

Original Research Article

A Study to Assess the Effectiveness of Progressive Muscle Relaxation on Stress among Nursing Students in a Selected Nursing College, Bangalore

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ABSTRACT

Background: Nursing students face immense stress in their journey to become a nurse. Potential sources of stress for nursing students include excessive homework, unclear assignments and shift duties. In addition to academic requirements, relations with faculty members, clinical experiences and time pressures may also contribute to stress. This stressful schooling and emotional toll can affect the student's performance if he/she does not use effective stress management strategies. Progressive muscle relaxation is one of the most effective techniques among various relaxation techniques for reducing stress. It reduces the individual's arousal levels when exposed to stressors and bring about calmer physiological and psychological state.

Objectives:

1. To identify the level of stress among nursing students in a selected Nursing College.
2. To assess the effectiveness of Progressive Muscle Relaxation on stress among nursing students in a selected nursing college.
3. To find out the association between level of stress and selected demographic variable among nursing student in selected nursing college.

Materials and Methods: A quasi-experimental, one group pre-test and post-test design was used for the study. Study setting was Krupanidhi College of Nursing, Carmelaram, Bangalore which offers diploma, BSc and MSc nursing courses. Study sample includes 70 nursing students staying in hostel. Purposive sampling technique was used to select the samples. Progressive muscle relaxation was taught to the subjects for 10 consecutive days. The post test was done on 11th day. Tool used includes Modified Student Nurse Stress Index.

Results: The data was analyzed using descriptive and inferential statistics. The study findings highlights that the mean stress score of post test was lower than mean pre test score of the subjects. The computed 't' value is greater than the table value ($t_{49} = 1.678$). Thus it is concluded that the Progressive Muscle Relaxation was effective in reducing the stress among nursing students.

Interpretation and Conclusion: The findings of the study show that the progressive muscle relaxation was effective in reducing the stress of nursing students.

Key words: Stress, progressive muscle relaxation, nursing students, student nurse stress index.

INTRODUCTION

"An Anxious Mind Can Not Exist In A Relaxed Body". Dr Edmud Jacobson

Stress is necessary for life. We need stress for creativity, learning, and for our very survival. Stress is only harmful when it becomes overwhelming and interrupts the

healthy state of equilibrium that our nervous system needs to remain in balance. When stress overwhelms the nervous system, our body is flooded with chemicals that prepare us for "fight or flight." [1,2] While the stress response can be lifesaving in emergency situations where we need to act quickly, it

wears our body down when constantly activated by the stressors of everyday life. The relaxation response puts the brakes on this heightened state of readiness and brings our body and mind back into a state of equilibrium. [2]

Evidences indicate that most of the human successes are created in stressful conditions; but high rate of stress would followed by numerous consequences, including mental and physical illnesses, dysfunction and adjustment disorder and ultimately reduction of individuals' quality of life. Nursing is a high stress level profession. Various aspects of nursing have been studied around the world in recent decades. Some studies recognize that nursing education is stressful, where the student faces challenging situations that often influence both learning process and health conditions. [3]

Nursing students are influenced by the various hospital stressor agents in addition to the stress caused by theoretical training environment. Hospitals are considered as one of the most stressful work environments, because there, it is the matter of humans' death and life. The stress which is resulted from the environment can affect the way their personality develops and also cause the incidence of many undesirable behaviours in individual. [4]

There are various methods recommended to control or reduce stress. Stress management practices include; yoga, relaxation, progressive muscle relaxation, breathing exercises, meditation and mental imagery. [5] Relaxation is a process that decreases the effects of stress on our mind and body. Relaxation techniques can help to cope with everyday stress and with stress related to various health problems.

Progressive muscle relaxation is a systematic technique for managing stress and achieving a deep state of relaxation. It was developed by Dr. Edmund Jacobson in 1930. He discovered that a muscle could be relaxed by first tensing it for a few seconds and then releasing it. Tensing and releasing various muscle groups throughout the body

produces a state of relaxation of mind. [6] Progressive relaxation techniques can be used as a natural muscle relaxant and is especially helpful since it's effective in achieving the relaxation response, a deep conscious state of calming the mind. [7]

As the practice of progressive muscle relaxation among nursing student reduces academic, clinical as well as personal stress and it will provide a great comfort for the students in a multitude of situational and developmental stressors that are impeding in their learning as well as the psychological health. Thus, the investigator was motivated to assess the effectiveness of progressive muscle relaxation which can be easily practice to reduce stress.

