

An Evaluation of the Impact of Deep Breathing Exercises on Reducing Academic Stress in B.Sc. Nursing Semester Students

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Abstract

Introduction: Academic stress nowadays is one of the considerable problems in nursing students which need to be tackled for improvement of their profession. **Objectives:** The objectives of the study were a) To assess level of stress among 3rd semester and 4th semester BSc Nursing students (b) To assess the effectiveness of selective self-help technique among 3rd semester and 4th semester B.sc Nursing students, (c) To compare pre-test and post-test score regarding the effectiveness selective self-help technique on stress among 3rd semester and 4th semester BSc Nursing students, (d) To investigate the relationship between pre-test scores and demographic variables, a quantitative research approach was employed in this study. **Methods and Methodology:** A sample of 98 B.Sc. nursing students in their semester was chosen using a convenience sampling method. The study utilized a modified academic stress scale as its instrument. A preliminary study was conducted to assess the viability of the research. **Result and conclusion:** The result of study revealed that majority (83.67%) of nursing students had stress, (mild stress 45.92% (45) and 25.51% (25) had moderate stress and 12.24% (12) had severe stress). Mean pre-test score was 73.0306 and the standard deviation was 31.3399, mean post-test score was 27.8163 and the standard deviation was 18.1763. The mean difference score was 45.2143. Z Value 12.36 and higher than table value ($z=1.98$) at 0.05 level of significance. This suggests that the demonstration successfully lowered the academic stress levels among nursing students.

Keywords: Academic stress, Self-help technique, Nursing students, Preliminary study, Moderate stress.

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INTRODUCTION

Stress is characterized as a state of mental strain or anxiety triggered by challenging situations, representing a natural human reaction that compels us to confront difficulties and threats in our lives. It arises from various stressors and, if short-lived, can be beneficial by creating pressure that motivates hard work and performance. If stress continues over a prolonged period without being alleviated, it can negatively affect mental health and overall lifestyle, possibly resulting in anxiety and depression. Academic stress is a prevalent issue among students, significantly affecting their academic performance if not promptly identified and managed. Academic performance is a critical component of a student's journey toward success, and any disruption caused by stressors can

negatively influence their career trajectory. Academic stress refers to the body's reaction to academic demands that exceed students' adaptive capacities, with estimates suggesting that 10-30% of students experience some level of academic stress throughout their academic careers. In this context, maintaining health is fundamental and paramount. It is considered as the luxury of one's life, that cannot be afforded but to be maintained. Everyone is not blessed with good health nowadays as around 45% of people are unhealthy in India.³ It can be said that it is the victory in life for those who are healthy, it is important to maintain a healthy lifestyle and not to follow sedentary lifestyle in order to perform daily life activities and to live longer. Since healthy life leads to healthy and positive mind.

Stress is characterized as a feeling of worry or mental pressure caused by demanding situations. It is a natural human response that drives us to face and deal with challenges and threats in our lives. While brief periods of stress can be beneficial by creating pressure that encourages hard work and striving for excellence, prolonged stress can negatively impact mental health and lifestyle, potentially leading to anxiety and depression if not managed effectively. Among students, academic stress is particularly common and can significantly impact academic performance if not promptly recognized and addressed. Academic performance is essential for students as it serves as a fundamental step toward attaining success. If it is hindered or disturbed by certain problems or stressors that will lead to a downfall in their career. A study was conducted to assess depression, anxiety, and stress due to academic pressure of medical students. The result of study shows that the students were suffered from anxiety and stress and the prevalence of mental health problems are more than 30% among medical students [1–5].

A study was held at Panna Dhai Maa Subharti Nursing College, Meerut to assess the stress level among 1st year BSc Nursing students. The result of the study shows that 53% students suffered from slight stress, 43% students suffered from moderate stress, 3% students suffered from high level of stress, 1% students suffered from no stress and no one suffered from extreme level of stress [6].

METHODOLOGY

Study Design and Approach

A pre-experimental design with a single group undergoing pre-test and post-test assessments was utilized in this study. A quantitative research method was used to meet the goals of the study.

Sample

The sample was selected from 3rd semester and 4th semester BSc Nursing students studying at Maharaja Agrasen Nursing College, Bahadurgarh. The sample size was 98 students selected by convenient sampling technique. The students who expressed a willingness to participate were included in the study.

