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RCT study to determine the effectiveness of PMR compared with physical activity as stress reducing intervention in B.Sc nursing first year students

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Abstract
B.Sc (N) First Year Students are found to be at risk of stress because they have to adjust in hostel life along with cultural differences, academic pressures, clinical demands etc. A RCT study using parallel group design was conducted to determine the effectiveness of PMR (Progressive Muscle Relaxation) as stress reducing intervention among 50 B.Sc (N) Students studying in First Year at selected nursing college (Indore). The main objective of the study is to compare PMR techniques with Physical Activity in reducing stress among study and control group.50 eligible participants were enrolled using allocation concealment and randomly divided into study and control group and they received respective intervention i.e. PMR and Physical Activity of choice. 33 participants were analysed. It was single blinded trial and CONSORT flow diagram was used. After intervention 64% of the study group participants were in the category of low stress in comparison to only 32% in control group The effect size is D=1.89(larger effect), So this indicates that PMR technique in comparison to Physical Activity has larger effect in reducing stress. On the basis of results it could be concluded that PMR is an effective technique to reduce the stress of B.Sc (N) First Year Students.

Keywords: PMR, physical activity, stress, B.Sc (N) first year students, study group, control group

Introduction: Background of the study

Stress has become an integral part of everyday life. Each and every person is under the grip of stress - starting from a two-year infant to an adult. Stress takes an entry in different forms and it alters the normal functioning of a person. Jones and Johnson report that prevalence of stress among nursing students is greater than the general student populations. Hence the issue of stress is an important consideration in nursing education. Academic pressures, practical demands, death and suffering in patients have been identified as sources of stress among nursing students. Many studies report a negative relationship between stress and academic performance. Overall this suggests that the evaluation of stress reducing techniques during the formative training period is important to provide evidence for stress management to be routinely taught in nursing curriculum. These techniques aim at changing the degree of stress perceived by the individual in a situation and help them cope more effectively with the consequences of stress.

Need for the study

Stress produces physiological and psychological effects such as alteration in vitals, headaches, back pain, palpitations, anxiety, restlessness and even depressions. Progressive muscle relaxation is an intervention that acts on these negative effects of stress. A great deal of literature is available on the effect of PMR (Progressive Muscle Relaxation Therapy) on stress and anxiety among students. However, its effect on stress in nursing students is an area less explored so to explore more a research was conducted.

Problem Statement

A Randomized Controlled Superior Trial Study to determine the effectiveness of PMR compared with Physical Activity as stress reducing intervention among B.Sc Nursing First Year Students in selected nursing college of Indore.

Objectives

1. To assess the level of stress among B.Sc Nursing First students of study and control group.
2. To evaluate the efficacy of PMR in reducing stress among B.Sc Nursing Students of study group.
3. To evaluate the effectiveness of Physical Activity in reducing stress among B.Sc Nursing students of control group.
4. To compare PMR techniques with Physical Activity in reducing stress among study and control group.

Hypothesis (Significance at 0.05)

H1: There is a significant difference in the level of stress before and after administrating PMR among B.Sc. (N) 1st Year students

H2: There is a significant difference in the level of stress before and after administrating Physical Activity among B.Sc. (N) 1st Year students

H3: Mean post test stress score of study group who underwent PMR technique is significantly lower than the control group who undergo physical activity.

Review of Literature

Literature relevant to the present study is mentioned under the following headings:

- Studies related to the stress of nursing students
- Studies related to effect of progressive muscle relaxation for reducing stress.

Studies related to the stress of nursing students

Alzayyat (2014) critically reviewed studies related to degrees

of stress and the type of stressors that can be found among undergraduate nursing students during their nursing education. Four themes were identified i.e. initial clinical experience, comparison between different academic years, cross cultural comparison and eustress aspects of clinical experience.

Edwards *et al*. (2010) the authors used the Stress in Nurse Education (SNE) questionnaire with a sample of 169 British nursing students. The students completed the study tool at different time points of their study. The results showed that levels of stress significantly varied between the different data collection times.

Burnard *et al*. (2008) carried out a longitudinal study to compare the perceptions of 1707 worldwide nursing students concerning levels and sources of stress during their education. The results indicated that nursing students internationally share much in common. The most frequently reported clinical stressors were the death of a patient and seeing a patient suffering. The cultural variations may contain factors such as teacher– student affiliations, feelings and thoughts towards education processes, and perception about the manner of caring. All of these issues will probably have impacts on stress levels.

Gorostidi *et al*. (2007), the study indicated that the highest levels of stress were reported at the first year. The authors rationalized this finding by suggesting that more professional stressors are placed in first year students compared with the senior students. The major limitation of the study is that they reflect the stressors related to the particular curriculum program. In other words, the generalization of the findings in other countries with different nursing curricula may be restricted.

Timmins & Kaliszer (2002) conducted a review of international literature that investigated the stressors among nursing students Concerning the clinical stressors, the findings showed that the majority of the participants considered that clinical placements, relationships with nurses in the hospitals and being involved with the death of a client are sources of stress.

