



STRESS AND COPING AMONG NURSING STUDENTS DURING COVID-19 PANDEMIC

Sudesh Devi

PhD research scholar in JJTU University Rajasthan

Nandaprakash P

Professor & Research Guide, JJTU University Rajasthan

Abstract:

Background: The COVID-19 had profound effects on nurses' general health. The severity and extent of the COVID-19 epidemic means it is highly likely that health personnel will suffer from psychological stress as a result the direct contact they have with patients who are infected. The goal of this research is to assess the level of anxiety and stress behaviors in B.Sc Nursing students, and to determine the relationship between stress levels and levels of coping, and socio-demographic variables.

Methods: This study was cross sectional study. The sample size consisted of 500 BSc nursing students and samples were selected using convenient sampling techniques and the data was collected through self-administered COVID 19 stress scale and COVID 19 coping scale.

Results:

The study revealed that majority of students (22 %) were male and (78%) were female. Result showed that only (8%) has mild stress, (91%) had moderate stress and had (1%) severe stress, and (2.2%) had poor coping, (96.8%) had average coping and (1%) good coping. There was negative significant correlation ($r=-0.721$) between stress and coping behaviour among nursing year nursing students. There was significant association between level of stress and demographic variables such as age, education of father and mother, occupation of father and mother and family income.

Conclusion:

Nursing students' stress levels should be examined on a regular basis, contributing variables should be recognized, and the nurse administrators should establish a guidance, counselling, and stress management program to especially manage the stress during pandemic.

Key Words: Nursing students, Covid 19, Pandemic, Stress, Burnout Syndrome, Coping strategies

DOI Number:10.14704/nq.2022.20.8.NQ44820

NeuroQuantology 2022; 20(8): 7940-7952

Introduction:

The COVID-19 pandemic has caused a wide range of negative cognitive reactions and moods in the at-risk group. In addition to the negative physical health consequences as well as psychological effects, the COVID-19 disease is expected to cause chronic psychotic symptoms such as anxiety, depression, panic disorder and psychosomatic manifestations (Qiu, 2020). In the context of the lockdown in India and across the

world, sudden travel restrictions, a lack of work, no expenditures and no money to pay for rules for quarantine are creating an increased level of stress and is creating a social strain that is driven by irresponsible behaviour as well as fear.

It has caused a detrimental impact on the mental wellbeing of caregivers since it has put a huge burden on healthcare systems as well as the workforce. Healthcare providers are at an increased chance of experiencing adverse mental



health effects as a result of the course of the epidemic. Nurses have been more crucial as healthcare providers than others in fighting COVID-19. Nurses during the current pandemic have demonstrated a remarkable dedication to their job and patients, changing their work in emergency department as well as in the infection control units in the Intensive care units and in units susceptible to COVID-19 [88]. The current pandemic is a sign that nurses are worried about the possibility of infection and exposure from COVID-19. But, they're not sufficiently prepared to handle the stress and workload which can cause some physical problems (Wang et al., 2021; Naushad et al.,2019; Health et al., 2020; Catton, 2020).

Risk factors that cause emotional distress of caregivers include insecurity about the infection of patients and inadequate personal protective devices (PPE) and tests which makes caregivers feel uneasy. The increased workload and the necessity to frequently take difficult moral and ethical choices regarding referrals to patients could influence the psychological stress of caregivers in the course of the COVID-19 epidemic (Health et al., 2020)

Despite the COVID-19 epidemic yet, there have been few studies on nurses' strategies for coping with the outbreak. Cognitive emotion regulation can help manage emotions or alter the situation to manage emotions and stop a person from becoming overwhelmed by an event. There are four coping strategies that include the rumination of others, blaming them self-blame and catastrophizing. Self-blame happens when a person feels guilty for having experienced an event that causes depression and anxiety. When the rumination happens the person is able to think about emotions and thoughts that are related to the event. While rumination is on, people are constantly thinking about sad things. The effects of ruminating can be detrimental to the mental health of a person because it can cause depression. Catastrophizing can be described as an excessive focus on the horrors of life which can lead to depression as a result of refusing to accept the reality of difficult situations (Badahdah et al.,2021; Xiang et al,2020; Sakakibara & Kitahara, 2016)

