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Depression, anxiety and stress among pregnant women of Pokhara during COVID-19

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Abstract

Background: Public health concerns pertaining to depression, anxiety, and stress in expectant mothers are critical. Pregnancy is a sensitive period of a woman's life. Various psychological factors can adversely affect her foetus and herself.

Objectives: To assess the status of depression, anxiety, and stress among pregnant women of Pokhara during the COVID-19 pandemic.

Methods: An analytical cross-sectional study was conducted in antenatal clinic of Pokhara Academy of Health Science, Kaski district among 400 pregnant women who were recruited by using convenient sampling technique. Data was collected through face-to-face interview technique with structured interview schedule from May to September 2021 after obtaining ethical clearance from Nepal Health Research Council (Ref. 180/2021P), Institutional Review Committee of Pokhara Academy of Health Sciences (Ref. 48.2022/078). Depression, anxiety and stress scale-21 was used to assess the depression, anxiety and stress among pregnant women. Descriptive statistics and inferential statistical analysis Chi-square, correlation, independent t-test and ANOVA were performed to analyse the data by using statistical package for social science.

Results: Slightly more than a fifth (21.3%) had depression, around one third (32.5%) had anxiety and 12.7% participants had stress. Age of respondents, the age of the spouse, the age difference, stress, anxiety, and depression scores all significantly correlate with each other ($p < 0.05$). There was a significant difference in depression score among rural and urban and among primi and multigravida participants ($p < 0.05$). With ANOVA, depression, anxiety, and stress had significant differences with occupation, husband's education and occupation, and marital satisfaction ($p<0.05$).

Conclusion: Almost a quarter of participants had depression**,** a nearly one third had anxiety, and more than one tenth had stress. Various factors are associated with depression and anxiety among pregnant women. Psychosocial counselling should be conducted by focusing on rural pregnant women.

Key words: Anxiety; COVID-19; Depression; Pregnant Women; Stress

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INTRODUCTION

Women who maintain their health during and after pregnancy are more likely to maintain their health later in life and have better birth outcomes, influencing children's health from infancy to adulthood. The World Health Organization proclaimed the coronavirus disease 2019 (COVID-19), as a pandemic in January 2020.[1] Governments have imposed public health measures and restrictions like social distancing and national lockdowns for decreasing and controlling the transmission of the virus, which restricted individuals' liberty and affected every part of society.[2] Psychological crises have become a global challenge, particularly for highly vulnerable populations with the spread of COVID-19 pandemic.[3]

Mental health problems are common during pregnancy, affecting pregnant women between 10-25%. that can adversely affect the women and the foetus.[4] Maternal depressive symptoms, anxiety, and stress have been associated with adverse pregnancy and foetal outcomes, pregnant women infected with COVID-19 are more likely to have an outcome of perinatal death, preterm delivery, and low birthweight.[5] The study aimed to assess the status of depression, anxiety and stress among pregnant women during the COVID-19 pandemic at Pokhara, Nepal.

METHODOLOGY

An analytical cross-sectional study was conducted in antenatal clinic (ANC) of Pokhara Academy of Health Sciences from 1st May to 30th September 2021 among 400 pregnant women after ethical approval from Institutional Review Committee of Pokhara Academy of Health Sciences (Ref. 48.2022/078) and the Ethical Review Board of NHRC (Ref no. 180/2021P),. The sample size was determined using the Cochran formula: $n = Z^2pq/d^2$ where, n= sample size Z= value for 95% confidence limit (1.96) p= estimated proportion of an attribute (0.5) q=1-p (0.5) d= allowable error (5%). For the calculation of sample size because of limited research in this topic, prevalence was assumed to be 50%. By using this formula total sample was 384 and by adding the 10% non-response rates to the sample size =384+43=427. The workable sample size was 400 and there were only 27 non-response rates in the study. Convenient sampling technique was used to select the women.