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Hypothesis

H₁: There is a significant difference between Progressive muscle relaxation and stress among nursing students.

H₂: There is a significant association between level of stress and selected demographic variables among nursing students.

Conceptual Framework

The conceptual framework used in this study was based on Modified Imogene King's goal attainment Theory. King's conceptual system is composed of three interacting systems, namely personal system, interpersonal system & social system. [8]

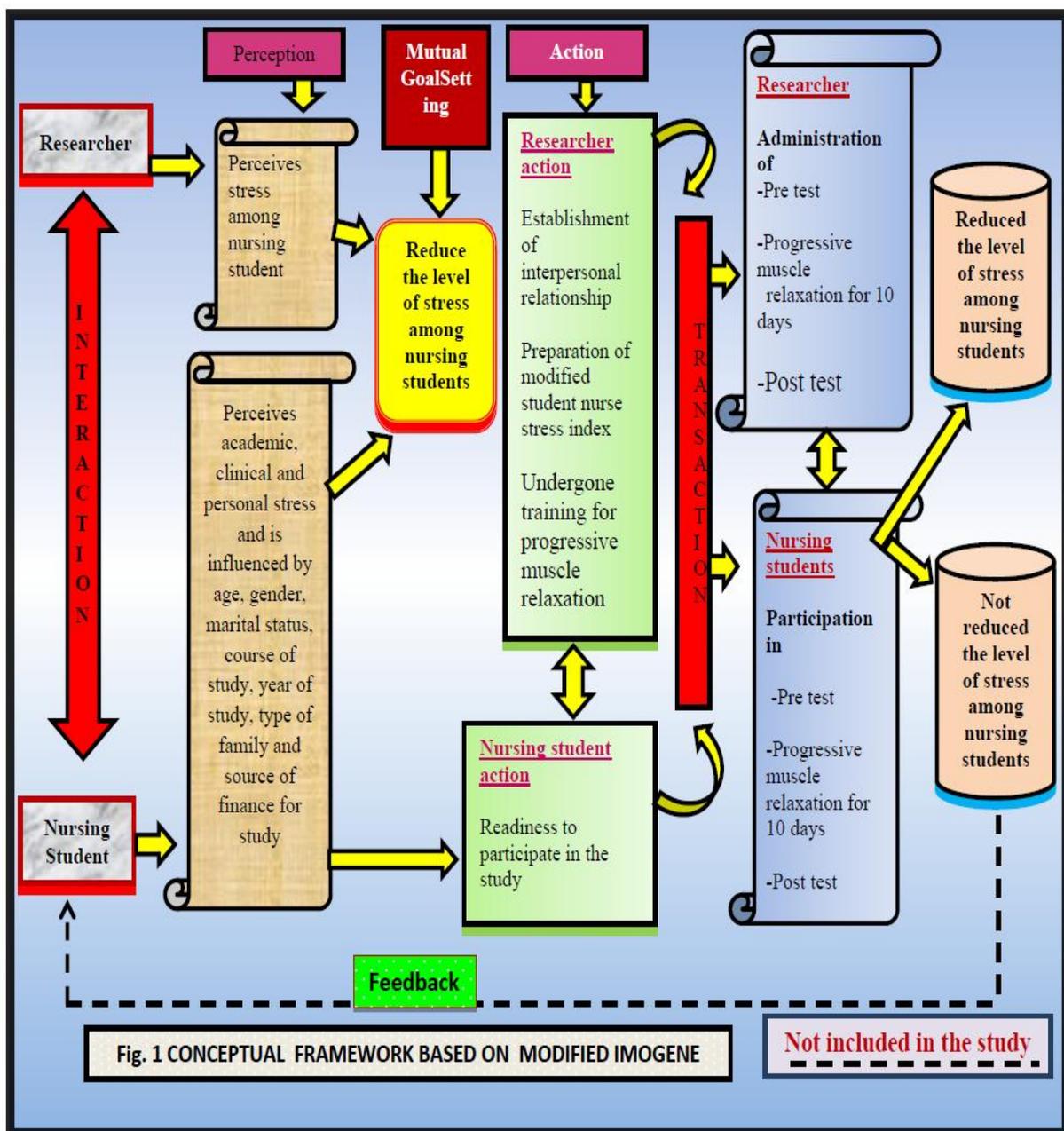
Interpersonal system

The major elements of the theory are seen in the interpersonal system in which researcher and the students, who are usually strangers, come together in an organization to help and to be helped to maintain a state of health that permits functioning of roles. The main concepts of interpersonal systems are interaction, perception, action and transaction.