Coping strategies are a set of thoughts and actions individuals employ to deal with stressful situations. The strategies are used to cope with stressful events. Coping methods have been employed as a way to prevent individuals from suffering emotional stress. Researchers have identified two common types of coping strategies which are problems focus and emotional focus. Focus on emotions aims to lessen the impact of emotional reactions triggered by a stressful incident. Focusing on the problem is attempting to reduce or eliminate the issue that causes stress. (Huang et al., 2020; Alharbi et al.,2020; Maben & Bridges, 2020). Coping responses may be either adaptive or ineffective and. Yet, Folkman et al (1980) argue that there aren't any effective or ineffective coping strategies or strategies. Rather they argue that the adaptive characteristics of coping efforts must be evaluated within the context of the particular context where they take place.

At present, information about the mental health challenges encountered by nurses who work with patients with COVID-19, their causes and the strategies for coping are insufficient. These data are crucial to creating strategies to decrease the symptoms of mental illness for nurses during the time of the pandemic. The primary objective of this research was identify level of stress and coping among nursing students.

7941

Materials and Methods

Research design

A cross-sectional study was conducted from January 2021 through March 2021. Before the commencement of the data collection process, the investigator obtained consent permission from the administrative committee and ethical clearance from Kalpna Chawla Medical College, Karnal.

Participants

The study's sample consisted of 500 undergraduate nursing students enrolled in various college nursing across Haryana. Among the Participants (n=110; 22%) were male and (n=390; 78%) were female.

Sampling technique



The data was collected using the convenience sampling technique. The questionnaire containing Information sheet, informed consent, demographic variables, stress scale, coping scale was prepared. The students who signed a consent form to participate in the study. Data was collected by self-administration method.

Inclusion criteria

- All nursing students who are studying 1st, 2nd , 3rd , and 4th Basic Nursing at selected Nursing Colleges, Haryana District will be included in the study.
- All girls and boys nursing students will be included in the study.
- Those students who are read and write in English and Hindi

Variables of the study

This study includes dependent and demographic variables. These are stress and coping behaviours among nursing students and age, sex marital status, education status of father as well as the educational status of mother, father's occupation and mother's occupation and religion, home and type of family, the family's income, and any family members who are affected by COVID 19.

Measurement

Covid Stress Scale (CSS)

The instrument containing 37-item COVID -19 Stress Scale (CSS) to assess COVID-19-related

stress. The stress scale has four sub scales Physical stress, psychological stress, social stress, financial stress. The CSS has a minimum score of 0 and a maximum score of 74. Stress was divided into three levels: Mild stress (0-25), stress (26-50) and Severe stress (51-74).

Covid Coping Scale (CCS)

The instrument containing 31-item COVID Coping Scale (CCS) to assess COVID-19-related coping behaviour. The CCS has a minimum score of 0 and a maximum score of 62. Coping was divided into three levels: Poor Coping (0-21), Average Coping (22-42) and Good coping (43-62).

Content Validity and Reliability

The tool was given to 10 experts for the content Validation. The authors used the (Yaghmaie,2003) criteria for determining content validity and created an evaluation form based on those criteria. The experts were asked to rate the items from 1 to 4. The item level content validity index (I-CVI) was estimated after expert suggestions. The I-CVI of stress scale and coping scale was found to be 0.86 and 0.89 respectively. This indicates the CSS, CCS, has met the satisfactory level of content validity. The tool was pretested with 60 samples and the Cronbach alpha was calculated which was found to be 0.78 and 0.82 for CSS, CCS respectively.

Results

**Table 1: Demographic Variables
n=500**

Demographic Variables		f	%
Age (in years)	19–20 years	150	30.0
	20–21 years	101	20.2
	Above 21 years	249	49.8
Sex	Male	110	22.0
	Female	390	78.0
Marital Status	Married	0	0.0
	Unmarried	500	100.0
	Widow	0	0.0
	Divorced	0	0.0
	Separated	0	0.0