Data was collected by face-to-face interview. Informed consent was taken from participants before data collection. Depression, anxiety and stress scale-21 (DASS-21) items was used to assess depression, anxiety and stress among the respondents.[6] This instrument is in the public domain, and therefore, it is an open source for the research. Nepali version tool was used for the data collection. The instrument is a four-point Likert scale (0 = did not apply to me, 1 = applied to me some of the time, 2 = applied to me to a good part of time and 3 = applied to me most of the time) with seven items for each subscale. The tool has already been tested in Nepal, its psychometric properties validated and reliability was checked.[7] The internal consistency as reported in the Nepali version was scale 0.77 for depression, 0.80 for anxiety, and 0.82 for stress.[8]

Descriptive statistics (i.e., frequency, percentage, mean and standard deviation) were used to calculate depression, anxiety, and stress level. Inferential statistical analysis Chi-square, Correlation, independent t-test, and ANOVA were performed to find out the association between different variables.

RESULTS

The study sample included a total of 400 pregnant women. The mean ± SD age of the participants was 25.73 ± 4.58 years and 150 (37.5%) of the participants belonged to the age group 25-30 years. Also, the mean ± SD age of the husband was 29.97 ±5.398, and 138 (34.5%) of husbands belonged to the age group 25-30 years. More than half i.e. 215 (53.8%) of the participants were from nuclear family. Two third i.e. 264 (66%) of the participants reside in the urban area. More than two third, 288 (72%) of participants, were homemakers. Most 331 (82.8%) of the participants felt that their husbands highly supported them and more than half (214, 53.5%) of participants were highly satisfied with their marriage. More than half (246, 61.5%) of the women were multigravida (Table1).

Overall prevalence of depression was 85 (21.3%) among the participants. Among them 48 (56.5%) had mild depression, and the 37 (43.5%) had moderate depression. Similarly, 130 (32.5%) of the participants were found to be anxious, among them 59 (45.4%) were moderately anxious. Likewise, 51 (12.7%) of participants had stress. Of those, the majority 39 (76.5%) had mild stress. Among the depressed participants, 70 (53.8%) had anxiety and 39 (76.5%) had stress. Residential area, family type and age gap between husband and wife had statistically significant association with depression ($p<0.05$) (Table2).

There was a significant correlation between Age, husband's age, age gap, stress score, anxiety score, depression score ($p <0.05$). There was a partial positive correlation of age, husband's age and age gap between husband and wife with all three i.e. stress score, anxiety score and depression score. Stress had moderately positive correlation with anxiety and depression both, also anxiety was positively correlated with depression (Table 4).

There was significant difference in depression score among rural and urban participants ($p= <0.05$). Participants from the rural area had a slightly higher depression score compared to urban participants. Similarly, there is significant difference in depression score among primi and multigravida participants ($p=<0.05$). Multigravida participants had higher depression scores compared to primi participants. Depression scores was significantly different among occupational groups, husband's education, husband's occupation, and marital satisfaction. Similarly, stress score was significantly

different among ethnic groups, husband's education, husband's occupation (p <0.05) (Table 6).

Participants who were homemakers had significantly (p<0.05) higher depression scores compared to service holders and labourers. Likewise, the participant having school education had significantly (p<0.05) higher depression scores compared to participants having college-level education (MD = 0.56). Participants' husbands having service had significantly (p<0.05) higher depression scores compared to participants having business (MD = 0.64). On the other hand, participants with poor marital satisfaction had significantly (p<0.05) higher depression scores than participants with extremely high satisfaction. Similarly, Janjati participants had significantly (p<0.05) higher anxiety scores compared to Brahmin/Chhetri participants (MD = 0.81). Likewise, participants having primary education had significantly (p<0.05) higher anxiety scores compare to participants having college-level education (MD = 0.76). Participants' having school level educated husbands had significantly (p<0.05) higher anxiety scores compared to college-level educated husbands (MD = 0.73). On the other hand, participants' husbands having agriculture, labourer, and service occupations had significantly (p<0.05) higher anxiety scores. Likewise, Janjati participants had significantly (p<0.05) higher stress scores compared to Dalit participants (MD = 1.52) and religious minorities (MD=2.63). Likewise, Participants having a school level educated husband had significantly (p<0.05) higher stress scores compared to participants having college-level educated husbands (MD = 1.34). Participants having labourer husbands had significantly (p<0.05) higher stress scores than did businesses (Table 7).

