

Stress and Coping Mechanism Among Nursing Students of a Selected Tertiary Care Centre of West Bengal

Manisha Sarkar¹, Subarna Sinha Mahapatra², Aditya Prasad Sarkar³, Atanu Biswas^{4*}

^{1,2,3,4}Bankura Sammilani Medical College, Bankura, West Bengal, India

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ABSTRACT

Background: The health of nursing students are affected by different stressors. The perception of and the ability to handle the stress depends on their coping styles.

Objectives: To find out the prevalence of stress and factors associated with stress and coping mechanisms among B.Sc. nursing students of Nursing College, at Bankura, West Bengal.

Methodology: A cross-sectional observational study was conducted among 201 B.Sc. nursing students of a tertiary care centre at Bankura using self-administered questionnaire, PSS-10 and Brief-COPE inventory. Association between categorical data were analysed using chi square test. Correlation between two quantitative variables was tested using Spearman's rank correlation, while Mann Whitney U test was performed to compare the differences between two groups.

Results: Proportion of participants with low, moderate and high perceived stress were 18.9%, 67.2% and 13.9% respectively. Higher academic year, opting career by compulsion, history of long-term illness and receiving no support from family were associated with high stress. There was significant positive correlation between age, problem focused coping, avoidant coping, adaptive coping and maladaptive coping scores with PSS-10.

Conclusions: Complete stress-free nursing career might be a stretch, but it is imperative to identify the stressors to alleviate the level of perceived stress among the nursing students.

Key-words: Adaptation Psychological, Coping strategy, Nursing Education Research, Stress Psychological, Students Nursing

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***Correspondence:** Dr. Atanu Biswas (Email: atanunbmc@gmail.com)

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INTRODUCTION

Stress can be defined as a state of worry or mental tension caused by a difficult situation.¹ Stress is a natural human response that prompts us to address challenges and threats in our lives.¹ Little bit of stress is good for people to perform and protect themselves (positive stress or eustress) but too much stress can overwhelm them leading to fight, flight or freeze response (negative stress or distress).^{1,2} Coping can be defined as thoughts and behaviours used to manage the internal and external demands of situations that are appraised as stressful.³ So learning how to cope with stress is important for mental and physical wellbeing of human being.¹

Worldwide, the prevalence of mental health-related problems among the medical professionals is on the rise.⁴ Stressors like academic expectations, separation from family, workload, assignments, patient care and lack of leisure time put a toll on the health of the nursing students.¹⁻⁶ Studies reveal that high levels of stress negatively affect nursing students' general health, academic and clinical performance.⁵ The perception of stress and ability to handle stress is determined by the coping styles of nursing students.

Many studies have been conducted to address this important issue, however there is paucity of data from West Bengal, India. Evidence is lacking for Bankura District also.

The study was conducted with the objectives to determine the prevalence of stress and factors associated with stress and coping mechanisms among B.Sc. nursing students of Nursing College, at Bankura, West Bengal.

METHODOLOGY

An institution-based analytical, observational study with cross-sectional design was conducted among the undergraduate nursing students of Government College of Nursing, at a tertiary care centre of Bankura, West Bengal in the months of September to November, 2022. The study population comprised the students pursuing B.Sc. Nursing course in the aforementioned institute.

Eligibility criteria: Those who were present during the time of data collection and who gave written informed consent were included. The nursing batch who had any nearby examination that coincided with the period of data collection and the nursing students with pre-existing psychiatric disorders were excluded.

In a study by Bag R, 23.88% nursing students had moderate stress, while none had severe stress.² Taking p as 23.88%, d or absolute error as 9% and 95% confidence interval, the calculated minimum sample size came to be 86.21 by using the formula $n = Z^2(pq)/d^2$. Taking non-response rate of 15%, sample

size became 101.4 \approx 102. Taking design effect of 2, the sample size required would be 204. We approached 204 nursing students and 3 of them had incomplete responses, and were excluded from the study. Finally, 201 students were considered as sample for data analysis.