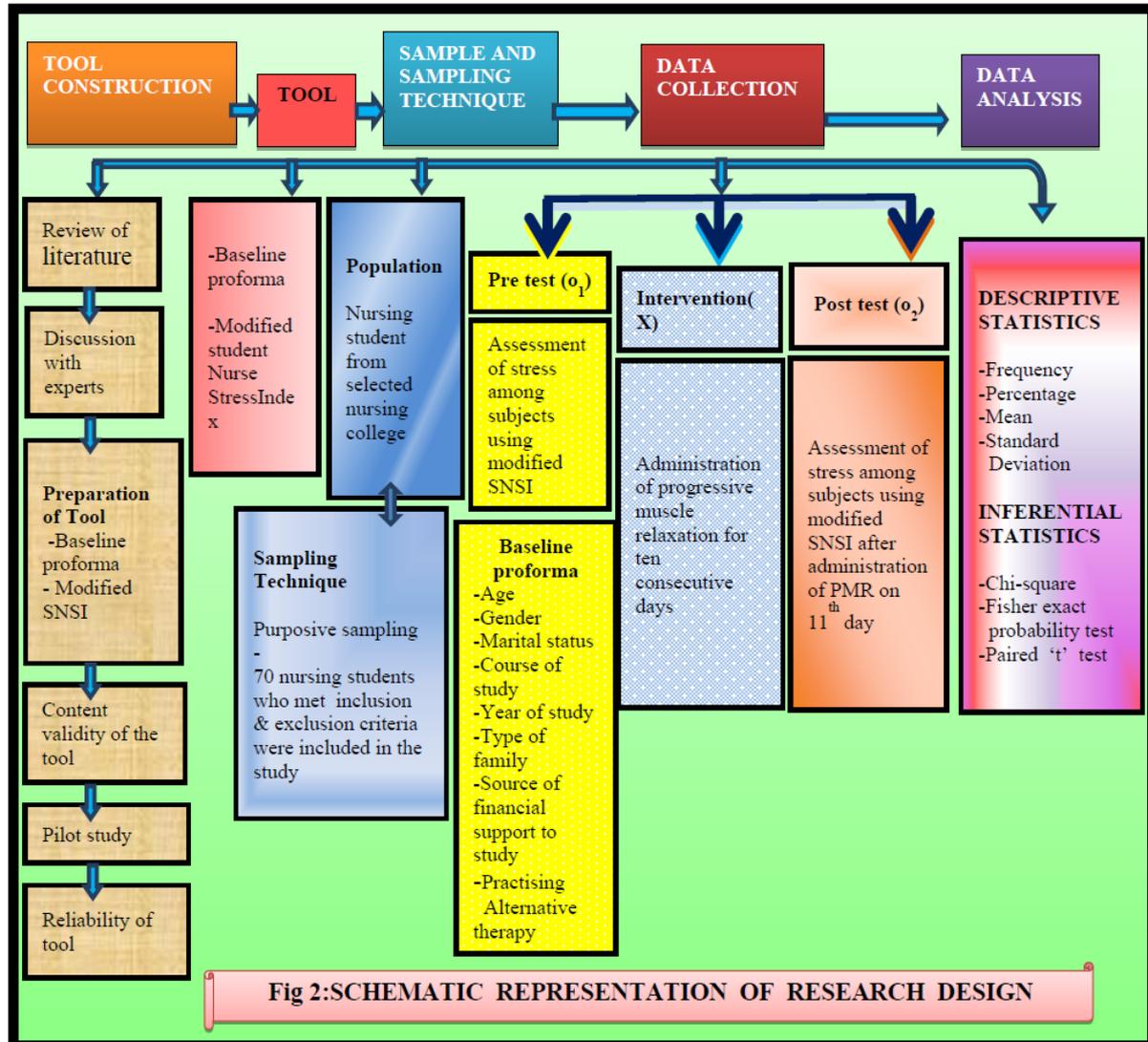
1. **Interaction:** Interaction system refers to the interaction between the researcher and nursing students.
2. **Perception:** Perception is defined as a person's representation of reality.