Educational status of father	Illiterate	139	27.8
	Primary	50	10.0
	Middle	60	12.0
	High school	91	18.2
	PUC	50	10.0
	Degree	70	14.0
	Other	40	8.0
Educational Status of mother	Illiterate	100	20.0
	Degree	50	10.0
	Primary	151	30.2
	Middle	100	20.0
	High School	50	10.0
	Other	49	9.8
Occupation of Father	Farmer	199	39.8
	Shopkeeper	50	10.0
	Govt. Employer	201	40.2
	Labourer	50	10.0
Occupation of mother	Housewife	200	40.0
	Govt. Employer	149	29.8
	Tailor	51	10.2
	Self employed	100	20.0
Religion	Hindu	349	69.8
	Muslim	51	10.2
	Christian	50	10.0
	Other	50	10.0
Residence	Urban	200	40.0
	Rural	300	60.0
Type of Family	Nuclear	200	40.0
	Joint	201	40.2
	Extended	99	19.8
Family Income	Less than Rs. 10,000	150	30.0
	Rs. 10,000–20,000	149	29.8
	Rs. 20,000–30,000	201	40.2
Any family members	Yes	250	50.0

7943



affected by covid 19	No	250	50.0
-----------------------------	----	-----	------

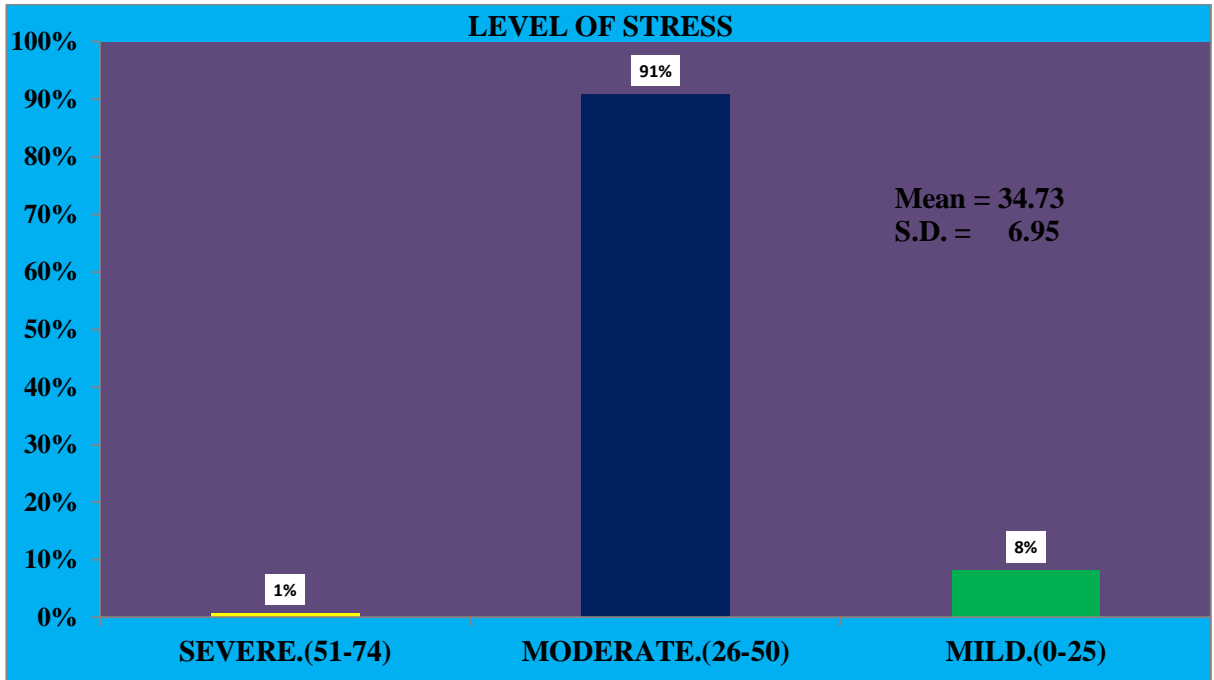


Figure1: Level of Stress, Mean and Standard Deviation

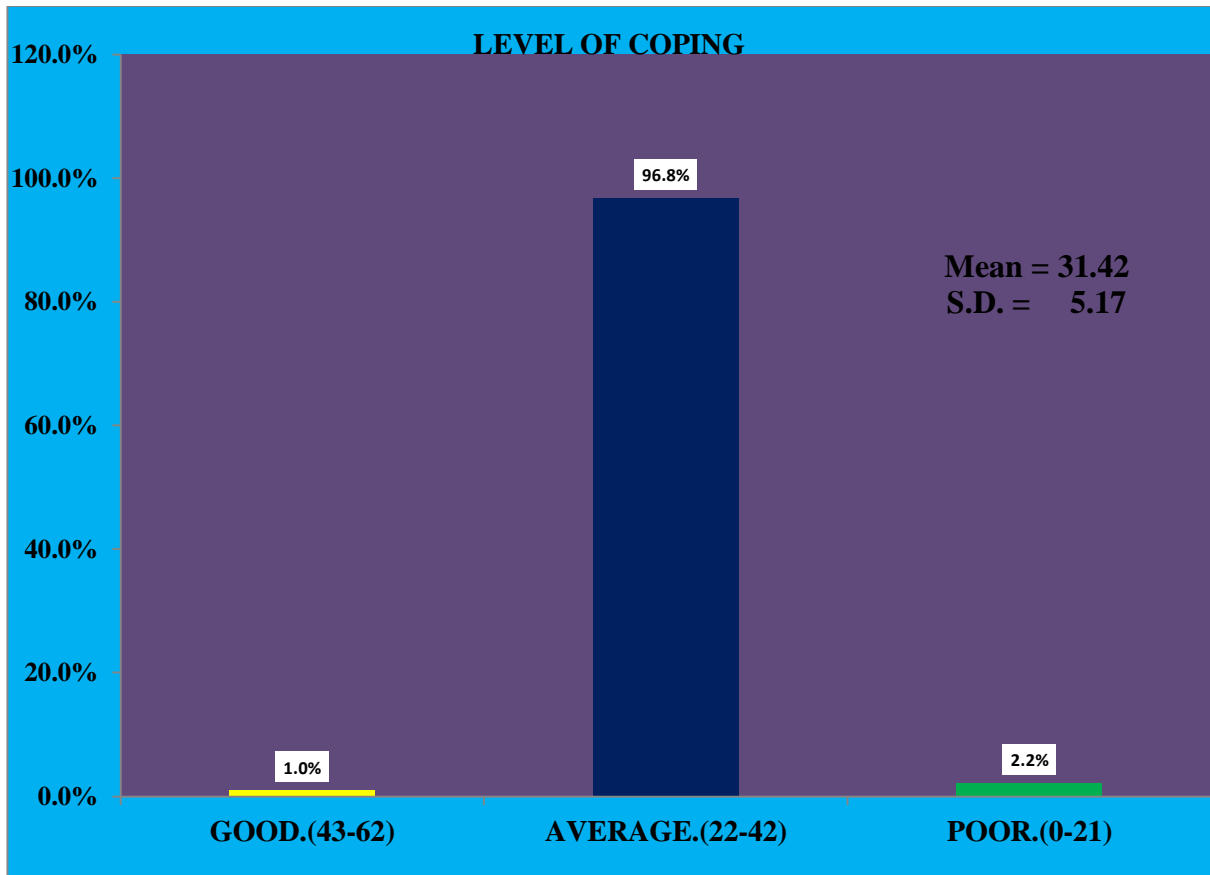


Figure 2: Level of Coping, Mean and Standard deviation