The study was conducted in two stages. In the first stage, three out of four academic years in B.Sc. Nursing curriculum were selected based on eligibility criteria as 3rd year nursing students were busy with nearby examination preparation. In the second stage, from each academic year, all nursing students were selected based on eligibility criteria, until the desired number of samples were obtained.

Study variables included sociodemographic variables (age, religion, academic year, residence, type of family, education of parents, socioeconomic status etc.), factors leading to stress and coping mechanisms (available hours for recreational activities, any history of chronic illness, career preferences, family support, coping mechanisms, stress management ways etc.). Nursing students were interviewed using the study tools which included pre-designed pre-tested structured self-administered questionnaire (SAQ), PSS-10⁷ and Brief-COPE⁸ inventory.

Perceived Stress Scale (PSS), developed by Sheldon Cohen,⁷ is used as a self-appraisal measure for individuals to assess the extent of the perceived stressfulness of their various life situations. It comprises of 10 items measured on a five-point Likert scale (0: never, 1: almost never 2: sometimes 3: fairly often 4: very often). The PSS score is obtained by summing the scores of all the items, with reverse coding for items 4, 5, 7, and 8 as they are positively stated. The PSS ranges from 0 to 40, with the 40-point score representing the highest perceived stress level i.e., higher score represented more stress. Based on the score, perceived stress is classified as low stress (1-13), moderate stress (14-26) and high stress (27-40).

The Brief-COPE⁸ can be used to assess trait coping (the usual way people cope with stress in everyday life) and state coping (the way people cope with a specific stressful situation). The scale consists of 14 subscales with two items per subscale (i.e., 28 questions overall) measuring active coping, planning, positive reframing, acceptance, humour, religion, use of emotional support, use of instrumental support, self-distraction, denial, venting, substance use, behavioural disengagement, and self-blame.

Cooper et al.⁹ categorised the original Brief-COPE subscales into three, "Problem-focused coping" (active coping, use of informational support, planning, and positive reframing), "Emotion-focused coping" (venting, use of emotional support, humour, acceptance, self-blame, and religion), and "Avoidant coping" (self-distraction, denial, substance use, and behavioural disengagement).

Meyer¹⁰ categorized original Brief-COPE subscales into second-order factor model, which consisted of

“Adaptive coping strategies” (use of emotional support, positive reframing, acceptance, religion, humour, active coping, planning, and use of instrumental support) and “Maladaptive coping strategies” (venting, denial, substance use, behavioural disengagement, self-distraction, and self-blame).

Permission from Institutional Ethics Committee was sought for before the study was begun. All the subjects were explained about the purpose and procedure of the study. Upon receiving written informed consent from them, information was collected from the subjects using validated, English version of the SAQ. Data were entered using Microsoft Office Excel and analysed using JAMOVI software for windows, release solid and version 2.2.5 (The Jamovi Project 2021, Sydney, Australia). Results were expressed in terms of mean, median, standard deviation, range and percentage. Association between categorical data were analysed using chi square test. Stress and coping scores were checked for normality by using Histogram, QQ plot and Kolmogorov Smirnov Test. Both the stress and coping scales did not follow normal distributions, therefore non-parametric tests were done. To test the correlation between two quantitative variables Spearman’s rank correlation was done and to compare the differences between two independent groups, when the dependent variable is ordinal or continuous, Mann Whitney U test was performed. For all statistical purposes p value less than 0.05 was considered statistically significant.

