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Original Research Article

Determinants of depression and coping strategies among nursing students after the second wave of the COVID-19 Pandemic

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ABSTRACT

Background: COVID-19 pandemic led to the emergence of mental health problems such as depression and the use of maladaptive coping strategies among nursing students. This study is planned to assess the prevalence of depression and coping strategies adopted by nursing students after the second wave of the COVID-19 pandemic.
Methods: A descriptive cross-sectional survey was carried out among 164 nursing students in a selected nursing institution in a rural area of Northern India. Depression was assessed using the patient health questionnaire-9, whereas coping was assessed by the brief-coping orientation of problem experienced scale.
Results: Mean age of the participants was 20.80±2.35 years. The mean depression score of nursing students was 6.43±4.28. Majority of the nursing students had mild depression (43.9%) and belonged to the non-depressed group (78.7%) with a PHQ-9 score <9. Maladaptive coping mechanisms were chiefly utilized by male nursing students. Coping mechanisms substance use (β=0.223, p<0.013) had more impact on depression, after controlling for sociodemographic variables and COVID-19-related information of nursing students.
Conclusions: Minimal or mild depression is common among nursing students after the second wave of the unprecedented pandemic with adaptive coping strategies more commonly used.

Keywords: Coping strategies, COVID-19 pandemic, Depression, Nursing students, Second wave

INTRODUCTION

College marks a process of evolution from adolescence to adulthood for university students. The nursing profession is one of the most demanding among all professions where students acquire clinical skills in addition to classroom learning. The current pandemic has amplified mental health problems among students to a great extent. Many students committed suicide due to pandemic-related academic losses and delays or postponement of examinations.[1] It is estimated that one-third of college students enter college life with mental health diagnoses.[2]

There has been emerging concern for mental health during the existing pandemic which is driven by the escalating psychological challenges.[3,4] Depression is a common mental disorder and an important cause of disability globally.[5] Infections and deaths from the virus led to psychological stress and bereavement.[3] Coping strategies refer to the specific behavioral and psychological efforts, that are used to master, reduce, tolerate, or minimize any stressful events.[6] On a continuum, one end could be passive and maladaptive while on the other end, it can be active and adaptive. Depression resulting from the current pandemic can be handled appropriately by using adaptive and positive coping strategies. Recent studies have suggested

increased alcohol consumption as coping strategy during the COVID-19 pandemic among college students.[7,8]

The current pandemic calls for urgent screening for depression and coping strategies used among students, particularly among nursing students.[9] There is a scarcity of research evidences in the area of depression and coping strategies used by nursing students especially in India after the second wave of this pandemic. To our knowledge, very few studies have evaluated depression and coping strategies among nursing students after the second wave of the COVID-19 pandemic in India. Therefore, there is a pressing need to assess the prevalence of depression among nursing students post second wave of the unprecedented pandemic and evaluate the coping strategies adopted by nursing students to tackle the pandemic.

METHODS

Study design

This descriptive cross-sectional survey was carried out in a selected nursing institution situated in a rural area of Northern India in November 2021. Nursing students studying B.Sc. Nursing and GNM, aged 17 years or older, and able to read and write English were included, while nursing students unwilling to give informed consent were excluded from the study. Written informed consent and informed assent (for participants below 18 years) were obtained from study participants. They were assured about the confidentiality and anonymity of the obtained information. Further, they were given the option to withdraw from the study, if appropriate. Permission to use standardized tools was obtained from respective copyright authors.

Sample size

Assuming the prevalence of depression among nursing students during the COVID-19 pandemic as 46% at a 95% CI with 8% precision, the sample size was calculated to be 150.[10] Taking 10% non-response rate, the final sample size was decided to be 165. However, we managed to acquire 164 participants.

Tools for data collection

Sociodemographic and COVID-19-related information of nursing students was collected. Depression and coping strategies were assessed using Patient Health Questionnaire (PHQ)-9 and Brief Coping Orientation to the Problem Experienced (COPE) Inventory respectively. All the tools were completed by nursing students immediately after their class.

Socio-demographic and COVID-19-related information

It had 8 items eliciting the socio-demographic and COVID-19-related details of the nursing students. Items related to demographic were age, gender, course, and family income. COVID-19-related information was in yes/no format and assessed information in the past one year. Details included tested positive for COVID-19, relative or family member tested positive for COVID-19, relative or family member lost livelihood due to COVID-19 and relative or family member died of COVID-19.