Table 2: Domains of stress among nursing students n=500

Descriptive Statistics	Physical Stress	Psychological Stress	Social Stress	Financial Stress	Overall
Mean	9.08	16.20	4.74	4.70	34.73
S.D.	2.933	3.800	1.679	1.741	6.946
Mean Percentage%	45.41	47.65	47.44	47.00	46.93
Rank	4	1	2	3	

Table 3: Loading coefficients of factors obtained by Factor Analysis of stress among nursing students

Item No.	Factor Loadings Physical	Factor Loadings Psychological	Factor Loadings Social	Factor Loadings Financial
	0.696			
	0.788			
	0.742			
	0.677			
	0.849			
	0.843			
	0.842			
	0.805			
	0.799			
	0.778			
		0.842		
		0.799		
		0.888		
		0.689		
		0.699		
		0.728		
		0.742		
		0.778		
		0.757		
		0.843		
		0.765		
		0.877		
		0.887		
		0.896		
		0.805		
		0.737		
		0.849		
			0.799	
			0.941	
			0.806	
			0.589	
			0.556	
			0.799	
				0.768
				0.850



				0.630
				0.724
Variance	13.52%	19.22 %	13.56 %	15.71 %
Eigen Value	2.18	1.71	2.03	1.94
Cronbach's Alpha	0.784	0.724	0.651	0.748

KMO= 0.748, Bartlett's Test of Sphericity $\chi^2 = 2672$, $p < 0.001$.

