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Original Research Article

Pregnant Women's Mental Health Status and its Related Factors Amidst COVID-19: A Cross-Sectional Study

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ABSTRACT

Introduction: Since the emergence of COVID-19 pandemic, it has challenged the psychological aspect of everyone. Pregnant women being the vulnerable group are most likely to be at increased risk. This study aimed to assess the mental health status of the pregnant women residing in Nepal during COVID-19. **Methods*:*** A cross-sectional online study was carried out among 368 pregnant women during lockdown using Perceived stress scale-10, Generalized Anxiety Disorder-7 scale and Edinburg Perinatal Depression Scale. Data were analyzed using descriptive and inferential statistics. **Results*:*** The mean age of the participants was 27.06±4.64years. Getting infected with the virus (71.7%) was the major fear and inadequate antenatal checkup (61.1%) was the major effect experienced by the participants. The prevalence of stress, anxiety and depression was 41%, 28.5% and 33.2% respectively. Age, salary status of oneself and their husband, healthcare frontliner in the family and effect of social distancing were significantly associated with perceived stress. Age, education, employment, monthly income, trimester and effect of social distancing were significantly associated with anxiety. Salary status of husband, trimester, parity, being infected with COVID-19 and effect of social distancing were associated with depression. **Conclusion*:*** High prevalence of mental health disorders during COVID-19 outbreak suggests the importance of special attention on monitoring the maternal mental health status during such public health emergencies. Measures such as awareness program targeted to pregnant women and health education programs on how to cope during the pandemic situations should be made effective to rule down the mental health burden of COVID-19.

Keywords: Anxiety; COVID-19; Depression; Pregnant women; Stress

INTRODUCTION:

With the emergence of CoronaVirus Disease 2019 (COVID-19), the world got desperately frazzled. The pandemic affected not only the physical but also the mental aspects. A study related to the COVID-19 pandemic reported that women had a higher prevalence of mental health disorders than men.[1] In this scenario, the high-risk groups; pregnant women and postpartum mothers could undoubtedly be more susceptible to acquire mental health problems. Pregnancy is usually a joyful time for most women, but it brings many negative emotions in a few of them. These emotions sometimes put pregnant women at risk of developing anxiety and depression.[2] As the World Health Organization (WHO) states, "*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 risks for specific mental health disorders*."[3] Therefore, pregnant

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women may be more in danger of developing mental illness in the COVID-19 pandemic.

The focus of the recent studies on pregnancies during the COVID-19 pandemic has been mainly on therapeutic aspects. Mental health and psychological needs are mentioned barely.[4,5] It is thus high time to recognize the possibility of a negative impact caused by the pandemic. Necessary planning of the proper care to prevent any adverse effects has to be developed beforehand. Mental health issues in this pandemic have to be considered as one of the critical public health concerns.[3] To manage the mental health consequences, it is first essential to identify the mental health status of pregnant women during this pandemic period. Therefore, with this background, the researchers were interested in conducting this study to assess the mental health status of pregnant women and analyze the factors affecting their mental health status during the COVID-19 pandemic.

METHODS:

A descriptive cross-sectional study was conducted (August-2020 to January-2021) among pregnant women residing in Nepal. Data was collected through an online survey as the people were advised to stay at home during the COVID-19 outbreak. Ethical clearance was obtained from the Institutional Review Committee of College of Medical Sciences-Teaching Hospital (COMSTH-IRC), Bharatpur-10 (Ref. no. 2020-082).

The required sample size for the study was calculated using the formula, $n=Z^2PQ/d^2$ based on a study conducted in China where the prevalence of poor mental health was 31.12%.[6] Considering confidence level (Z) = 1.96 for 95% confidence interval, desirable error (d) = 5% and non-response rate of 12%, the calculated sample size was 368.

Questionnaires were sent through Google form (E-mail, Viber, Facebook, and WhatsApp) to the targeted population. Request to participate in the study was posted on social media with the links to the Google form of questionnaire. Purpose and objectives of the study were clearly explained. Those who provided consent to participate in the study were asked to continue to fill the google form. The eligibility criteria included Nepalese women residing in Nepal who were pregnant, willing to participate in the study, and having no history of major stressors (divorce, death of a family member, and diagnosis of a family member with an incurable and life-threatening disease) in the last six months.

