rounding off, 400 participants were included in the study using two stage sampling technique. At first stage city was selected by simple random sampling by computer generated numbers. In second stage hospital was selected by simple random sampling by lottery method. Pregnant females aged 18-49 years irrespective of number of conceptions, having a healthy pregnancy and willing to participate were included. Females > 49 years or <18 years of age, those who had history of mental illness/obstetric complications and who did not give consent were excluded.

Demographic data was collected on a self-structured pre-tested questionnaire and validated questionnaires i.e., PHQ-9 and CAS were used to assess state of depression and anxiety[11,12].

PHQ-9 is comprised of nine items describing the depressive symptoms over the last two weeks with four choices corresponding to 0, 1, 2 and 3 score. Total score ranging from 1-4 signifies minimal or no depression. Mild depression is interpreted by (5-9) score, moderate depression by (10-14) score, moderately severe depression by (15-19) score and severe depression by (20-27) score. In this study, depression was categorized as minimal to mild depression (PHQ-9 score <10) and moderate to severe depression (PHQ-9 score ≥ 10).

The coronavirus anxiety scale (CAS) is a screening tool to identify dysfunctional anxiety related to corona virus pandemic. Assessment of every item of CAS is done on Likert scale, 0 (not at all), 1 (rare or less than a day or two), 2 (several days), 3 (more than 7 days) to 4 (nearly every day), indicating experience in last two weeks. Cumulative score ≥9 indicates probability of having dysfunctional anxiety.

Descriptive statistics like frequency and percentages was used for qualitative variables. Mean and standard deviations was calculated for quantitative variable. SPSS version 23 was used for data analysis. Chi square test was used to find association and multivariate binary logistic regression was applied to measure strength of association and to control potential confounders. Back elimination method of binary logistic regression was applied to find out significant predictors. p value ≤0.05 was labelled as significant.

RESULTS

Mean age of participants was 27.25±5.22 years. The mean gestational age was 23.5±9.6 weeks. Out of 400 participants, 84(21%) were primigravida. Most of the participants (58.25%) were urban residents. Among total participants, 353(88.3%) pregnant women were housewives while rest 47(11.7%) were working women. About two third respondents (66.8%) were living in joint or extended families. The monthly family income ranged from 10,000 to 500,000. About 178(44.5%) participants were not used to do regular exercise or physical activity. Table 1 describes the socio-demographic details.

In total, 279(69.8%) regularly visited the hospital for their ante-natal checkups during the pandemic and 63(15.8%) participants thought that they are vulnerable to get COVID-19. Moreover, 164(41%) women had knowledge about the effects of COVID- 19 on pregnancy. About 76(19%) women had been in complete isolation during their pregnancies. A significant percentage of respondents, 43(10.8%) had any family member infected or exposed to corona virus. About one third participants, 141(35.3%) were worried about getting prenatal care during the current pandemic. Majority of study participant, 189(47.3%) faced financial problems during the pandemic. Mean score of PHQ-9 scale was 4.46 ± 0.65. Among total respondents, 181(45.4%) have varying degree of depression (Figure 1).

Statistically significant association was observed between level of depression and no physical activity, not having husband's support, perceived vulnerability of COVID-19 and fear of infection to baby (Table 2).

Further analysis was done to find out strength of association. Binary logistic regression was applied. Significant association was observed between depression level and no of pregnancies, physical activity, type of family and fear that newborn baby might get infected (Table 3)

Table 1: Sociodemographic characteristics of respondents

Variable	Frequency (n)	%age
Age		
18-25 years	148	37
26-30 years	146	36.5
31-35 years	83	20.75
36 -49 years	23	5.75
Area of residence		
Urban	233	58.25
Rural	167	41.75
Monthly income		
Less than 50000 per month	325	81.25
50000-100000 per month	66	16.5
More than 100000 per month	9	2.25
Employment status during pregnancy		
House wives	47	88.25
Working women	353	11.75
Education		
Illiterate	88	22
Primary	86	21.5
Matric	121	30.3
Graduate or above	105	26.3
Living with Spouse		
Yes	367	91.8
No	33	8.2
Duration of pregnancy		
1st trimester	66	16.5
2nd trimester	167	41.8
3rd trimester	167	41.8