Data Collection

Section A: It have 6 questions based on socio-demographic variable of semester nursing students.

Section B: Data was collected by using Modified Academic Stress Scale. It is in the form of Likert scale with 5 options i.e. never, almost, sometimes, fairly often and very often. Scoring of the scale was (0-160), Total score was 160, the maximum score was 160 and minimum score was 0. Total item in the scale was 40, for each question in the scale there are five options in the form of Likert scale. Each item scoring be like NEVER=0, ALMOST=1, SOMETIMES=2, FAIRLY OFTEN=3, VERY OFTEN=4. Understanding of the score: NO STRESS: 0-40, MILD STRESS: 41-80, MODERATE STRESS: 81-120, SEVERE

Stress: An intervention module was prepared, Demonstration of self-help technique (deep breathing exercise) for seven days with the help of module consisting of introduction and benefits of deep breathing exercise.

Development of the Module

A structured intervention module involve (deep breathing exercise) was prepared on the basis of review of research articles, govt. guidelines from discussion with experts and consultation with guides.

Table 1 shows the all-content area related to deep breathing exercise.

Table 1. Content area in the module

S.N.	Content Area
1.	Introduction of deep breathing exercise
2.	Definition and meaning of deep breathing exercise
3.	Benefits of deep breathing exercise
4.	Indications of deep breathing exercise
5.	Contraindications of deep breathing exercise
6.	Steps of deep breathing exercise
7.	Summary

ETHICAL CONSIDERATION

Approval was secured from the college's ethics committee, and consent was obtained from the nursing students prior to starting the study.

Table 2. Frequency and percentage distribution of socio demographic characteristics of nursing students

S.N.	Demographic variable	Categories	Frequency	Percentage
1	Age(years)	17–20	41	41.8%
		21–24	57	58.2%
		ABOVE 25	0	0%
2	Residence	Urban	55	56.1%
		Rural	43	43.9%
3	Religion	Hindu	96	98%
		Muslim	1	1%
		Christian	1	1%
4	Family income per month (in Rs.)	<10,000	7	7.1%
		10,001-20,000	13	13.3%
		20,001-35,000	29	29.6%
		Above 35,001	49	50%
5	Previous knowledge regarding deep breathing exercise	Yes	15	15.30%
		No	83	84.69%
6	If yes, then through which media	Television	1	6.66%
		Internet	8	53.33%
		Journals	0	0%
		Others	6	40%

RESULTS

Table 2 shows demographical characteristics of nursing students. Out of 98 nursing students 41.8% (41) belongs to 17-20 years of age, more than half 58.2% (57) were 21–24 years. More than half samples 56.1% (55) belongs to urban area and 43.9% (43) were belongs to rural area. Majority of samples 98% (96) were Hindu, 1% (1) was Christian and 1% (1) was Muslim. Around 7.1% (7) of nursing students had family income less than Rs.10,000/month, 13.3% (13) had between Rs.10,001-20,000, 29.6% (29) had between Rs.20, 001 – 35,000 and approx. half 50% (49) had Rs.35,001 and above. Majority of nursing students 84.69% (83) did not had previous knowledge regarding deep breathing exercise,

15.30% (15) had previous knowledge regarding deep breathing exercise. Out of 15 nursing students who had previous knowledge, 6.66% (1) had some through television, around half of them 53.33% (8) had some knowledge through internet, and less than half of the students 40% (6) had some knowledge through other sources.

The data in Table 3 describes the frequency and percentage distribution of assessment of academic stress. This revealed that 16.32% (16) had No stress, 45.92% (45) had mild stress, 25.51% (25) had moderate stress and 12.24% (12) had severe stress.

Table 3. Frequency and percentage distribution of pre-test for assessment of academic stress.

n= 98

Score	Assessment of academic stress among nursing students	Frequency	Percentage
0–40	No Stress	16	16.32%
41–80	Mild Stress	45	45.92%
81–120	Moderate Stress	25	25.51%
121–160	Severe Stress	12	12.24%

The data presented in Table 4 shows that there is no significant association between the pre-test score and selected baseline characteristics like age ($x=7.53$, $p<0.05$), residence ($x=0.668$, $p<0.05$), religion ($x=2.9464$, $p<0.05$), family monthly income ($x=11.195$, $p<0.05$), and there is a significant relation between pre-test score and selected demographic variable i.e. previous knowledge regarding deep breathing exercise ($x=80.76$).