Research questionnaire: It consisted of six parts. Part 1, 2 and 3 were self-developed questionnaire by the authors based on relevant literatures. Part 4, 5 and 6 were internationally validated scales- Perceived Stress Scale (PSS-14), Generalized Anxiety Disorder Assessment Scale (GAD-7) and Edinburg Perinatal Depression Scale (EPDS) whose Cronbach's alpha values were 0.85, 0.89 and 0.74 respectively.[7,8,9] **Part 1:** ***Questions related to socio-demographic variables***: Age, religion, ethnicity, residence, marital status, education, husband's education, occupation, occupation of husband, household income, salary status during lockdown and family type. **Part 2:** ***Questions related to Obstetric factors***: trimester, type of pregnancy, type of conception, parity, number of children, presence of any disease before pregnancy, history of abortion, timely antenatal checkups during lockdown and mode of antenatal checkups during lockdown. **Part 3:** ***Questions related to COVID-19 measures*****:** Presence of family members working as COVID-19 frontliner (health care worker), effect of social distancing on daily life activities, pregnant women's fear during COVID-19 and effects experienced by pregnant women during lockdown. **Part 4:** ***Perceived Stress Scale (PSS-14)*** is a five point Likert scale measuring perceived stress where 0=never, 1=low, 2=moderate, 3=much, 4=very much. There are total 10 statements in the scale among which 4 items (4, 5, 7, 8) are of positive concepts for which reverse coding is done. Scores range from 0 to 40.[10] Participants with a score of 20 and above are regarded as stressed and below as non-stressed.[11] **Part 5:** ***Generalized anxiety disorder (GAD-7)*** is a seven-item instrument that is used to measure the severity of generalized anxiety disorder (GAD). Response options scored as 0="not at all," 1="several days,"2="more than half the days" and 3="nearly every day". Total score ranges from 0 to 21. A score of 10 and above is considered as cutoff point for identifying cases of GAD.[8] **Part 6:** ***Edinburg Perinatal Depression Scale (EPDS)*** has 10 multiple-choice questions; each question scored with a 0, 1, 2, or 3 (maximum score = 30). Participants scoring 13 and above are categorized as depressed.[9]

All collected data were checked, reviewed, coded and organized for its accuracy, completeness, and consistency and further analyzed via Statistical

Package for Social Science (SPSS) version 16. Data were analyzed and interpreted in terms of descriptive statistics (frequency, mean, range, percentage and standard deviation) and Chi-square test was used to determine the statistical association of mental health status with the selected variables. Statistical significance was assessed at level of <0.05.

RESULTS:

The mean age of the participants was 27.06 ± 4.64 years. Majority (82.6%) of the participants were Hindu. More than half (52.7%) of the participants were Brahmin and Chhetri and most (62.0%) of them were from urban area. Almost half (43.5%) were educated up to secondary level. Majority (64.7%) of the participants were unemployed and among the employed, only half (55%) of them were getting paid during the lockdown period. Majority (65.5%) of the participants' husband were educated up to higher secondary, most (85.3%) of them were employed and 77.9% were getting salary in the lockdown period. Almost half (52.2%) of the participants had their monthly family income more than NPR 25000. Majority (68.5%) of the participants were from joint family.

About two-thirds (66.6%) of the participants were in third trimester, the majority (87.8%) had planned pregnancy and almost all (98.9%) had natural conception. Almost half (54.9%) of the participants were primigravidae and 55.2% had no children. Majority (96.2%) of the participants did not have any disease before pregnancy and only 16% had a history of abortion. Only 53.5% of the participants could continue their regular antenatal checkups during lockdown period, among which 71.7% had their checkups visiting hospital, 14.7% through phone calls and 0.3% through video call.

Participants infected with COVID-19 accounted for 2.2% in this study. Half (50.3%) of the participants stated that they were somewhat affected by social distancing whereas, 9.5% were extremely affected by social distancing. Majority (71.7%) of the participants were afraid of getting infected with the virus followed by being unaware of the mode of delivery (64.4%) in this pandemic period. Regarding the effect of COVID-19 experienced by the participants, majority (61.1%) faced inadequate antenatal checkups followed by inadequate social support (57.1%) and transmission of vague and inaccurate information from different sources (50.5%). A very meagre portion (5.4%) of the participants faced domestic violence from family members. More details regarding the COVID-19 related measures are presented in table 1 and 2.

Table 1. COVID-19 related fears of the participants (n=368).