Figure 1: Level of depression in study participants
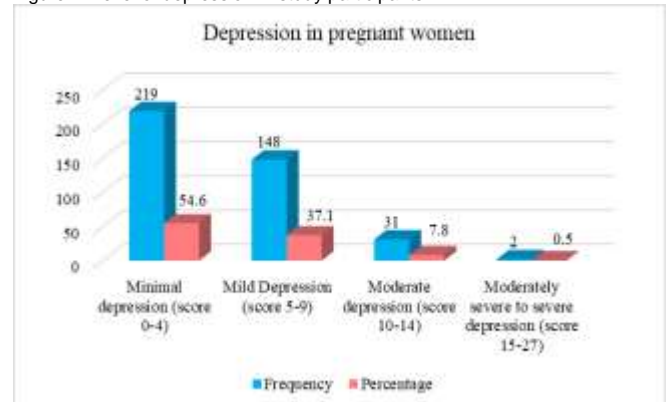
Among total 400 participants, 13(3.25%) participants had dysfunctional anxiety. Mean CAS score were 1.6 ±2.4. Women in first trimester of pregnancy had the higher mean scores. Those females who were well informed about effect of corona virus infection on pregnancy had greater CAS score (Table 4).

Table 2: Bivariate analysis of depression among pregnant women

Variables	Score 0-9 (minimal to mild depression) n(%)	Score ≥ 10 (moderate to severe depression) n(%)	Total n(100%)	p value
No of pregnancies				0.24
Primigravida	79 (94)	5(5.9)	84	
Second, third or 4th gravida	239(92.3)	20(7.7)	259	
5th or more	49(85.9)	8(14)	57	
Age				0.43
18-25 years	136(91.9)	12(8.1)	148	
26-30 years	135(92.5)	11(7.5)	146	
31-35 years	77(92.8)	6(7.2)	83	
36-49 years	19(82.6)	4(17.4)	23	
Duration of Pregnancy				0.54
First trimester	59(89.4)	7(10.6)	66	
Second trimester	156(93.4)	11(6.6)	167	

Third trimester	152(91)	15(8.9)	167	
Regular Physical Activity				**0.02**
Yes	210(94.5)	12(5.4)	222	
No	157(88.2)	21(11.8)	178	
Spouse support				**0.03**
Yes	340(92.6)	27(7.4)	367	
No	27(81.8)	6(18.2)	33	
Perceived vulnerability of COVID				**0.004**
Yes	52(82.5)	11(17.5)	63	
No	315(93.5)	22(6.5)	337	
Concerns about getting pre-natal care				0.09
Yes	125(88.7)	16(11.3)	141	
No	242(93.5)	17(6.6)	259	
Financial problems during pandemic				0.56
Yes	175(92.6)	14(7.4)	189	
No	192(90.9)	19(9)	211	
Remained in isolation during this pregnancy				0.42
Yes	68(43.3)	89(56.6)	157	
No	299(92.3)	25(7.7)	324	
Fear that baby might get infected after birth				**0.05**
Yes	146(88.4)	19(11.5)	165	
No	221(94)	14(5.95)	235	

Table 3: Multivariate analysis

Variable	β- Coeff	S.E	Sig	Odd's ratio	95% Confidence Interval	
					Lower limit	Upper limit
No of pregnancies	1.349	.523	.01	3.854	1.383	10.743
Physical activity	-.934	.390	.017	.393	.183	.845
Type of family	-.957	.472	.043	.384	.152	.968
Fear that newborn baby might get infected	-.816	.382	.033	.442	.209	.396

Table 4: Level of anxiety of study participants

	Mean CAS Scores	St. Deviation
Duration of pregnancy		
First trimester	1.86	2.7
Second trimester	1.71	2.4
Third trimester	1.38	2.2
Information about effect of COVID-19 on pregnancy		
Well informed	1.89	2.3
Not informed	1.38	2.4

