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Effectiveness of Pranayama on the reduction of stress among 1st year nursing students due to adjustment problems in a nursing college

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Abstract

Introduction: Stress is a common feature in all our lives. It is often seen as a negative emotion but it plays an important role in survival, helping face threats, often motivating individuals and enhancing performance. Stress is a state of physical and psychological strain which imposes demands for adjustments upon the individual. It has been reported that student nurses are affected with stressors in academics, clinicals, and finances, due to parental expectations, competition for grades, and career choices. The aim of this study was to find the prevalence of stress among B.Sc. Nursing 1st year students due to adjustment problems and the effectiveness of pranayama in stress management.

Method: A pre-experimental; one-group pretest-posttest design was conducted among fifty 1st year B.Sc. Nursing students in Karnataka College of Nursing in Bangalore between 25th August 2022 to 10th September 2022 using a questionnaire and rating scale to determine level of stress.

Result: The comparison of pretest and post-test level of stress among 1st year B.Sc. nursing students revealed an overall reduction in mean % by 11.73 % with SD of 3.7. The obtained value was higher than the table value 4.804 which was highly significant at 0.05 level, indicating the practice of pranayama has a great influence in the reduction of stress.

Conclusion: The findings of the study clearly showed that the practice of pranayama was effective in reduction of stress; enabling and empowering students with stress reduction methods, which in turn contributed to improving the quality of one's health.

Keywords: Nursing; Pranayama; Stress

INTRODUCTION

Stress is a common feature in all our lives. It is often seen as a negative emotion but it plays an important role in survival. It helps to face threats and dangerous situations, makes the individual motivated and can even enhance performance. Stress is a state of physical and psychological strain which imposes demands for adjustments upon the individual.¹ It has been reported that student nurses are affected with the stressors in academic, clinical, financial, due to parental expectations, competition for grades, and career choices.²

It is disappointing that in the era of rapid development of human advancement, stress still exists in our surroundings. Stress when taken as a problem, we can assess that it has its own effect, more on the people who are studying.³ Nursing students suffer from stress due to long hours of study, multiple assignments, lack of free time, lack of timely feedback, and lack of faculty response to student needs.⁴ Chronic stress is the result of the fight or flight response occurring for a long period of time, a response that should typically last for a few minutes under extreme circumstances. According to the Gale Encyclopaedia of Alternative Medicine, stress is the cause of 80 to 90% of all diseases.⁵

Effective coping strategies facilitate the return to a balanced state, reducing the negative effects of stress. Stress can be managed by the support from family members, developing a positive optimistic attitude, time management, counselling, vacation when needed, playing games, yoga and meditation. Yoga is a wonderful stress reducer and Pranayama is one form of yoga. Pranayama is one of the effective measures to manage stress. It is derived from 2 Sanskrit words – Parana (life force) and Ayama (control). Pranayama is basically a series of exercises, which aims at bringing more oxygen to blood and to the brain. Pranayama is an art and has techniques to make the respiratory organs to move, expand, intentionally, rhythmically which provides a deep relaxation to the body and mind, improves concentration, relieves stress depression, and strengthens the nervous system, and respiratory system.³

The aim of this study is to find out the prevalence of stress among B.Sc. Nursing 1st year students due to adjustment problems and the effectiveness of *pranayama* in stress management. The goal of practising this technique is to clear the mind, purify and expand the breath, and slow down the respiration rate to activate the relaxation response.

METHOD

A pre-experimental; one-group pretest-posttest design was used to determine the level of stress among 1st year B.Sc. Nursing students in Karnataka College of Nursing in Bangalore between 25th August 2022 to 10th September 2022. Ethical approval was taken from the Institutional Review Committee of Karnataka College of Nursing in June, 2022.

1st year B.Sc. nursing students willing to participate were included in the study excluding students who were free from stress. The data was collected using a questionnaire method and rating scale. The intervention (*pranayama*) was applied to participants through structured sessions, typically involving controlled breathing exercises and meditation techniques aimed at reducing stress and improving respiratory function.

Random sampling method was used to select the required number of participants. The sample size was calculated based on comparison of means with standard deviation 5.38 of the pilot study findings assuming 80% power, at 0.05 level of significance 3.0 clinical differences.

$$n=2[(Z_{1-\alpha/2} + Z_{1-\beta}) SD/d]^2$$

- $Z_{1-\alpha/2}$: Value taken from standard normal distribution at a specified confidence level (For $\alpha = 0.05$, $Z_{1-\alpha/2} = 1.96$)
- $Z_{1-\beta}$: Value at specified power ($Z_{0.8} = 0.84$; $Z_{0.9} = 1.28$)
- SD: Standard Deviation
- d: Clinically significant difference in means

$$n = 2[(1.96+0.84) 5.38/3]^2$$

$$n = 50.41$$

The calculated sample size was 50. Data was collected and noted on a structured proforma. On receiving a case, participants were explained about the study in detail. They were assured of confidentiality and informed written consent was taken. Detailed history regarding stress from academic factors, physical factors and psychological factors was taken. Stress was measured using a four-point rating scale and the techniques of *pranayama* used were Nadi shodhana, Shitali *pranayama*, kapalabhati *pranayama*, bhramari *pranayama*.