Patient health questionnaire (PHQ)-9

PHQ-9, a self-report questionnaire was used to assess the severity of depression among nursing students. It consists of 9 items, which correspond to 9 symptoms of major depressive disorder criteria of the diagnostic and statistical manual of mental disorders, fourth edition. Nursing students reported 'how often they had been bothered by problems over the past 2 weeks on a 4-point Likert scale (0= not at all, 3= nearly every day). The total depression score ranged from 0-27. The severity of depressive symptoms was categorized as none (0-4), mild (5-9), moderate (10-14), and severe (20-27).[11] In the present study, Cronbach's alpha of PHQ-9 was calculated to be 0.738, which is acceptable internal consistency reliability.

Brief coping orientation to the problem experienced inventory

The coping mechanism adopted by nursing students after the second wave of the COVID-19 pandemic was assessed by the Brief coping orientation to the problem experienced (COPE) inventory consisting of 28 items.[12] Each coping mechanism contains two items, thus measuring a total of 14 coping mechanisms. Each item was assessed on a four-point Likert scale (1= "I have not been doing this at all" and 4= "I have been doing this a lot") with a higher score denoting more frequent use of that particular coping mechanism. The Cronbach's alpha of the Brief COPE Inventory for the present study is 0.902, showing excellent internal consistency.

Statistical analysis

Data analysis was completed using SPSS 20.0 version. Both descriptive and inferential statistics were used. Frequency, percentage, mean, standard deviation, and range were calculated in descriptive statistics. Inferential statistics included chi-square and fisher's exact test to find an association between socio-demographic variables and depression. An independent sample t-test was used to compare coping mechanisms with depressed and non-depressed groups. Internal consistency of the scales was measured using Cronbach's alpha. Pearson's correlation was used to correlate depression and coping mechanisms. A hierarchical multiple regression analysis was done to find an association between coping mechanisms and depression after controlling the sociodemographic factors and COVID-19-related information of the nursing students. A statistically significant level was set at $p<0.05$.

RESULTS

A total of 164 nursing students participated in the present study. Mean age of the participants was 20.80±2.35 years. Majority of the students were female (80.5%), studying in B.Sc. Nursing (50.6%) and having family monthly income of Rs. 10,000-40,000 (51.8%). COVID-19-related information revealed that most of the students were not tested positive for COVID-19 (92.1%). Majority of nursing student's family/relatives did not tested positive for COVID-19 (87.2%), did not died of COVID-19 (93.8%), and did not lost their livelihood due to COVID-19 (89.0%) (Table 1).

Table 1: Sociodemographic variables and COVID-19 related information of nursing students after second wave of COVID-19 pandemic (n=164).

Variables	Subgroup	Non-depressed group, n(%)	Depressed group, n(%)	Chi-square value	P-value
Age group (years)	17-20	59 (45.7)	17 (48.6)	2.901[a]	0.407
	21-24	60 (46.5)	18 (51.4)		
	25-28	8 (6.2)	0 (0)		
	29-31	2 (1.6)	0 (0)		
Gender	Female	108 (83.7)	24 (68.6)	4.023[b]	0.045*
	Male	21 (16.3)	11 (31.4)		
Course	B.Sc. Nursing	64 (49.6)	19 (54.3)	0.241 [b]	0.624
	GNM	65 (50.4)	16 (45.7)		
Family income	Rs. 0-10,000	47 (36.4)	12 (34.3)	1.584 [a]	0.663
	Rs. 10,000-40,000	68 (52.7)	17 (48.6)		
	Rs. 40,000-1,20,000	13 (10.1)	6 (17.1)		
	Above Rs. 1,20,000	1 (0.8)	0 (0)		
Tested positive for COVID-19	Yes	6 (4.7)	7 (20.0)	8.887 [b]	0.003*
	No	123 (95.3)	8 (80.0)		
Family/relative tested positive for COVID-19	Yes	13 (10.1)	8 (22.9)	4.027 [b]	0.045*
	No	116 (89.9)	27 (77.1)		
Family/relative died of COVID-19	Yes	8 (6.2)	3 (8.6)	0.247 [b]	0.619
	No	21 (93.8)	32 (91.4)		
Family member lost livelihood due to COVID-	Yes	11 (8.5)	7 (20.0)	3.709 [b]	0.054
	No	118 (91.5)	28 (80.0)		

[a]Chi-square test, [b]Fisher's exact test, *statistically significant where p <0.05 and two tailed.

Table 2: Coping strategies adopted by nursing students in comparison with depressed and non-depressed group (n=164).