According to King, perceptions are related to past experiences. [9]

3. **Action:** Action refers to the communication between the two interpersonal system. [8]
4. **Transaction:** Transaction is a series of exchanges between human beings and their environment that includes observable behaviours that seek to reach goals of worth to the participants. When transactions occur between nurses and clients, goals are attained. [8]



RESEARCH METHODOLOGY



Research Approach

An evaluatory approach was used to assess the effectiveness of progressive muscle relaxation on stress among nursing students in selected Nursing college, Bangalore.

Research Design

Quasi-experimental, one group pre-test – post-test design was used.

Group	Pretest	Treatment	Posttest
Nursing Students	o_1	X	o_2

Setting

The study was conducted in Krupanidhi College of Nursing, located in Carmelaram, Bangalore. The college offers diploma, BSc and MSc nursing courses. During study, the strength of student was 184 which include GNM, BSc, and MSc. nursing students.

Population

The population consisted of BSc/GNM nursing students of selected Nursing college, in Bangalore.

Sample and sample size

The sample size consisted of 70 nursing students, who fulfilled the inclusion and exclusion criteria.

Sampling Technique

Purposive sampling technique was used. The samples were handpicked based on inclusion and exclusion criteria. After obtaining informed consent, they were included in the study.

Description of Tool

The tool used for the study consisted of 2 sections.

Section I: Baseline Proforma to assess sample characteristics

This section deals with the description of the baseline characteristics of the subjects such as age, gender, marital status, course of study, year of the study, type of family, source of financial support to study and previous alternative therapy attended.

Section II: Modified Student Nurse Stress Index (SNSI)

The Modified Student Nurse Stress Index was used to measure the level of stress among nursing students. It consists of 24 items comprising of 3 domains. Scoring was based on 1 to 5 scale. The Modified SNSI consists of three factors (domains) with Academic load, Clinical concern and Personal problems. The Academic load consists of sum score on items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11. The clinical concern consists sum score on items 11, 12, 13, 14, 15, 16, 17. The personal problems consists sum score on items 18, 19, 20, 21, 22, 23, 24.

The total score is arbitrarily graded '1-24' as Not stressful, '25-48' as Mild stress, '49-72' as Moderate stress, '73-96' as severe stress and '97-120' as Extremely Severe.

Validity of the tool

Content validity of tool was established by 11 experts in the field of nursing. Modifications were made based on suggestions & comments given by expert, after consulting with the guide.

Reliability of the tool

The reliability of modified student Nurse Stress Index was established by administering the tool to eight nursing student at Vignan Institute of Nursing, Lakkasandra, Bangalore -30.

The reliability was computed using Split half method, using Karl Person's coefficient of correlation and the spearman Brown's Prophecy formula. The obtained value of coefficient of correlation r' was 0.93. Hence the tool was highly reliable.

Technique of data Collection

Based on the inclusion and exclusion criteria, the subjects were selected. The investigator introduced herself to the subjects and the purpose of the study was explained to them. Confidentiality was assured and written consent was obtained. At first baseline information and Pre-test was done by using modified student nurse stress index. From the same day following the pre-test, subjects were made to do Progressive muscle relaxation once a day for 10 days consecutively in a sessions lasting for 30 minutes. On the 11th day, the post- test stress level was assessed by using the same scale. There were 20 drop outs during the study period.

The data collected was compiled for analysis.

ANALYSIS AND RESULTS

Section 1: Description of baseline characteristics of nursing students.

In the present study, majority, 68% of the subjects were in the age group of 21 to 24 years and most of them, 66% were females. Majority, 72% of the subjects were doing GNM course. 76% of subjects were in second year. Most of the subjects, 76% were in joint family whereas 72% were getting Scholarship for the study. Regarding marital status and practicing alternative therapy, 100% of the subjects were unmarried and not practicing alternative therapy, for stress relief.