Figure 1 shows that out of 98 nursing students 16.32% (16) had no stress, 45.92% (45) had mild, 25.51% (25) had moderate and 12.24% (12) had severe before the demonstration of deep breathing exercise. More than half i.e. 83.67% (82) had no stress, 14.28% (14) had mild, 1.02% (1) had moderate and 1.02% (1) had severe after the demonstration of deep breathing exercise.

Table 4. Association with pre-test score and selected demographic variables.

S.N.	Demographic variable	Categories	No Stress	Mild Stress	Moderate Stress	Severe Stress	x-value	P-Value
1	Age	17-20	5	15	11	9	12.36 NS	12.59
		21-24	11	30	14	3		
		Above 25	0	0	0	0		
2	Residence	Urban	7	25	14	7	0.668 NS	7.81
		Rural	9	20	11	5		
3	Religion	Hindu	16	44	24	12	2.9464 NS	12.59
		Muslim	0	1	0	0		
		Christian	0	0	1	0		
4	Family monthly income	<10,000	1	4	0	2	11.195 NS	16.91
		10,001–20,000	4	4	2	3		
		20,001–35,000	5	11	8	5		
		Above 35,001	6	26	15	2		
5	Previous knowledge regarding deep breathing exercises	Yes	0	8	7	0	80.76 S	7.81
		No	16	37	18	12		
6	If yes then through which media	Television	0	1	0	0	0.47 NS	16.91
		Internet	0	4	4	0		
		Journals	0	0	0	0		
		Others	0	3	3	0		

Notes: *S=Significance at $p<0.05$ NS; not significance

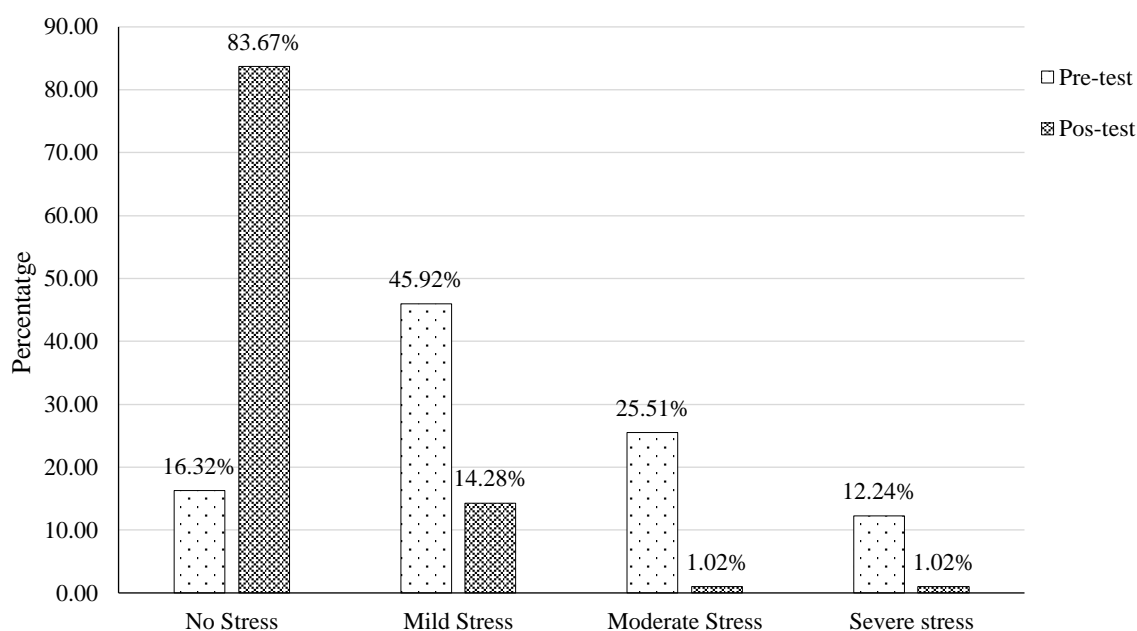


Figure 1. Bar diagram showing effectiveness of demonstration of deep breathing exercise.