Table 1: Socio-Demographic Characteristics of the Participants (n=400)

Variables	Frequency (Percent)
Age of participant	
Below 20	25 (6.3)
20-25	139 (34.8)
25-30	150 (37.5)
30-35	73 (18.3)
Above 35	13 (3.3)
Mean ± SD 25.7 ± 4.6 years	
Husband Age	
Below 25	64 (16.0)
25-30	138 (34.5)
30-35	119 (29.8)
35-40	69 (17.3)
Above 40	10 (2.5)
Mean ± SD 29.9 ± 5.4years	
Age gap of husband and wife	
≤5years	283 (70.8)
≥6years	117 (29.2)
Type of Family	
Nuclear	215 (53.8
Joint	185 (46.3
Residential Area	
Urban	264 (66)
Rural	136 (34)
Occupation of participant	
Housemaker	288 (72)
Service	53 (13.3)
Business	28 (7)
Agriculture	16 (4)
Labor	15 (3.8)
Husband Occupation	
Service	192 (48)
Labor	91 (22.8
Business	89 (22.)
Agriculture	28 (7)
Economic status	
Completely sufficient for a year	82 (20.5)
Fairly sufficient for a year	307 (76.8)
Insufficient	11 (2.8)
Husband support	
High	331 (82.8)
Low	69 (17.3)
Marital satisfaction	
High	214 (53.5)
Low	186 (46.5)
Gravida	
Primigravida	154 (38.5)
Multigravida	246 (61.5)

Table 2: Prevalence of depression, anxiety and stress (n=400)

Variables	Frequency (Percent)
Level of depression	
Normal (No depression)	315 (78.7)
Mild	48 (12)
Moderate	37 (9.3)
Level of Anxiety	
Normal (No anxiety)	270 (67.5)
Mild	47 (11.8)
Moderate	59 (14.7)
Severe	18 (4.5)
Extremely Severe	6 (1.5)
Level of Stress	
Normal (No stress)	349 (87.3)
Mild	39 (9.7)
Moderate	12 (3)

Table 3: Association of depression status with residential area, family type and age gap of the respondents (n=400)

Variable	Depression Status		*p value
	Depressed n (%)	Normal n (%)	
Area			
Rural	42 (30.9)	94 (69.1)	0.001
Urban	43 (16.3)	221 (83.7)	
Family Type			
Nuclear	54 (25.1)	161 (74.9)	0.04
Joint	31 (16.8)	154 (83.2)	
Age Gap			
≤5 Years	45 (15.9)	238 (84.1)	0.003
≥ 6 Years	6 (5.1)	111 (94.9)	

P-value <0.05 is significant * Chi-square test.

Table 4: Correlation between Depression, Anxiety, Stress Scores and Variables

Correlation	Age of respondents	Age of respondents' husband	Age gap	Stress score	Anxiety score
Stress Score	0.11*	0.10*	0.02	-	-
Anxiety Score	0.08	0.13*	0.09	0.67†	-
Depression Score	0.10*	0.13†	0.073	0.75†	0.70†

† Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 5: Independent Sample t-Test of depression score, residential area and gravida

Variables	Mean	SD	Levene's Test for Equality of Variances		t-test for Equality of Means		
			Sig.	df	Sig. (2-tailed)	Mean Difference	CI at 95%
Residence							
Rural	9.54	1.96	0.001	213.75	.056	0.33	-0.04-0.71
Urban	9.48	1.80					
Gravida							
Primi	9.08	1.34	<0.001	386.4	.011	-0.40	-0.71 - -0.09
Multi	9.48	1.80					