Data were analysed using the IBM SPSS Statistics 20.0 and results were tabulated in Microsoft Excel.

RESULT

Among 50 students, it was evident that the majority 25 (50%) of 1st year B.Sc. nursing students had mild stress, 22 (44%) of them had moderate stress and 3 (6%) of them had severe stress in comparison to post-test findings showing the majority 41 (82%) of 1st year B.Sc. nursing students had mild stress, 8 (16%) of them had moderate stress and only 1 (2%) of them had severe stress (Table 1).

In the pre-test, the students had an overall mean score of 47.18 with SD of 20.54 and mean percentage 39.31% (Table 2).

In terms of post-test score, the students had an overall mean score of 33.1 with SD of 16.83 and mean percentage 27.58% (Table 3).

Table 1. Frequency and percentage distribution of level of stress among 1st year B.Sc. nursing students in terms of pretest score

Level of stress	Score	Pre test n (%)	Post test n (%)
Mild	<50%	25(50%)	41(82%)
Moderate	50-75%	22(44%)	8(16%)
Severe	>75%	3(6%)	1(2%)

Table 2. Mean, Standard deviation, mean percentage of stress among 1st year B.Sc. nursing students in terms of pretest score

Aspect wise stress	Maximum statement	Maximum score	Range	Mean ± SD	Mean %
Academic factors	19	57	4-45	27 ± 14	47.36
Physical factors	8	24	1-24	10 ± 6	41.66
Psychological factors	13	39	1-39	19 ± 10	48.71

Table 3. Mean, standard deviation, mean percentage of stress among 1st year B.Sc. nursing students in terms of post-test score

Aspect wise stress	Maximum statement	Maximum score	Range	Mean ± SD	Mean %
Academic factors	19	57	3-45	19.76 ± 12.18	34.66
Physical factors	8	24	0-20	7.58 ± 4.61	31.58
Psychological factors	13	39	1-33	12.38 ± 7.10	31.74
Overall	40	120	8.33-75.83	33.1 ± 16.83	27.58

It shows that most of the study participants had mild stress i.e. 50% and many of them had moderate stress 44% and severe stress i.e. 6% in the pre-test. In post-test the severe and moderate stress was reduced to 2% and 16% from 6% and 44% respectively (Table 4).

Table 4. Comparison of pretest and post-test level of stress among 1st year B.Sc. nursing students

Level of stress	Score	Pretest n (%)	Post-test n (%)
Mild	<50%	25(50)	41(82)
Moderate	50-75%	22(44)	8(16)
Severe	>75%	3(6)	1(2)

DISCUSSION

The study shows that the majority 25(50%) of 1st year B.Sc. nursing students had mild stress, 22(44%) of them had moderate stress and 3(6%) of them had severe stress. The above data shows that the stress level was high which is similar to the study conducted in Narayana College of Nursing i.e. 15(25%) students had mild stress, 22(36.7%) students had moderate stress and 23(38.3%) students had severe stress.³

In this study the findings of the post-test stress level revealed that the majority 41(82%) of 1st year B.Sc. nursing students had mild stress, 8(16%) of them had moderate stress and 1(2%) of them had severe stress. The above data shows that the stress level has been reduced after practising *pranayama* which is similar to the study conducted in Narayana College of Nursing where 15(25%) students had very mild stress, 29(48.3%) students had mild stress and 16(26.7%) had moderate stress.³

In this study, the students in pre-test had a mean score of 47.18, mean percentage 39.31% with SD of 20.54. This indicated that the highest level of stress was obtained.

However, in post-test the students had a mean score of 33.1, mean percentage 27.58% with SD of 16.84. This indicated that the level of stress was obtained. Since the post-test value is less than pre-test, the practice of *pranayama* was effective which in contrast with the study done in selected setting in Jaipur where in the pre-intervention stage, the themes had mild stress with a mean percentage of 56% with SD of 7.9, where as in post-intervention, there was an enormous mean stress reduction of 31.0±9.1.³

CONCLUSION

From the result of the study, it was concluded that rendering *pranayama* to the nursing students was effective in reducing stress. Therefore, the investigator felt that more importance should be given for assessment of the stress of nursing students.

DECLARATIONS

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Conflict of Interest

The author declared no competing interests.

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Ethical Clearance

Ethical issues (Including Plagiarism, Data Fabrication, Double Publication) have been completely observed by authors. Ethical clearance was taken from IRC of Karnataka College of Nursing.

Author Contribution

All authors contributed equally to the study.

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