Table 5 demonstrates a significant difference between the pre-test and post-test scores. The mean and standard deviation for the pre-test were 73.0306 and 31.3399, respectively, while for the post-test, they were 27.8163 and 18.1763, respectively. This shows that the post-test scores were consistently lower than the pre-test scores. The comparison between the pre-test and post-test scores was conducted using a Z-test.

Table 5. Effectiveness of demonstration of deep breathing exercises in relieving academic stress.

n=98

S.N.	Test	Mean	Mean difference	Standard Deviation	Z score	P-value
1.	Pre-test	73.0306	45.2143	31.3399	12.36	P<0.05
2.	Post-test	27.8163		18.1763		

Note: *significance at $p < 0.05$

The computed Z VALUE ($z=45.2143$) was higher than the table value ($z=1.98$) at 0.05 level of significance. As a result, the null hypothesis was dismissed and the research hypothesis was supported. It was determined that there was a notable difference between the pre-test and post-test scores regarding academic stress among nursing students. This suggests that the demonstration effectively reduced academic stress levels in the nursing students.

- Approximately half of 45.92% (45) nursing students had mild stress before the demonstration of deep breathing exercise
- More than half 83.7% (82) of nursing students had no stress after the demonstration of deep breathing exercise
- Mean pre-test score was 73.0306 and the standard deviation was 31.3399, mean post-test score was 27.8163 and the standard deviation was 18.1763. The mean difference score was 45.2143. Z Value 12.36 and higher than table value ($z=1.98$) at 0.05 level of significance. This indicates that the demonstration successfully lowered the academic stress levels of nursing students.
- Present study found the association of socio demographic variables with pretest score which revealed that there was a significant association between a selected demographic variable with a pre-test score of the nursing students. Age, residence, religion, family income per month were found to have no significant association between a selected demographic variable with pre-test of nursing students.

DISCUSSION

In this research study the effectiveness of self-help technique is assessed in reducing academic stress. The current study was conducted to evaluate both academic stress levels and the effectiveness of deep breathing exercises among nursing students. The findings reveal that most nursing students experienced mild stress. The findings also demonstrate a substantial link between self-help methods and a decrease in academic stress [7]. The aim of this study was to assess how effective self-help techniques are in alleviating academic stress. These findings were in settlement with the studies conducted by researcher in 2021 conducted a non-experimental exploratory study to assess the academic stress among the undergraduate nursing students from nursing college of Pune. Academic stress scale was used. The result showed that 31.67% had slight stress (50-98), 53.33% students have moderate stress (99-147), 15% had high stress (148-196) and no one had extreme stress. Data collected using Demographic Profile and Self Structured Academic Stress Scale. The result shows that out of 200 nursing students, 28 had mild level, 120 had moderate level and 52 had severe level of academic stress. 74% told the reason of stress is discrepancy between theory and practical classes [8]. Dhara Yagnang Vyas (2020) conducted a quantitative descriptive study on level of stress among 60 1st year BSc Nursing students of Dinsha Patel College of Nursing, Nadaid, by purposive sampling technique. The results revealed that 23% student had mild stress, 67% had moderate stress, 10% had severe stress. Study also revealed that statistically stress and gender of students were associated with each other [9, 10].

CONCLUSION

On the basis of the findings of the present study the successive conclusions were drawn (Annexure 1):

1. Majority (83.67%) of nursing students had academic stress, (mild stress 45.92% (45) and 25.51% (25) had moderate stress and 12.24% (12) had severe stress)
2. The demonstration of selected self-help technique was found effective in reducing academic stress among nursing students.
3. A significant correlation was identified between the pre-test scores of nursing students and the chosen demographic variables.

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ANNEXURE 1

Tools Used

Student researcher ask the students and response given by them will be marked against each question as a tick mark. (✓)

Tool contains:

Part A: Demographic Variable-6 items

Part B: Modified Academic Stress Scale-40 items

PART-A DEMOGRAPHIC VARIABLES

1. Dear participants
2. Given below are some statements.
3. You are requested to go through each statement carefully and choose your best answer among alternatives given for each statement and place a tick mark (✓) on corresponding answer.