Table 6: Association between depression score and variables (n =400)

Depression score and variables	p value
Participant's occupation	0.002*
Husband's Education	0.005*
Husband's occupation	0.025*
Marital Satisfaction	0.006*
Stress Score and variables	
Ethnicity	<0.01
Husband's Education	<0.001
Husband's occupation	<0.001

Table 7: Group comparisons on depression scores by Bonferroni post hoc test

Variable (I)	Variable (J)	Mean Difference (I-J)	p Value	95% Confidence Interval
Housewife (Occupation)	Agriculture	0.06	1.00	-1.11-1.24
	Service	0.66*	0.05	-0.01-1.35
	Labor	1.30*	0.03	0.09-2.51
	Own business	0.50	1.00	-0.40-1.40
school level (Education)	Literate	2.16	0.37	-0.90-5.23
	Primary	0.39	1.00	-0.69-1.46
	College level	0.56*	0.01	0.10-1.00
Service (Husband's occupation)	Agriculture	0.19	1.00	-0.69-1.07
	Labor	0.29	0.95	-0.26-0.85
	Business	0.64*	0.02	0.08-1.19
Poor (Marital Satisfaction)	Extremely high	3.00*	0.01	0.41-5.59
	High	2.33	0.09	-0.18-4.84
	Moderate	2.26	0.14	-0.25-4.77

*. The mean difference is significant at the 0.05 level.

DISCUSSION

In this study, slightly below a quarter (21.3%) of the participants had depression which was almost similar with the findings reported by Shrestha P. et al. in Pokhara, Nepal, where 19% of the participants had depression.[9] Other studies conducted by Daryani F et al. in Iran[5]educational and labor market success, social network and establishing of family. Secure attachment is associated with optimal outcomes in all developmental domains in childhood, and both insecure and disorganized attachment are associated with a range of later problems and psychopathologies. In disadvantaged populations insecure and disorganized attachment are common, which points to the need of identifying early risk and effective methods of addressing such problems. This protocol describes an experimental evaluation of an indicated group-based parental educational program, Circle of Security-Parenting (COS-P and by Cao Y et al in China[10] showed somewhat contrast results, i.e. 32.7% and 32.21% of the participants had depression symptoms. Likewise, the study done in Turkey[11] reported that 56.3%, of participants had depression which is triple (21.3%) than this study. It might be because of geographical, cultural and social differences compared to this study.

This study found that among those who had depression, more than half number (56.5%) of the respondents had mild depression which is similar to the findings of the study reported by Khatri S. et al where 51.6% were mild-to-moderate level of depression.[1]with consequences on maternal and foetal outcomes; currently there are scant data for the same in India. To the best of our knowledge, this report is the first from India on psychological status of pregnant women during COVID-19 pandemic. Aim: The aim is to study the impact of ongoing COVID-19 pandemic on psychological status of pregnant women. Setting and Design: Cross-sectional observational study in a tertiary care hospital setting in Mumbai. Materials

and Methods: Out of total 98 pregnant women reporting to antenatal clinic of the hospital during the study period from June to July 2020, 66 gave informed consent to participate in the study. Perceived Stress Scale (PSS-10[2] In this study, increasing age of participant had more depression scores, which is similar with findings reported by Shrestha P. et al. where depression was higher in women among more than 35 years.[9]