This four factors model explained nearly 62.01 % of the variability of the data. Factor 1 (Physical), Factor II (Psychological), Factor III (Social), Factor IV (Financial) accounted for 13.52%, 19.22%, 13.56%, 15.71%, of variance respectively with an eigenvalue of 2.18, 1.71, 2.03, 1.94.

Table 4: Relationship Between Coping behavior and stress among nursing Students

n=500

Variables	r Value	P value
Coping behaviour - Stress	-0.724	0.039 *

Table 4: depicts the relationship between coping behavior and stress. The findings suggest that there was moderate negative correlation between coping behaviour and stress in with r value of -0.724, which was significant at level of $p = 0.039$. Hence, it can be inferred that if coping behaviour increases stress decreases.

Table 5: Association Between demographic variables and level of stress during lockdown among nursing students.

n=500

Demographic variables		Severe	Moderate	Mild	Chi-Square test
Age (in years)	19–20 years	0	143	7	$\chi^2=12.517$ P=0.014 Df = 4 *
	20–21 years	1	84	16	
	Above 21 years	3	228	18	
Sex	Male	1	98	11	$\chi^2 = 0.635$ P = 0.728 Df = 2
	Female	3	357	30	
Educational status of father	Illiterate	0	130	9	$\chi^2 = 25.496$ P = 0.013 Df = 12 *
	Primary	1	43	6	
	Middle	0	49	11	
	High school	1	84	6	
	PUC	2	45	3	
	Degree	0	69	1	
Educational Status of mother	Illiterate	0	99	1	$\chi^2 = 22.153$ P = 0.014 Df = 10 *
	Degree	0	44	6	
	Primary	2	135	14	
	Middle	2	91	7	
	High School	0	40	10	
	Other	0	46	3	
Occupation of	Farmer	0	189	10	$\chi^2 = 19.626$



Father	Shopkeeper	0	40	10	P = 0.003 Df = 6 **
	Govt. Employed	4	178	19	
	Labourer	0	48	2	
Occupation of mother	Housewife	2	192	6	$\chi^2 = 14.695$ P = 0.023 Df = 6 *
	Govt. Employed	0	130	19	
	Tailor	1	44	6	
	Self Employed	1	89	10	
Religion	Hindu	2	322	25	$\chi^2 = 4.844$ P = 0.564 Df = 6
	Muslim	1	44	6	
	Christian	1	43	6	
	Other	0	46	4	
Residence	Urban	0	183	17	$\chi^2 = 2.712$ P = 0.258 Df = 2
	Rural	4	272	24	
Type of Family	Nuclear	0	183	17	$\chi^2 = 7.861$ P = 0.097 Df = 4
	Joint	4	178	19	
	Extended	0	94	5	
Family Income	Less than Rs. 10,000	0	147	3	$\chi^2 = 18.301$ P = 0.001 Df = 4 *
	Rs. 10,000–20,000	0	130	19	
	Rs. 20,000–30,000	4	178	19	
Any family members affected by covid 19	Yes	1	226	23	$\chi^2 = 1.630$ P = 0.443 Df = 2
	No	3	229	18	

7947

*p < 0.05 significant, p > 0.05 not significant.