RESULTS

Socio-demographic characteristics: The mean age (SD) of the nursing students were 20.2 ± 1.41 years,

with range of 7 years (17-24). All of them were females. Maximum study participants belonged to 1st year (45.3%) followed by 2nd year (29.4%) and 4th year (25.4%) respectively. Majority belonged to Hinduism (86.1%), followed by Islam (10.9%) and others (Buddhism, Sikhism and Sari) (3.0%). Maximum nursing students (45.8%) belonged to general or unreserved category followed closely by Scheduled caste (SC) (22.9%) and Other backward class (OBC) (22.4%) while rest (9.0%) belonged to scheduled tribe (ST). Majority (80.1%) of the students belonged to nuclear family. More than half (52.2%) of the nursing student mothers and less than one fourth (23.4%) of the nursing student fathers were educated up to secondary level or below. Majority of them had permanent residence at rural areas (69.2%), and most study participants stayed at hostel (61.7%) while some stayed at home (20.9%) and remaining (17.4%) stayed at paying guests, relatives’ home or rented house. As per modified BG Prasad scale, Jan 2022,¹¹ maximum nursing students belonged to socio-economic status (SES) class I (36.3%), followed by SES class II (19.4%), IV (17.9%), III (16.9%) and V (9.5%) respectively

Nearly more than one third (37.3%) opted this career by compulsion, while remaining opted it by their choice. Nearly one tenth (10.4%) of nursing students had long term illness, of whom 42.1% were suffering from polycystic ovarian syndrome, while others had asthma, diabetes mellitus, hypothyroidism, dyslipidaemia etc. Majority (94.5%) received support from their family. More than one third (35.8%) had history of chronic illness in family members. Approximately less than half (46.8%) nursing students had less than ten hours available for recreation weekly.

Table 1: PSS-10 scale and Brief-COPE inventory scale and subscales among the participants (n=201)

Scales and subscales	Mean ± SD	Median (IQR)
PSS-10	19.62 ± 6.61	20 (9.00)
The original brief-COPE by Carver		
Self-distraction (Items 1 & 19)	3.00 ± 0.73	3.00 (1.00)
Active coping (Items 2 & 7)	2.98 ± 0.71	3.00 (1.00)
Denial (Items 3 & 8)	1.70 ± 0.69	1.50 (1.00)
Substance use (Items 4 & 11)	1.09 ± 0.44	1.00 (0.00)
Emotional support (Items 5 & 15)	2.75 ± 0.83	2.50 (1.50)
Behavioural disengagement (Items 6 & 16)	1.63 ± 0.73	1.50 (1.00)
Venting (items 9 & 21)	2.59 ± 0.74	2.50 (1.00)
Use of informational support (Items 10 & 23)	2.63 ± 0.79	2.50 (1.00)
Positive reframing (Items 12 & 17)	2.83 ± 0.78	3.00 (1.00)
Self-blame (Items 13 & 26)	2.37 ± 0.88	2.00 (1.00)
Planning (Items 14 & 25)	2.96 ± 0.65	3.00 (1.00)
Humour (Items 18 & 28)	1.85 ± 0.85	1.50 (1.50)
Acceptance (Items 20 & 24)	3.02 ± 0.70	3.00 (1.00)
Religion (Items 22 & 27)	2.58 ± 0.91	2.50 (1.50)
Brief-COPE scale-Cooper, Katona, Orrell, &Livingston		
Problem-Focused Coping	2.85 ± 0.52	2.88 (0.75)
Emotion-Focused Coping	2.53 ± 0.39	2.58 (0.58)
Avoidant coping	1.86 ± 0.35	1.88 (0.38)
Brief-COPE scale categorized by Meyer		
Adaptive coping	2.70 ± 0.42	2.75 (0.63)
Maladaptive coping	2.07 ± 0.35	2.00 (0.42)

Mean (SD) available time for recreation weekly was 11.0 ± 7.46 hours, median time (IQR) was 10 hours (8) varying from nil to 49 hours. Only few (7.0%) attended any stress management program in past.