In this study, nearly one third (32.5%) of the participants reported anxiety this finding contradicts with the findings reported by Silwal et al. where 79.54% of participants had minimal anxiety.[13] This study is similar with the study conducted by Cao Y et al. in China[10] 27.5% and by Khatri S. et al. in Nepal, where 39.4% had mild-to-moderate anxiety symptoms.[12]with consequences on maternal and foetal outcomes; currently there are scant data for the same in India. To the best of our knowledge, this report is the first from India on psychological status of pregnant women during COVID-19 pandemic. Aim: The aim is to study the impact of ongoing COVID-19 pandemic on psychological status of pregnant women. Setting and Design: Cross-sectional observational study in a tertiary care hospital setting in Mumbai. Materials and Methods: Out of total 98 pregnant women reporting to antenatal clinic of the hospital during the study period from June to July 2020, 66 gave informed consent to participate in the study. Perceived Stress Scale (PSS-10

The current study revealed that depression scores among pregnant women during COVID-19 had significant difference among occupational groups (F=4.19, p <0.05), husbands' education (F=4.40, p <0.05), husband's occupation (F=4.9, p <0.05), and marital satisfaction (F=4.9, p <0.05) which is similar findings reported by Effati-Daryani F in Iran[5]educational and labor market success, social network and establishing of family. Secure attachment is associated with optimal outcomes in all developmental domains in childhood, and both insecure and disorganized attachment are associated with a range of later problems and psychopathologies. In disadvantaged populations insecure and disorganized attachment are common, which points to the need of identifying early risk and effective methods of addressing such problems. This protocol describes an experimental evaluation of an indicated group-based parental educational program, Circle of Security-Parenting (COS-P, it was found that there was a significant relationship between spouse's level of education, marital life satisfaction with depression. Likewise, study by Premji SS. et al. in Pakistan, husband's occupation is significantly associated with depressive symptoms.[14] Similarly study by Maharlouei N. et al. in Iran reported that depression was significantly associated with women's job.[15] Study by Bakhshi H. et al. in Iran, showed that with increasing severity of depression among men and women, their marital life satisfaction decreased.[16]

The study revealed that anxiety scores among pregnant women during COVID-19 had significant different among education (F=5.14, p <0.05), occupation (F=3.22, p <0.05), husband's education (F=3.71, p<0.05), husband's occupation (F=9.02, p <0.05), marital satisfaction (F=8.75, p <0.05) and trimester of pregnancy (F=4.08, p <0.05). Similar findings reported by Premji S in Pakistan, husband's occupation is significantly associated with anxiety.[14] Likewise study by Maharlouei N. et al. in Iran, showed that anxiety was significantly associated with women's job, educational level.[15] Similarly, by Kahyaoglu Sut H. et al. education level, working status were related to anxiety[11]. Study by Bakhshi H. et al. in Iran, a significant relationship between marital life satisfaction anxiety.[16]

In this study, first experienced pregnant participants had more anxiety compared to multi gravida pregnant participants which is similar to the findings reported by Effati-Daryani F. et al. in Iran where anxiety scores were found to be significantly lower in women who experienced their first and second pregnancies than in those in the third and more pregnancies.[5]educational and labor market success, social network and establishing of family. Secure attachment is associated with optimal outcomes in all developmental domains in childhood, and both insecure and disorganized attachment are associated with a range of later problems and psychopathologies. In disadvantaged populations insecure and disorganized attachment are common, which points to the need of identifying early risk and effective methods of addressing such problems. This protocol describes an experimental evaluation of an indicated group-based parental educational program, Circle of Security-Parenting (COS-P

CONCLUSIONS

This study concluded that more than one fifth of participants had depression**,** a nearly one third of participants had anxiety and more than one tenth of the participants had stress. Rural area, increasing age, large age gap, multigravida, housewife, secondary level education of husbands, service holder husband, poor marital satisfaction, ethnicity, insufficient economic status was associated factors in depression and anxiety. Likewise, marriage age with husbands was significantly associated with stress. The study showed significant

correlation between age, husband's age, age gap, stress score, anxiety score and depression score.

There should be psychosocial counselling for pregnant women of rural areas and women who have large age gap with their husband. Likewise, women and their husband should be empowered, and screening program should be conducted periodically to detect depression, anxiety and stress among pregnant women.

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