Table 6 : Association Between demographic variables and level of coping during lockdown among nursing students.

n=500

Demographic Variables		Good	Average	Poor	Chi-Square Test
Age (in years)	19–20 years	3	143	4	$\chi^2 = 5.911$ P = 0.206 Df = 4
	20–21 years	2	96	3	
	Above 21 years	0	245	4	
Sex	Male	2	104	4	$\chi^2 = 2.341$ P = 0.310 Df = 2
	Female	3	380	7	
Educational status of father	Illiterate	0	138	1	$\chi^2 = 10.966$ P = 0.532 Df = 12
	Primary	0	50	0	



	Middle	1	57	2	
	High school	2	86	3	
	PUC	0	48	2	
	Degree	1	68	1	
	Other	1	37	2	
Educational Status of mother	Illiterate	1	98	1	$\chi^2 = 12.166$ $P = 0.274$ $Df = 10$
	Degree	2	45	3	
	Primary	2	145	4	
	Middle	0	98	2	
	High School	0	49	1	
	Other	0	49	0	
Occupation of Father	Farmer	3	192	4	$\chi^2 = 2.345$ $P = 0.885$ $Df = 6$
	Shopkeeper	0	49	1	
	Govt. Employer	2	195	4	
	Labourer	0	48	2	
Occupation of mother	Housewife	1	194	5	$\chi^2 = 9.386$ $P = 0.153$ $Df = 6$
	Govt. Employer	2	143	4	
	Tailor	2	47	2	
	Self employed	0	100	0	
Religion	Hindu	3	337	9	$\chi^2 = 8.758$ $P = 0.188$ $Df = 6$
	Muslim	2	47	2	
	Christian	0	50	0	
	Other	0	50	0	
Residence	Urban	3	192	5	$\chi^2 = 0.992$ $P = 0.609$ $Df = 2$
	Rural	2	292	6	
Type of Family	Nuclear	3	192	5	$\chi^2 = 1.655$ $P = 0.799$ $Df = 4$
	Joint	2	195	4	
	Extended	0	97	2	
Family Income	Less than Rs. 10,000	1	146	3	$\chi^2 = 0.584$ $P = 0.965$



	Rs. 10,000–20,000	2	143	4	Df = 4
	Rs. 20,000–30,000	2	195	4	
Any family members affected by covid 19	Yes	5	238	7	$\chi^2 = 5.950$ P = 0.051 Df = 2
	No	0	246	4	

Table 6 shows that demographic variables and stress were not related to each other.

Discussion

During the lockdown nursing students throughout the world are under a great deal of stress for a variety of reasons, the first of which is the dread of contracting COVID 19 while caring for COVID-19-infected patients, and the second is the pandemic's extreme workload due to continuous flow of patents. Many research have been undertaken to analyse stress and coping techniques among staff nurses, but only a few studies have been performed to estimate the level of stress and coping behaviour of nursing students who were undergoing clinical training during the pandemic. This study tries to explore the prevalence of stress among Indian nursing students and coping strategies adapted by them to manage the stress.

This study findings show that majority of the nursing students had moderate of level of stress during clinical training and almost all the nursing students use different coping strategies to deal with stress. This study findings converge with the research conducted by (Sveinsdottir et al.,2021) who reported 51% of the nursing students had stress during lockdown while undergoing clinical training. However, contrasting results were reported by (Hamadi, 2021) were nursing students coping strategies were not found satisfactory to deal with stress. Further the study recommends implementation of stress management programme for nursing students to manage the stress.

This study used authored developed stress scale and coping inventory to measure the level of stress and coping behaviour of nursing students. Almost all the nursing students had moderate stress (91%), mild (8%), mild (1%) and almost all nursing students had average coping behaviour (96.8%), Good (1%), Poor (2.2%) and also there was strong negative correlation between coping

behaviour and stress ($r= 0.724$). The study conducted by (Shaheen, 2021) who reported effective use of coping behaviour by the nursing students significantly reduces the stress. Tiwari et al. (2021) reported there was negative correlation between coping behaviour and stress among nursing students.

This study finding shows that 89 % of the male students and 91% students female had moderate level of stress. A study conducted by (Sveinsdottir et al., 2021) on nursing students consistent with the current study findings. Further the study reported that female had more stress compared to the male students. Another study done by (Aslan et al., 2020) reported of presence of high stress among female when to male students. This gender differences in stress were explained previous studies conducted by (Zhang et al., 2020; Wang et al., 2021; Rogowska et al., 2020; Qiu et al., 2020).

This study finding shows nursing students had physical stress (45.41%), Psychological Stress (47.65%), Social Stress (47.44%), Financial Stress (47.00%). The study findings were parallel to the study to the conducted by (Aslan et al., 2020) reported psychological and financial stress was more common due to loss of closed one, job loss of family members, fear of COVID -19 infection were common contributing factors. Similar study findings were reported by (Cao et al, 2020, Islam et al., 2020).