Fears*	n (%)
Outcome of the unborn baby	232 (63.0)
Getting infected with the virus	264 (71.7)
Uncertainty regarding the mode of delivery	237 (64.4)
Probability of getting isolated from the baby if tested positive for Covid-19	199 (54.1)
Not being able to be with the chosen ones at the time of delivery	155 (42.1)
Change of hospital	122 (33.2)
Unavailability of vehicles to reach hospital during emergency	146 (39.7)
Caregiver shortage	146 (39.7)
Missed antenatal appointment and visits	83 (22.6)

**Multiple response*

Table 2: COVID-19 related effects experienced by the participants (n=368).

Effects*	n (%)
Inadequate social support	210 (57.1)
Inadequate antenatal check ups	225 (61.1)
Vague and inaccurate information from different sources	186 (50.5)
Reduced household finances	109 (29.6)
Being subjected to domestic violence from family members	20 (5.4)
No proper arrangements of equipment and supplies needed for delivery and postnatal care	25 (6.8)
Lack of motivation to exercise/ physically inactive due to lockdown	122 (33.2)
Unavailability of choices for healthy foods	156 (42.4)
Over eating	81 (22.0)
Over resting	67 (18.2)

**Multiple response*

Prevalence of stress, anxiety and depression among the pregnant women were found to be 41%,

28.5% and 33.2% respectively which is depicted in table 3.

Table 3. Prevalence of stress, anxiety and depression among the participants (n=368).

Status	Stress n (%)	Anxiety n (%)	Depression n (%)
Yes	151 (41)	105 (28.5)	122 (33.2)
No	217 (59)	263 (71.5)	246 (66.8)

On bivariate analysis, age, salary status of the participant and their husband during lockdown, presence of family member working as COVID-19 front liner, and effect of social distancing were significantly associated with perceived stress ($p<0.05$). Furthermore, age, education, employment status of the participant, family monthly income, trimester and effect of social distancing were associated with anxiety ($p<0.05$). Age, salary status of husband during lockdown, trimester, parity, being infected with COVID-19 and effect of social distancing had significant association with depression ($p<0.05$). The details are represented in table 4.

DISCUSSION:

Reproductive health and mental health are interwoven and a complete well-being cannot be obtained without their integration. Mental health in pregnancy was never addressed to the extent of its necessity while this COVID-19 pandemic has shown the ever present gap in maternal mental health worldwide.[12] The prevalence of stress, anxiety and depression in this study was found to be 41%, 28.5% and 33.2% respectively. The occurrence of depression is in agreement with the results of a study conducted in Iran. However, in contrast, stress was higher and anxiety was lower in our study compared to the same study findings.[13] Study conducted in China had higher prevalence of perceived stress, anxiety and depression.[14] This difference might be due to China being the epicenter of the emergence of COVID-19. A Turkish study which examined the same population of pregnant women prior and during the COVID-19 pandemic found that depression and anxiety level were significantly increased in the latter period.[15] Results of present study are in line with studies conducted in Nepal before pandemic, showed the prevalence of stress, anxiety and depression to be

Table 4. Association of perceived stress, anxiety and depression with selected variables.

	Perceived Stress			Anxiety			Depression		
Variables	**No n (%)**	**Yes n (%)**	**P - value**	**No n (%)**	**Yes n (%)**	**P - value**	**No n (%)**	**Yes n (%)**	**P - value**
Age (yrs)									
15-25	77(51.7)	72(48.3)	0.01	96(64.4)	53(35.6)	0.03	101(67.8)	48(32.2)	0.07
26-35	127(62.3)	77(37.7)		154(75.5)	50(24.5)		139(68.1)	65(31.9)	
36-45	13(86.7)	2 (13.3)		13(86.7)	2(13.3)		6(40.0)	9(60.0)	
Salary status of husband									
Not paid	29(43.3)	38(56.7)	< 0.001	47(70.1)	20(29.9)	0.86	39(58.2)	28(41.8)	0.04
Paid	146(61.9)	90(38.1)		163(69.1)	73(30.9)		168(71.2)	68(28.8)	
Trimester									
First	17(68.0)	8(32.0)	0.15	20(80.0)	5(20.0)	0.04	17(68.0)	8(32.0)	0.03
Second	64(65.3)	34(34.7)		78(79.6)	20(20.4)		55(56.1)	43(43.9)	
Third	136(55.5)	109(44.5)		165(62.7)	80(32.7)		174(71.0)	71(29.0)	
Effect of social distancing									
Not at all	98(66.2)	50(33.8)	< 0.001	113(76.4)	35(23.6)	0.01	116(78.4)	32(21.6)	< 0.001
Somewhat	106(57.3)	79(42.7)		132(71.4)	53(28.6)		117(63.2)	68(36.8)	
Extremely	13(37.1)	22(62.9)		18(51.4)	17(48.6)		13(37.1)	22(62.9)	

lesser than the finding of this study.[16,17,18] This shows the increment in the prevalence of mental health disorders after the emergence of COVID-19.