Perceived stress and coping strategies among the nursing students: Among the study participants, 18.9% had low stress, 67.2% had moderate stress while remaining (13.9%) had high perceived stress. PSS scores varied from score 1 to 39 among nursing students. The descriptive summary of the obtained scores of PSS-10 scale and Brief-COPE inventory scale and subscales among the nursing students have been presented in Table 1. Most commonly used coping strategies by the nursing students based on orig-

inal Brief-COPE⁸ were self-distraction, active coping, positive reframing, planning and acceptance, while substance use was the least commonly used coping strategy. Nursing students used problem focused coping strategies more than emotion focused coping strategies and least frequently used avoidant coping strategy based on Cooper et al.'s⁹ classification. Problem focused strategies aims at changing the stressful situation. High scores are also indicative of psychological strength, grit, a practical approach to problem solving and is predictive of positive outcomes.⁹ Study also found that adaptive coping strategies were more frequently used by the nursing students in contrast to maladaptive coping strategies based on Meyer et al.'s¹⁰ classification.

Table 2: Association between sociodemographic profile and stress categories (n=201)

Variables	Low stress 38 (18.9%)	Moderate stress 135 (67.2%)	High perceived stress 28 (13.9%)	χ^2 , df, p value
Caste				
Unreserved	16 (17.4)	60 (65.2)	16 (17.4)	1.76, 2, 0.415
Reserved	22 (20.2)	75 (68.8)	12 (11.0)	
Academic year				
1 st	26 (28.6)	56 (61.5)	9 (9.9)	12.5, 4, 0.014 [Fisher exact test- p=0.011]
2 nd	4 (6.8)	45 (76.3)	10 (16.9)	
4 th	8 (15.7)	34 (66.7)	9 (17.6)	
Mother's education				
Secondary level or below	19 (18.1)	73 (69.5)	13 (12.4)	0.64, 2, 0.727
Higher secondary or above	19 (19.8)	62 (64.6)	15 (15.6)	
Father's education				
Secondary level or below	6 (12.8)	34 (72.3)	7 (14.9)	1.51, 2, 0.470
Higher secondary or above	32 (20.8)	101 (65.6)	21 (13.6)	
Type of family				
Nuclear	31 (19.3)	107 (66.5)	23 (14.3)	0.19, 2, 0.912
Joint	7 (17.5)	28 (70.0)	5 (12.5)	

Table 3: Factors associated with severity of stress (low, moderate and high perceived stress) among nursing students (n=201)

Variables	Low stress 38 (18.9%)	Moderate stress 135 (67.2%)	High perceived stress 28 (13.9%)	χ^2 , df, p value
Permanent residence				
Rural	26 (18.7)	97 (69.8)	16 (11.5)	2.36, 2, 0.307
Urban	12 (19.4)	38 (61.3)	12 (19.4)	
Current stay				
Hostel	22 (17.7)	83 (66.9)	19 (15.3)	2.78, 4, 0.594 Fisher Exact test- p=0.573
PG or others	7 (20.0)	26 (74.3)	2 (5.7)	
Home	9 (21.4)	26 (61.9)	7 (16.7)	
Reasons for opting this career				
By choice	24 (19.0)	91 (72.2)	11 (8.7)	7.85, 2, 0.020
By compulsion	14 (18.7)	44 (58.7)	17 (22.7)	
History of long-term illness				
Yes	3 (14.3)	10 (47.6)	8 (38.1)	11.4, 2, 0.003 Fisher Exact test- p=0.007
No	35 (19.4)	125 (69.4)	20 (11.1)	
Support from family				
Yes	37 (19.5)	130 (68.4)	23 (12.1)	9.71, 2, 0.008 Fisher Exact test- p=0.020
No	1 (9.1)	5 (45.5)	5 (45.5)	
History of chronic illness in family				
Yes	14 (19.4)	47 (65.3)	11 (15.3)	0.22, 2, 0.895
No	24 (18.6)	88 (68.2)	17 (13.2)	
Time available for recreation per week				
< 10 hrs	19 (20.2)	61 (64.9)	14 (14.9)	0.41, 2, 0.814
≥ 10 hrs	19 (17.8)	74 (69.2)	14 (13.1)	
Attended any stress management program				
Yes	3 (21.4)	7 (50.0)	4 (28.6)	3.03, 2, 0.220 Fisher Exact test- p=0.169
No	35 (18.7)	128 (8.4)	24 (12.8)	