Coping mechanisms	Mean (SD)			t-test	p-value
	Non-depressed group	Depressed group	Total		
Self-blame	3.84 (1.74)	4.43 (1.70)	3.96 (1.75)	1.784	0.076
Venting	3.64 (4.60)	4.60 (1.73)	3.84 (1.64)	3.156	0.002*
Behavioral disengagement	4.59 (2.10)	5.40 (1.39)	4.76 (2.00)	2.148	0.033*
Substance use	2.62 (1.43)	3.94 (2.08)	2.90 (1.68)	4.350	< 0.001*
Denial	3.97 (1.64)	4.86 (1.64)	4.16 (1.68)	2.834	0.005*
Self-distraction	4.80 (1.57)	5.57 (1.39)	4.96 (1.56)	2.637	0.009*
Acceptance	5.56 (2.02)	5.89 (1.69)	5.63 (1.96)	0.876	0.382
Planning	5.45 (2.01)	5.29 (1.70)	5.41 (1.95)	-0.439	0.661
Positive reframing	4.91 (1.93)	5.51 (1.90)	5.04 (1.93)	1.654	0.100
Use of informational support	5.15 (1.77)	6.09 (1.56)	5.35 (1.76)	2.846	0.005*
Emotional support	4.91 (1.86)	5.66 (1.79)	5.07 (1.87)	2.103	0.037*
Active coping	5.53 (1.87)	5.71 (1.48)	5.57 (1.79)	0.524	0.601
Religion	5.66 (1.85)	5.51 (1.85)	5.63 (1.84)	-0.410	0.683
Humor	3.59 (1.81)	4.31 (2.02)	3.74 (1.87)	2.045	0.042*

Independent sample t-test, *statistically significant where p<0.05 and two tailed.

The mean depression score of nursing students was 6.43±4.28. Majority of the nursing students had mild depression (43.9%), followed by none-minimal depression (34.8%), moderate (17.1%), and moderate severe (4.3%). A large number of nursing students belonged to non-depressed group (78.7%) with PHQ-9 score <9. The severity of depression did not vary with sociodemographic variables except gender, which shows that female students significantly associated with depression (p<0.05). The chi-square test further shows that not tested positive for COVID-19 (self or family member/relative) in the past one year significantly associated with depression (Table 1).

Independent sample t-test shows a significant difference in mean scores of coping mechanisms with depressed and non-depressed groups. Maladaptive as well as adaptive coping mechanisms such as venting, substance use, denial, self-distraction, use of informational support, emotional support, and humor were commonly utilized by the depressed group (Table 2).

Correlation between coping mechanisms and depression is described in Table 3. Depression among nursing students was weak positively correlated to behavioral disengagement (r= 0.166, p= 0.033), emotional support (r= 0.163, p= 0.037), and humor (r= 0.159, p= 0.042). Mild positive correlation was found between depression and venting (r= 0.241, p= 0.002), substance use (r= 0.323, p≤0.001), denial (r= 0.217, p= 0.005), self-distraction (r=0.203, p=0.009), which clarifies that these maladaptive coping mechanisms were associated with higher prevalence of depression. Surprisingly, adaptive coping mechanism "use of informational support" (r= 0.218, p= 0.005) had a mild positive correlation with depression.

Table 3: Correlation between coping mechanisms and depression.

Coping mechanism	Depression (r)
Self-blame	0.139
Venting	0.241**
Behavioral disengagement	0.166*
Substance use	0.323**
Denial	0.217*
Self-distraction	0.203**
Acceptance	0.069
Planning	- 0.034
Positive reframing	0.129
Use of informational support	0.218**
Emotional support	0.163*
Active coping	0.041
Religion	- 0.032
Humor	0.159*

r= pearson's correlation coefficient; *statistically significant where p <0.05 and two tailed; **statistically significant where p <0.01 and two tailed

Table 4: Hierarchical multiple regression analysis: Association between depression (depressed group vs. non depressed group) and coping mechanisms adjusted for sociodemographic variables and COVID-19-related information.

Serial number	Variables	R	R^2	Adjusted R^2	F (df)	p	β
Model 1	**Sociodemographic variables**						
	Gender	0.157	0.025	0.019	4.074 (1,162)	0.045	0.157*
Model 2	**COVID-19 related information**						
	Tested positive for COVID-19	0.269	0.073	0.055	4.172 (3,160)	0.007	0.173*
	Family/relative tested positive for COVID-19						0.083
Model 3	**Coping mechanisms**	0.465	0.216	0.160	3.814(11,146)	<0.001	
	Venting						0.055
	Behavioural disengagement						-0.010
	Substance use						0.223*
	Denial						0.093
	Self-distraction						0.063
	Use of informational support						0.087
	Emotional support						0.078
	Humor						-0.002

R=Multiple correlation coefficient; R2=Coefficient of determination; df=degree of freedom; β=Standardized coefficient; * p<0.05.