This study findings shows 91% of the students aged above 21 years (Final year students) exhibited moderate level of stress and 7.2 % had mild level of stress. The current study findings were converge with the study conducted by (Revert'e-Villarroya et al., 2021) reported presence of high level stress in final year students. However, study conducted by (Aslan et al., 2021) was contradicted with current study findings who

7949



reported presence of higher level of stress among pre final year students.

This study finding shows that 87.2 % of the male students and 97.4% students female had average level of coping behaviour. The study findings were converge with the study conducted by (Khoshaim et al., 2020) who reported female students adapted more coping techniques than male students. Cvetkovic et al. (2018) reported influence of gender in adapting the coping strategies during demanding situation.

This study findings shows 98.4 % of the students aged above 21 years (Final year students) had average coping strategies and 1.6 % had poor coping strategies. The current finding converge with study conducted by (Hamdi et al, 2021) who reported use better coping strategies by final year nursing students. Similar findings reported by (Huang et al., 2020) who explained the better coping strategies applied by the final nursing students to manage stress.

Despite the fact that our study attempted to close the research gap left by previous studies, our study has also certain limitations. The study results may be influenced by personality trait of the students. This study does not explore the contributing factors which may lead stress to during clinical training of nursing students.

Conclusion

According to our findings, almost all nursing students experienced moderate levels of stress throughout clinical training during pandemic period, necessitating the efficient application of coping techniques to manage this stress. Nursing students' stress levels should be examined on a regular basis, contributing variables should be recognized, and the nurse administrators should establish a guidance, counselling, and stress management program to especially manage the stress during pandemic.

References

1. Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *General psychiatry*, 33(2), e100213. <https://doi.org/10.1136/gpsych-2020-100213>
2. Wang, Q. Q., Fang, Y. Y., Huang, H. L., Lv, W. J., Wang, X. X., Yang, T. T., ... & Zhang, Y. H. (2021). Anxiety, depression and cognitive emotion regulation strategies in Chinese nurses during the COVID-19 outbreak. *Journal of Nursing Management*, 29(5), 1263-1274.
3. Naushad, V. A., Bierens, J. J., Nishan, K. P., Firjeeth, C. P., Mohammad, O. H., Maliyakkal, A. M., ... & Schreiber, M. D. (2019). A systematic review of the impact of disaster on the mental health of medical responders. *Prehospital and disaster medicine*, 34(6), 632-643.
4. Heath, C., Sommerfield, A., & von Ungern-Sternberg, B. S. (2020). Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: a narrative review. *Anaesthesia*, 75(10), 1364-1371.
5. Catton, H. (2020). Global challenges in health and health care for nurses and midwives everywhere. *International nursing review*, 67(1), 4-6.
6. Badahdah, A., Khamis, F., Al Mahyijari, N., Al Balushi, M., Al Hatmi, H., Al Salmi, I., ... & Al Noomani, J. (2021). The mental health of health care workers in Oman during the COVID-19 pandemic. *International Journal of Social Psychiatry*, 67(1), 90-95.
7. Xiang, Y. T., Yang, Y., Li, W., Zhang, L., Zhang, Q., Cheung, T., & Ng, C. H. (2020). Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *The lancet psychiatry*, 7(3), 228-229.
8. Sakakibara, R., & Kitahara, M. (2016). The relationship between Cognitive Emotion Regulation Questionnaire (CERQ) and depression, anxiety: Meta-analysis. *Shinrigaku kenkyu: The Japanese journal of psychology*, 87(2), 179-185.
9. Huang, L., Lei, W., Xu, F., Liu, H., & Yu, L. (2020). Emotional responses and coping strategies in nurses and nursing students during Covid-19 outbreak: A comparative study. *PLoS one*, 15(8), e0237303.
10. Alharbi, J., Jackson, D., & Usher, K. (2020). The potential for COVID-19 to contribute to compassion fatigue in critical care nurses. *Journal of clinical nursing*.
11. Maben, J., & Bridges, J. (2020). Covid-19: Supporting nurses' psychological and mental