Section 2: Description of stress among nursing students. N=50

Stress Score	Range	Median	Mean	SD
Pre-test scores	58-116	90	89.56	±13.94
Post-test scores	35-100	65	65.74	±15.05

The data presented in the table 1 shows that posttest mean score (65.74 ± 15.05) was lesser than the pretest mean score (89.56 ± 13.94) of stress. So it was inferred that the stress was decreased among nursing students after administering PMR for 10 consecutive days.

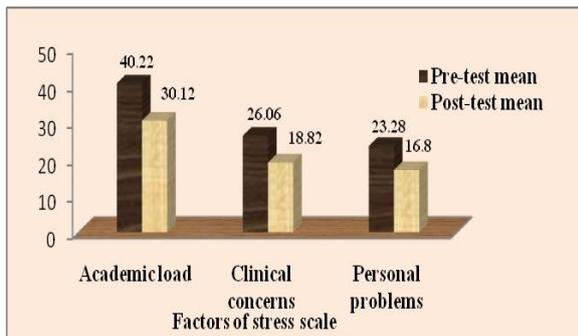


Fig 3. Comparison of mean score of 3 factors of stress scale among nursing students.

Figure 3 shows that there were reduction in post- test mean scores of 3 factors of stress scale. This implied that there was a reduction of stress among nursing students with regard to academic, clinical and personal problems.

Section 3 : Effectiveness of progressive muscle relaxation on stress among nursing students.

H₀ : there is no significant difference in the pre-test & post-test mean scores of stress among nursing student.

Table 3 : Comparison of stress score among nursing students N=50

Stress scores	Mean	SD	t value
Pre-test scores	89.56	±13.94	12.774
Post-test scores	65.74	±15.05	

$$t(0.05, 49) = 1.678$$

The data presented in the table 3 depicts that there was significant difference between the mean stress score of pre-test (89.56) and the post-test (65.74). The computed 't' value was greater than the table value at 0.05 level of significance. So the null hypothesis was rejected.

Hence it was concluded that there was a significant relationship between Progressive muscle relaxation and stress among nursing students.

Section 4 : Association between age, gender, course of study and pretest stress score among nursing students.

H₀ : there is no significant association between selected demographic variables and stress among nursing students.

In order to find out the association between age, gender, course of study and stress, Chi-square test was computed

Demographic variables	Pre-test scores		Chi-square value	P value	Inference
	Below median	Above median			
Age (years)					
18-20	7	9	0.462	0.423	*NS
21-24	19	15			
Gender					
Male	9	8	0.009	0.924	*NS
Female	17	16			
Course of study					
GNM	17	19	1.176	0.278	*NS
BSc (N)	9	5			

$$\text{Chi square } (0.005, 1) = 3.841$$

*NS- Non Significant

The data presented in the table 4 depicts that computed χ^2 test value was lesser than table value at 0.05 level of significance. Hence the null hypothesis was accepted and it was inferred that the age, gender and course of study have no significant association with the pre-test stress score.

Table 5 : Association between course of study and pretest stress score among nursing students. N=50

Demographic variables	Overall Pre-test scores		Fisher's Exact probability	Inferences
	Below Median	Above median		
Course of study				
GNM				
2nd year	15	19	0.216	*NS
3rd year/4th year	2	0		
Bsc (N)				
2nd year	3	1	0.545	*NS
3rd/4th year	6	4		

*NS- Non Significant

In order to find out the association between course of study and stress, Fisher's Exact Probability test was computed.

The data presented in the table 5 depicts that computed 'p' value for course of study was greater than 0.05 level of significance. Hence the null hypothesis was accepted; therefore it was inferred that the course of study have no significant association with the pre-test stress score.

Table 6 : Association between year of study, type of family, source of financial support to study and pretest stress score among nursing students.

In order to find out the association between year of study, type of family, source of financial support to study and stress among nursing students, Chi-square test was computed. N=50

Demographic variables	Overall Pre-test scores		Chi-square value	p value	Inference
	Below median	Above median			
Type of family					
Nuclear	18	20	1.361	0.243	*NS
Joint	8	4			
Source of financial support to study					
Family	9	4	2.09	0.148	*NS
Scholarship/ Loan	17	20			

Chi square (0.005,1) = 3.841

*Ns- Non Significant

The data presented in the table 6 depicts that computed χ^2 test value was lesser than table value at 0.05 level of significance. Hence the null hypothesis was accepted and it was inferred that the year of study, type of family and source of financial support to study have no significant association with the pre-test stress scores.