1. Age of the student

- a. 17-20 years
- b. 21-24 years
- c. ≥ 25 years

2. Area of residence

- a. Urban
- b. Rural

3. Religion

- a. Hindu
- b. Muslim
- c. Christian
- d. Any other specific

4. Family Monthly Income

- a. Below Rs 10,000
- b. Rs 10,001-Rs 20,000
- c. Rs 20,001-Rs 35,000
- d. Rs 35,001 and above

5. Do you have any previous information related to coping strategies of stress?

- a. Yes

- b. No
6. If yes, which is the source of information?
- a. Television
- b Internet
- c. Internet
- d. Others

PART-B Modified Academic Stress Scale

Instructions

The questions in this scale ask you about your feelings and thoughts related to your academics. In each case, please indicate your response by placing an “√” in the suitable column. Read the statements carefully and mark accordingly.

S.N.	Questions	Never	Almost	Sometimes	Fairly often	Very often
1.	I feel difficult to concentrate while studying.	0	1	2	3	4
2.	I feel a lot of pressure in my daily studying.	0	1	2	3	4
3.	I usually felt dissatisfied with my academic grades.	0	1	2	3	4
4.	I feel my sleeping pattern has been disturbed due to excessive syllabus.	0	1	2	3	4
5.	I feel stressed when I can't meet the goals I set for myself.	0	1	2	3	4
6.	Academic scores are very important for me and even these scores determine my future.	0	1	2	3	4
7.	I think that I dissatisfy my parents with my academic grades.	0	1	2	3	4
8.	I think I disappoint my teachers with my academic grades.	0	1	2	3	4
9.	My parents and teachers expectations put me in stressful situation.	0	1	2	3	4
10.	Sometimes I become so much worry about future education and employment.	0	1	2	3	4
11.	I quickly forget things I read a while ago due to lot of burden.	0	1	2	3	4
12.	My problem solving skill are hindering because of lot of burden.	0	1	2	3	4
13.	I hesitate to ask questions to my teachers.	0	1	2	3	4
14.	I usually suffer from headache and less desire to eat like problems.	0	1	2	3	4
15.	I feel like there is nobody who can understand me and help me out with my academic problems.	0	1	2	3	4
16.	I often isolate myself when I am unhappy.	0	1	2	3	4
17.	I get irritated with everyone very easily.	0	1	2	3	4
18.	Lot of syllabus leads to lack of participation in extracurricular activities.	0	1	2	3	4
19.	I feel like instead of going home I complete my work by staying in hostel.	0	1	2	3	4
20.	There is too much competition among classmates that drive a lot of pressure.	0	1	2	3	4

S.N.	Questions	Never	Almost	Sometimes	Fairly often	Very often
21	Exams after every one or two month increase our stress level.	0	1	2	3	4
22	I feel stressed due to less preparatory holiday in between exams.	0	1	2	3	4
23	I am unable to grasp the study material.	0	1	2	3	4
24	Availability of incomplete and confusing study material leads to frustrating situation.	0	1	2	3	4
25	Unable to discuss my academic failure with my parents.	0	1	2	3	4
26	There is a lack of mutual help among classmates.	0	1	2	3	4
27	I am slow in getting along with the curriculum.	0	1	2	3	4
28	I am unable to complete my assignments on time because of lot of work.	0	1	2	3	4
29	Lack of assertiveness in the class.	0	1	2	3	4
30	Difficulty in covering whole syllabus.	0	1	2	3	4
31	Every time I get worry about examination.	0	1	2	3	4
32	I think of consequence of failing when I am preparing for tests.	0	1	2	3	4
33	I feel nervousness causes me to make careless errors.	0	1	2	3	4
34	I avoid playing with friends due to overburden.	0	1	2	3	4
35	I am worried about not knowing how to study effectively.	0	1	2	3	4
36	Calm environment help me in reducing my stress level.	0	1	2	3	4
37	Exercising some interventions are helpful in reducing stress.	0	1	2	3	4
38	Practicing some exercise help me in improving my situation.	0	1	2	3	4
39	Practicing technique help me in socializing.	0	1	2	3	4
40	I am able to manage work one by one.	0	1	2	3	4

Scoring: Range of scoring was (0-160), Total score was 160, the maximum score was 160 and minimum score was 0. Total item in the scale was 40, for each question in the scale there are five options in the form of Likert scale. Each item scoring be like Never=0, Almost=1, Sometimes=2, Fairly Often=3, Very Often=4.

Understanding of the score:

No Stress: 0-40

Mild Stress: 41-80

Moderate Stress: 81-120

Severe Stress: 121-160