Factors affecting stress and coping strategies among nursing students: Association between sociodemographic profile and other variables with low, moderate and high stress categories have been shown in Table 2 & 3. Higher academic year, opting career by compulsion, history of long-term illness and receiving no support from family were associated with high stress. There was significant positive linear correlation between age, problem focused coping, avoidant coping, adaptive coping and maladaptive coping scale scores with PSS-10 scores as shown in Table 4. Factors associated with adaptive and maladaptive coping strategies among nursing students have been shown in Table 5. Nursing students who received support from their family members were engaged in more of adapting coping strategies in

comparison to those who received no family support. Those nursing students who opted for this career by compulsion were more involved in maladaptive coping strategies in comparison to those who opted the career by choice.

Table 4: Correlation between PSS-10 score with age and various coping strategies (n=201)

Variables	PSS-10 score	
	Spearman's ρ	p value
Age	0.154	0.029
Problem-focused coping	0.290	<0.001
Emotion-focused coping	0.052	0.467
Avoidant coping	0.176	0.012
Adaptive coping	0.326	<0.001
Maladaptive coping	0.282	<0.001

Table 5: Factors associated with adaptive and maladaptive coping strategies among nursing students (n=201)

Variables	Adaptive coping			Maladaptive coping		
	Median	Mann Whitney U	p value	Median	Mann Whitney U	p value
Age (years)						
< 20	2.81	4220	0.438	2.04	4403	0.760
\geq 20	2.69			2.00		
Caste						
Unreserved	2.75	4577	0.287	2.08	4622	0.338
Reserved	2.69			2.00		
Reasons for opting this career						
By choice	2.69	4550	0.660	2.00	3792	0.019
By compulsion/ others	2.75			2.08		
Support from family						
Yes	2.75	469	0.002	2.00	944	0.589
No	2.38			2.00		
Time available for recreation weekly						
<10 hours	2.72	5018	0.980	2.00	4956	0.859
\geq 10 hours	2.75			2.08		
Attended any stress management program						
Yes	2.81	1251	0.782	2.00	1238	0.734
No	2.75			2.00		

DISCUSSION

The current cross-sectional study was conducted to find out the prevalence of stress among the nursing students, to determine the coping strategies adopted by them and to determine the factors affecting stress and coping strategies. Nursing students experience enormous stress, and to deal with them, everyone engages in different coping strategies as evident by various studies.^{2,3,5,12-18} It is important to lessen the stressors which impairs the quality of life and affects the work efficiency particularly among the future nursing work force.

In this study the mean age of the nursing students were 20.2 ± 1.41 years with a range from 17-24 years similar to other studies.^{12,15-17} The study revealed that 18.9% nursing students had low perceived stress, 67.2% had moderate stress while 13.9% had high perceived stress. Similarly, Singh et al.¹⁹ reported the prevalence of mild, moderate and severe stress as 19.4%, 76.9% and 3.6% respectively.

Joseph et al.²⁰ also found in their systematic review that low to moderate stress was reported in all the studies and high/ severe stress was comparatively low. However, Bag R² found slightly different results, 73.14% students had mild stress (score 11-20), 23.8% had moderate stress (score 21-30), 2.98% had least level of stress (score 0-10) and none had severe stress (score 31-40). These differences could be because of small sample size in later study and different categorization of stress based on scores obtained.

The mean stress score in the current study was 19.62 ± 6.61 with median (IQR) score of 20.0 (9.00). Similarly, Sierakowska et al.²¹ found the mean PSS-10 scores as 20.9 ± 5.2 .