DISCUSSION

Description of baseline characteristics of nursing students.

The findings of the study revealed that 68% of the subjects were between the age group of 21-24 years with majority (66%) of subjects were females.

In relation to course of study, most of the subjects (72%) were doing GNM course.

Findings of the study revealed that 76% of subject were in second year as most of the subjects from second year were stayed in hostel during the study period, which was an inclusion criteria of the present study. The study did not include 1st year BSc/ GNM, the nursing students because they were not exposed to the clinical areas during the study period.

In the present study, 72% of subjects were getting Scholarship for the study from a grant offered by the state Government which they belongs.

Description of stress among nursing students.

The pre-test was done by using modified student nurse stress index. The results demonstrated that the mean stress scores of post-test (65.74±15.05) was lesser than the pre-test score, which showed that the stress was decreased among nursing students after administration of PMR.

The study indicated that, the academic load, clinical concern and personal problems were the major sources of stress among nursing students.

This finding is consistent with that of another study which was done in two nursing training colleges in Ghana among 273 State Registered Nursing, Community Health Nursing, and Midwifery students. The results indicated that students experience severe levels of stress. They also reported significantly higher Personal stressors, followed by Academic stressors and Social stressors. [10]

The present study finding is supported by another study which was done in university in Jordan to assess the association between perceived stressor, stress related factors, and students' clinical performance, the results showed that nursing students experiences stress and it is increased by the factors like academic load, clinical concern and personal problems. [11]

Effectiveness of progressive muscle relaxation on stress among nursing students.

The findings of the study revealed that there was significant difference

between the mean pre-test (89.56) and post-test (65.74) scores. The computed t value was greater than the table value t (0.05, 49) = 1.678. This inferred that there was a significant relationship between Progressive muscle relaxation and stress among nursing students.

The findings also demonstrated that the computed t value of 3 factors of stress score was greater than the table value at 0.05 level of significance. Thus it was concluded that the PMR was effective in reducing stress in terms of academic load, clinical concerns and personal problems among nursing students.

The present study is supported by another study that was conducted on 36 students to determine the effectiveness of progressive muscle relaxation for examination stress. Progressive muscle relaxation was given for 20 days and post test conducted showed that mean pre test score (111.67) of stress level was higher than the post test score (74.33). The study revealed that progressive muscle relaxation was effective in reducing examination stress ($p < 0.05$). Therefore it was concluded that the PMR was effective in reducing the stress among the student. [12]

Association between selected demographic variables and stress among nursing students.

The finding of the study revealed that the baseline variables such as age, gender, course of study, year of study, type of family, source of financial support to study had no significant association to the pre-test stress score.

These findings are contradictory with a descriptive study which was done among 203 nursing students in a public higher education institute and the result showed that no statistical significance was found in most demographic variables, except year two students' stress scores were significantly lower than those of students in other years (p values were between 0.000 and 0.026). [13]

The analysis of the study showed that the progressive muscle relaxation was

effective in reducing stress among nursing students. Hence the finding of the study suggested that there is a need to implement the progressive muscle relaxation for all nursing students to manage the stress among them.

CONCLUSION

Stress is a part and parcel of human lifestyle. It can serve as a driving force in terms of obtaining results, but on the other hand, non-stop stress can act as a killer in terms of performance. Nursing students are subjected to different kinds of stressors, such as the pressure of academics with an obligation to succeed, difficulties of integrating into the system, learning to become more responsible and getting acceptance from their peer. By using progressive muscle relaxation, nursing student can achieve a "relaxation state". Indeed, a number of studies shows that regular practice of progressive muscle relaxation may help keep stress in check as well as treat stress-related health problems. The findings of the present study also strongly emphasise the importance of PMR to reduce extreme stress among nursing students.

Recommendations

1. A similar study can be replicated on larger sample to generalize the study findings.
2. A similar study could be conducted for a longer duration.
3. A comparative study can be conducted between PMR and other complimentary therapies like meditation, yoga guided imaginary therapy and other strategies.
4. There is a need to carry out more researches to detect the strategies that can be effectively administered to reduce the stress among different sections and age groups in the community.
5. A descriptive study can be conducted to assess perceived stress and coping strategies among nursing students

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