7950



- health. *Journal of clinical nursing*, Accepted-Article.
12. Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of health and social behavior*, 219-239.
 13. Yaghmaie, F. (2003). Content validity and its estimation. *Journal of medical education*, 3(1).
 14. Sveinsdóttir, H., Flygenring, B. G., Svavarsdóttir, M. H., Thorsteinsson, H. S., Kristófersson, G. K., Bernharðsdóttir, J., & Svavarsdóttir, E. K. (2021). Predictors of university nursing students burnout at the time of the COVID-19 pandemic: A cross-sectional study. *Nurse Education Today*, 106, 105070.
 15. Hamadi, H. Y., Zakari, N. M., Jibreel, E., Al Nami, F. N., Smida, J. A., & Ben Haddad, H. H. (2021). Stress and coping strategies among nursing students in clinical practice during COVID-19. *Nursing Reports*, 11(3), 629-639.
 16. Shaheen, S. R., Moussa, A. A., & Khamis, E. A. R. (2021). Knowledge and Attitude of Undergraduate Nursing Students toward COVID 19 and their Correlation with Stress and Hope Level. *Assiut Scientific Nursing Journal*, 9(24), 73-83.
 17. Tiwari, J., Imam, Z., Nagar, S., Singh, S., Gaur, S., & Verma, J. (2021). A study to assess perceived stress and coping strategies for COVID-19 among gnm 3 rd year students in integral college of nursing Lucknow. *Int J Curr Res*, 13, 16812-6.
 18. Aslan, I., Ochnik, D., & Çınar, O. (2020). Exploring perceived stress among students in Turkey during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 17(23), 8961.
 19. Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934.
 20. Islam MS, Sarkar T, Khan SH, Mostofa Kamal AH, Hasan SMM, Kabir A, Yeasmin D, Islam MA, Amin Chowdhury KI, Anwar KS, Chughtai AA, Seale H. COVID-19-Related Infodemic and Its Impact on Public Health: A Global Social Media Analysis. *Am J Trop Med Hyg*. 2020 Oct;103(4):1621-1629. doi: 10.4269/ajtmh.20-0812.
 21. Zhang, Y., & Ma, Z. F. (2020). Impact of the COVID-19 Pandemic on Mental Health and Quality of Life among Local Residents in Liaoning Province, China: A Cross-Sectional Study. *International journal of environmental research and public health*, 17(7), 2381. <https://doi.org/10.3390/ijerph17072381>
 22. Wang, Y., Di, Y., Ye, J., & Wei, W. (2021). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychology, health & medicine*, 26(1), 13-22.
 23. Kumar, S. (2022). A quest for sustainium (sustainability Premium): review of sustainable bonds. *Academy of Accounting and Financial Studies Journal*, Vol. 26, no.2, pp. 1-18
 24. Allugunti V.R (2022). A machine learning model for skin disease classification using convolution neural network. *International Journal of Computing, Programming and DatabaseManagement* 3(1), 141-147
 25. Rogowska, A. M., Kuśnierz, C., & Bokszczanin, A. (2020). Examining anxiety, life satisfaction, general health, stress and coping styles during COVID-19 pandemic in Polish sample of university students. *Psychology Research and Behavior Management*, 13, 797.
 26. Reverté-Villarroya, S., Ortega, L., Lavedán, A., Masot, O., Burjalés-Martí, M. D., Ballester-Ferrando, D., Fuentes-Pumarola, C., & Botigué, T. (2021). The influence of COVID-19 on the mental health of final-year nursing students: comparing the situation before and during the pandemic. *International journal of mental health nursing*, 30(3), 694–702. <https://doi.org/10.1111/inm.12827>
 27. Khoshaim, H. B., Al-Sukayt, A., Chinna, K., Nurunnabi, M., Sundarasan, S., Kamaludin, K., ... & Far Abid Hossain, S. (2020). How students in the Kingdom of Saudi Arabia are coping with COVID-19 pandemic. *Journal of Public Health Research*, 9(1_suppl), jphr-2020.
 28. Cvetković, V. M., Roder, G., Öcal, A., Tarolli, P., & Dragičević, S. (2018). The role of gender in preparedness and response behaviors



towards flood risk in Serbia. International
journal of environmental research and public
health, 15(12), 2761.