The current study revealed that nursing students most commonly were engaged in self-distraction, active coping, positive reframing, planning and acceptance as coping strategies, while substance use was least common coping strategy used by them. As per another similar study³ active coping and planning were the common coping strategies among the

undergraduate nursing students. Substance use was also recorded as least frequently used coping strategy in the same study.³ In another study¹⁶ active coping was the most commonly used coping strategies whereas the least reported coping strategy was the use of substance use. Similar findings were also revealed by Sierakowska et al.²¹ i.e., the most popular strategies of coping with stress were active coping (2.2 ± 0.5) and planning (2.2 ± 0.6), as well as emotional support (2.1 ± 0.6). The lowest score was obtained for substance use (0.3 ± 0.6).²¹ However, Das et al.¹² reported that the coping strategies 'used a lot' by majority of the study participants were spirituality/meditation/ religion, information support from others and active coping, while substance use was still least used strategy. The differences in the former could be due to local or regional belief in prayers. Though spirituality/ meditation also reflected positive coping strategy.

The current study found that nursing students used problem focused coping strategies more than emotion focused coping strategies and least frequently used the avoidant coping strategies. The findings corroborated with Dasgupta et al.¹⁷ who reported that problem solving was the mostly adopted coping behaviour, and avoidance was the least practiced coping behaviour among the students. Similarly, problem-focused coping was the strategy most used and avoidance least used strategy, even by the emergency department nurses in another study.²²

Adaptive coping strategies were more frequently used by the nursing students in contrast to maladaptive coping strategies as per the current study. This finding corroborated with other study.¹⁶

Current study revealed that higher academic year, opting career by compulsion, history of long-term illness and receiving no support from family were associated with high stress. Baluwa et al.³ reported that academic category was associated with higher levels of stress, particularly 2nd year. Nebhinani et al.¹⁶ also found lack of free time as likely reason of distress apart from attitude of other professionals towards nursing and fear of examination. Level of stress was found to have significant association with the interest of students in nursing.¹⁶ Association between level of stress and demographic variables such as purpose of joining this course, monthly family income and precipitating factors (i.e., away from home first time, failure to pursue other courses) was also found in the study of Bag R.²

Stress correlates with coping strategies. As per the current study there was significant positive linear correlation between PSS-10 scores with age, problem focused coping, avoidant coping, adaptive coping and maladaptive coping scale scores. Similar findings were obtained from Dasgupta et al.¹⁷ i.e., significant correlation (r) was observed between overall PSS and coping behaviour (Coping behaviour inventory score) scores. Stress was related with coping strategies even during the covid-19 pandemic. Significant

positive correlation between total stress score and each strategy of adaptive and maladaptive coping strategies were revealed from the study of Elsherbny et al.²³ during covid-19 pandemic.

Several factors predict the coping strategies adopted by the nursing students. In this study it was revealed that, nursing students who received support from their family members were engaged in more of adapting coping strategies in comparison to those who received no family support. Likewise, those nursing students who opted for this career by compulsion were more involved in maladaptive coping strategies in comparison to those who opted the career by choice. This corroborated with the study of Nebhinani et al.¹⁶ where, participants with interest in nursing significantly used active coping as compared to participants who did not have interest in nursing. Maladaptive coping like denial, venting, and self-blame were significant coping strategies used by students with no interest in nursing.¹⁶ Although participants who had attended any stress management program in the past were found to have used self-distraction as main coping strategy as revealed by Nebhinani et al.¹⁶ whereas this factor (i.e., attended any stress management program in past) was neither found to be associated with stress nor with coping strategies adopted by the nursing students in the current study.

CONCLUSION

It would be a stretch to promise a completely stress-free nursing career, but it is definitely possible to alleviate the level of stress among aspiring nurses by looking into the factors that increase stress. The study provides insight into the factors associated with stress among the budding nurses and also highlighted on the coping styles adopted by them. Study also addressed the factors that affected coping strategies.

The study was limited in having the possibility of recall bias and conscious falsification of facts.

Recommendation: The early management of any long-term illness and providing family support during the progression of the nursing training are crucial to reducing stress among aspiring nurses and improving their quality of life. At the very least, efforts should be made to provide the chance to choose a career by choice rather than by compulsion.

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