Hierarchical multiple regression analysis was performed to investigate the effect of coping mechanisms (model 3) to predict depression (only significant variables), after controlling for sociodemographic variables (model 1) and COVID-19-related information (model 2). Model 1 (F [1,162]=4,074, p<0.05), model 2 (F [3,160] =4.172, P <0.05), and the final model 3 (F [11,146] =3.814, P <0.001) were statistically significant which represents that the present multiple regression model is a good fit of the data. Multiple correlation coefficient (R) value was 0.465 showing a moderate relationship between coping mechanisms and depression. The coefficient of

determination (R2) value of 0.216 suggested that coping mechanisms explained a total of 21.6% variance of depression. The impact of the independent variable on dependent variable was described by standardized coefficient (β). Coping mechanisms substance use (β = 0.223, p<0.013) had more impact on depression, after controlling for sociodemographic variables and COVID-19-related information of nursing students (Table 4).

DISCUSSION

The present study examined the prevalence of depression and various coping strategies utilized by nursing students post second wave of the COVID-19 pandemic. Major findings of the study suggested that the majority of the nursing students had mild depression. The severity of depression varied with gender, not tested positive for COVID-19 (self or family member/relative) in the past one year. Also, mild positive correlation was found between depression and maladaptive coping mechanisms. Substance use had more impact on depression, after controlling for sociodemographic variables and COVID-19-related information.

Due to the specificity of the nursing profession, majority of the participants in our study were females. A study done among undergraduate nursing students reported that tested positive for COVID-19, having a family member/friend hospitalized or died from COVID-19 were not associated with mental health problems, which was in line with the present study.[13] This suggests that COVID-19 experiences may not necessarily be associated with depression.

The psychological impact of this unprecedented pandemic is extreme and severe. Many studies have demonstrated a striking increase in mental health problems, especially among undergraduate students during pandemic situations.[14-16] In our study, majority of the nursing students experienced minimal or mild depression, which was in contrast with several other studies which showed that students had high levels of depression during the COVID-19 pandemic.[15-19] Nursing students are more medically knowledgeable and can perceive potential threats and serious consequences related to the ongoing pandemic which may cause an increased prevalence of depression among these already vulnerable populations. Many studies have reported depression levels similar to our study.[10,13,20,21]

Medical and nursing students are more vulnerable to depression.[2,22,23] Consequently, there is an urgent necessity for active interventions and effective planning for them. Another obvious finding of our study suggests that the severity of depression among nursing students varies with gender, which was comparable with several studies, which showed that both female students and nurses were more distressed and experienced greater psychological burden and depression, compared to their counterparts.[19,22,24]

We also investigated coping strategies that are utilized by nursing students to cope after the second wave of the existing pandemic. In the present study, adaptive coping skills such as acceptance, planning, use of informational support, active coping, and religion were commonly used. College students are more prone to develop maladaptive coping strategies, develop significant psychosocial problems, and can hamper their academic performances when faced with stress caused by public health emergencies.[20,25]

A study demonstrated that the coping strategy 'self-blame' was significantly associated with depression, which was not in agreement with our study.[26] Use of religion may act as a protective factor for students against depression.[20,27] However in our study we did not found such an association. Surprisingly, adaptive coping mechanisms such as venting, use of informational support, emotional support, and humor were commonly utilized by depressed group. In our study, most frequently used coping strategy was acceptance and religion, which was comparable to a study done among Saudi nursing students during the COVID-19 pandemic.[18] Substance use was the least common coping mechanism that is employed by nursing students in our study.

There are strengths and limitations while interpreting the findings of this study. While the prevalence of depression and coping strategies are well documented among nursing students, to our knowledge, this comprehensive study paid close attention to determinants of depression and coping strategies in relation to post second wave of the COVID-19 pandemic among nursing students. Additionally, we have used standardized validated questionnaires with good internal consistency to assess study variables and also, managed to acquire an adequate sample size.

Regardless of these strengths, we are aware that single-center study limits the generalizability of the study findings. Also, psychological attributes of the students during filling of the questionnaires may have influenced their responses. Risk of selection bias because of purposive sampling and self-report bias cannot be ignored. Lastly, being a cross-sectional study, temporal and causal relationships cannot be examined. In future studies, nursing students from different nursing colleges with large sample sizes, and more male students are necessary to validate the findings.

CONCLUSION

The study revealed that mild depression is prevalent among nursing students after the second wave of the COVID-19 pandemic. It is vital to enhance adaptive coping strategies through counseling and educational sessions at an institutional level. Regular screening and referral to experts are crucial for early identification and management.

Recommendations

The findings of our study are captivating and eye opener. Nursing curriculum developers should integrate needed skills and resources to prepare nurses for future health emergencies. In rural areas of India, the availability of mental health facilities is limited and therefore it is need of the hour to investigate mental health problems among students. Further, longitudinal studies can be planned on preventive and interventional measures to decrease the burden of depression with special attention to academic performance. Provision of institution-based mental health services with focus on adaptive coping strategies should be a priority in addition to providing educational programs.

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