DISCUSSION

Pregnancy is a most crucial period of a woman's life and various factors may affect psychological state of pregnant women. This study showed that a high proportion of participants (44.9%) had depression including 37.1% suffering from mild, 7.8% from moderate and 0.5% from moderately severe depression. These findings suggest urgent need of psychosocial support to this vulnerable group during the crisis. In a study carried out by Sun F et al prevalence of depression among pregnant women was found to be 30%[13]. In another study conducted in Qatar, among 39.2% women who had depression, 21.5% women had mild depression, 11.5% had moderate depression, 5.2% had moderately severe and 1% had severe depression[14].

The current study described young women were less prone to develop depression. However no significant association was found between maternal age and level of depression. These findings are in accordance with research conducted in United States which showed that low levels of depression were found in older age group of pregnant women[15].

This study showed that depression symptoms were less marked in primigravida and multi gravida (5 or more pregnancies) have maximum frequency of developing depression. These findings are similar to a study carried out in Nigeria which revealed multiparity was a predictor of depression[16].

Findings of this study reflected higher level of depression was observed in women who were in first trimester of pregnancy. Another study conducted by Mei H et al. showed the similar findings. Significant difference was not found in depression rates between the three trimesters[17].

The role of regular physical activity is considered very important in relation to maternal depression. According to results of the study, depression was more likely to occur in pregnant women who did not do regular physical activity. Similarly, a study in China found that physical activity was negatively associated with depression in pregnant women[18].

In current study low level of depression was found in those participants who got the support of their husbands and family members. Researchers in a study conducted at China described that higher level of perceived family support was negatively correlated with depressive symptoms[19].

A significant percentage of respondents (47%) reported that they faced financial difficulty but it was not significantly associated with depression. About 43% pregnant women living in the United States reported COVID-19-related financial problems increase the risk of developing depression. The reason of this difference could be high maternity care costs in USA and non-affordability due prolonged lockdown[20].

Social isolation is considered as an important measure to control the spread of COVID-19. Quarantine has been reported as extremely uncomfortable experience. In this study, higher scores of PHQ-9 were observed among those women who remained in isolation during their pregnancies. Researchers in Ontario, Canada described, pregnant women who remained in social isolation were more likely to develop depressive symptoms during the current pandemic[21].

The concern about getting pre-natal care, reported by 45.4% participants, demonstrated significant effects on depression in current study. In research conducted at Ankara Turkey, majority of respondents (51.5%) were found to be worried that they might not be able to get the obstetric care during pandemic[22].

Majority of women expressed perceived vulnerability to get COVID 19. Frequency of depression was high among those women who had this feeling. Similarly in New York, many pregnant women expressed that they might get infected during hospital visits for ante-natal check-ups[23].

Fetal well-being is always an important maternal concern. Women expressed their worries about risk of infection to baby after being born and this concern was significantly associated with high depression level. Similar findings were revealed by a study conducted in Canada. Odds for clinically elevated depression increased in perceived risk to baby due to pandemic[24].

In this study 13(3.25%) participants had dysfunctional anxiety. Najam R, et al. in their study in India described that dysfunctional anxiety was found in 18.3% of antenatal women and 14.6% of postnatal women. This difference is due to different study settings[25].

Awareness campaigns by mass media and health care systems need to explicitly address the effect of COVID-19 related stressors on mental health in pregnant women. Along with timely screening of mental health issues, prevention of risk factors should be part of intervention strategies for pregnant women.

CONCLUSION

COVID-19 has produced the marked effect on mental health of pregnant women. Mild depression was found in 37.1% while moderate depression in 7.8% and severe depression in 0.5% participants. Statistically significant association was found between depression and no physical activity, not having support of spouse, perceived risk of getting COVID-19 and fear that baby might get infected after birth. Only 13(3.25%) participants had dysfunctional anxiety.

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