Fear of unknown, fear of the outcome of the unborn child, disruption of routine prenatal care, inability to access reliable information and reduced daily routines and social interactions because of quarantine were the factors causing anxiety in Turkish pregnant women during the COVID-19 pandemic.[19] Similar fears and effects were experienced by the pregnant women in this study. Misinformation can lead to fear and anxiety. Therefore reliable sources should provide accurate information in such a crisis period.[20] Majority of the participants in this study also faced the inaccurate overflow of information regarding COVID-19.

Antenatal visits were suspended except for critical situations, while in some countries, pregnant women were asked only to come at the time of birth.[21,22] Likewise, in Nepal, pregnant women were requested to postpone their regular antenatal checkups to reduce iatrogenic transmission.[23] In this study almost half of the participants were devoid of getting timely antenatal checkups during lockdown. Mobilization of the Female Community Health Volunteers (FCHV) for antenatal and postnatal checkups to identify any danger signs would benefit these crisis periods. Necessary protocols of physical distancing and hand washing along with other preventive approaches must be briefed to the FCHVs.[23] The results of the present study showed that women often felt lack of motivation to exercise and remained physically inactive due to lockdown as well as complained about over resting. These findings are in agreement with the study conducted among Spanish pregnant women.[24] Physical inactivity during pregnancy may result in complications such as obesity and gestational diabetes mellitus.The RCOG (Royal College of Obstetricians and Gynecologists) suggests that the COVID-19 pandemic increases the risk of perinatal anxiety, depression, and domestic violence in pregnant women.[25] Though a meagre proportion (5.4%) of the participants in this study suffered domestic violence from their family member. A study conducted in Austria had 37.5% of the participants experiencing increased stress about conflict between household members.[26] This effect may be the most neglected consequence of lockdown but the important one that has to be addressed properly and timely.

In this study, lower age group women had stress and anxiety in comparison to the other age groups. However in a study conducted in Iran reported higher depression, anxiety and stress in women with more advanced age.[27] Lower level of education was significantly associated with anxiety in this study. This finding is supported by various other studies suggesting that lower level of education have a tendency to elicit poor mental health status.[28,29] Good mental health is successively related to her being educated to higher levels. Being unemployed was associated with the presence of stress among the participants of this study, salary status of participants and their husband were also associated with anxiety and depression. Those who had not got their salary during this lockdown period were presented with anxiety and depression than among those who were getting their salary in lockdown time. Similarly those with lower monthly income were more anxious than the other with higher level of household income which is similar with findings of study conducted in Iran.[30] In this study, women in second and third trimester were found to be anxious and depressed than in the first trimester which is similar to the findings of the Iranian study.[30] The present study showed that primipara mothers were more depressed in comparison to the multipara which is in contrast to a finding of a systamatic review conducted by Yan Haohao et al.[31] The study conducted by Moyer et al. showed family member being an essential frontline worker during COVID-19 was significant driver of greater changes in pregnancy related anxiety which is in contrast with present study.[26] This may be because they are practising preventive measures very effectively and following the health care advices of COVID-19 seriously. With the compliance, they could have developed more confidence in their practice of avoiding the virus and thus were less anxious in contrast to other group. Effect of social distancing had a significant association with all the mental health status parameters in this study. Those who were extremely affected by the social distancing protocol had more perceived stress, anxiety and depression. This finding is in agreement with the study conducted in Jordan.[32]

The limitation of the study is that data is collected through online so it ignores the pregnant women who do not have access to the internet and results are totally based on their self-declaration. Hence, the results cannot be generalized.

CONCLUSION:

This study highlighted the high prevalence rate of stress, anxiety and depression among the pregnant women. Therefore, it is very much essential to focus on mental health status of such high risks group. Preparedness for maternal mental health care in such public health emergencies is the utmost necessity. Measurements such as awareness programs targeting the pregnant women, provision of information flow on coping during the pandemic situations, screening of the antepartum mental health status and provision of tele-psychiatry services could be beneficial in reducing the mental health burden.

Conflict of Interest: The authors declare that no competing interests exist.

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