Studies related to effect of progressive muscle relaxation for reducing stress.

A quantitative systematic review on intervention effectiveness for reducing stress in student nurses was conducted. Seventeen studies met the inclusion criteria were included. From the review it was found that effective interventions, typically relaxation techniques provided skills for coping with stressful situations.

A study to assess the effectiveness of PMR and galvanic skin resistance training in reducing blood pressure and respiratory rate among highly stresses individuals was conduced in Amritsar. The result of the study showed that progressive muscle relaxation training resulted in significant decrease in blood pressure when compared to galvanic skin resistance training.

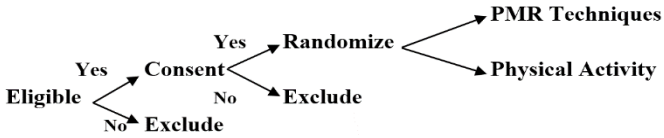
A study was conducted in Amritsar to check the efficacy of the PMR interventions in reducing pulse rate among highly stresses females. Results in this case too indicated PMR is more effective.

The impact on PMR on stress, hunger and eating pattern of adults was studied in USA. Pre and Post session indices of stress, anxiety, relaxation and salivary cortisol were obtained on day 1 and day 8. The outcome of the study indicated significant reduction in all aspects.

An experimental study was conducted in Virginia on the effect of PMR on the anxiety levels among dental students prior to their first paediatric procedure. The results showed no significant difference in the anxiety level of experimental and control group.

Research Methodology

Research Design: The selected research design was RCT Parallel Group Design. The design helped in randomized selection of subjects which helped to maintain the internal validity. PICO technique was followed.



Setting: The study was conducted at Bombay Hospital College of Nursing, Indore

Sampling Technique: Simple Random Sampling (Lottery Method)

Participants (Selection of Participants): The study was conducted on total 50 B.Sc Nursing Students. Out of which 42 were eligible who were randomly divided into study and control group.

Intervention: Study group were given PMR techniques intervention while control group was given Physical Activity module.

Comparison of stress level was done between PMR Technique and Physical Activity

Measurement: First Part includes Demographic Variables (age, educational status and Occupation of both mother and father and students interest in Nursing)

Second part includes perceived stress scale. The scale is a standardized stress assessment instrument.

Procedure

The study was conducted in 3 stages using CONSORT flow diagram with 2 group i.e. Study and control group. Total 50 students were assessed for enrolment.

In the pre-intervention phase the researcher after getting the approval for the research project from the ethical and Research Committee explained the goals of the study to participants and Perceived Stress Scale was given to 50 participants. It helped to categorize the participants in 3 groups on the basis of scores. The pre-intervention stress score of 50 participants was calculated and It was found that 6 participants had low perceived stress, 32 had moderate stress and 12 had high level of stress. Out of 50 participants 6 participants with low stress, and 2 more participants were excluded from the study. So, total 8 participants dropped out.

The participants and individuals enrolling them were kept unaware of the next study/control group assignment in the allocation sequence using allocation Concealment thus preventing selection bias by facilitating enrolment of comparable participants in each study group. The 42 participants were randomly divided into experimental and control group by randomization. Investigators used lottery method and number of subjects were 21 in each study and control group. It was a single –blind trial i.e investigators and

participants know the intervention but the assessor was unaware of it during the post randomization phase.

Study Group

Participants in the study group were given the schedule of attending the session. Each PMR session lasts for 30 minutes. Out of 21 participants 1 more participant left the study during the first week. The total study period was decided for 4 weeks. For the first 2 weeks the participants were taught PMR techniques from 9.00 am to 9.30 am and investigator supervised the PMR relaxation techniques. For the next 2 weeks the participants were asked to perform PMR relaxation techniques which was reminded to them daily by the investigator and also self administered checklist was given to them. Also favourable environment for the PMR was maintained. 2 more participants failed to follow up, so at the end of 4 weeks only 18 participants were left and Perceived stress scale was administered to them and results were analysed.

Control Group

Participants in the control group were given the same time for the physical activities. For the first 2 week the instructor taught Physical activities to the participants which included Spot Jogging, Stretching and loosening exercises, Strengthening exercises, Head rotation, Neck rotation, Wrist movement & rotation for 20 minutes, breathing exercises for 5 minutes which was followed by sitting quietly and rest for 5 minutes. The total timing of physical activity was 30 minutes. The routine of control group was same as the study group. After 2 weeks they were asked to perform simple Physical Activity using module and checklist was also administered to them. 5 control group participants discontinued the intervention and 1 participant failed to follow up. So at last Perceived stress scale was administered only on 15 control group members and results were analysed.

Ethical Consideration

Consent was taken from the ethical Committee of Bombay Hospital. Complete confidentiality of obtained information was ensured. After the study PMR was given for 1 week to the control group to respect the ethical considerations and they were also given checklist on their demand.

Trial Profile, Consort Flow Diagram

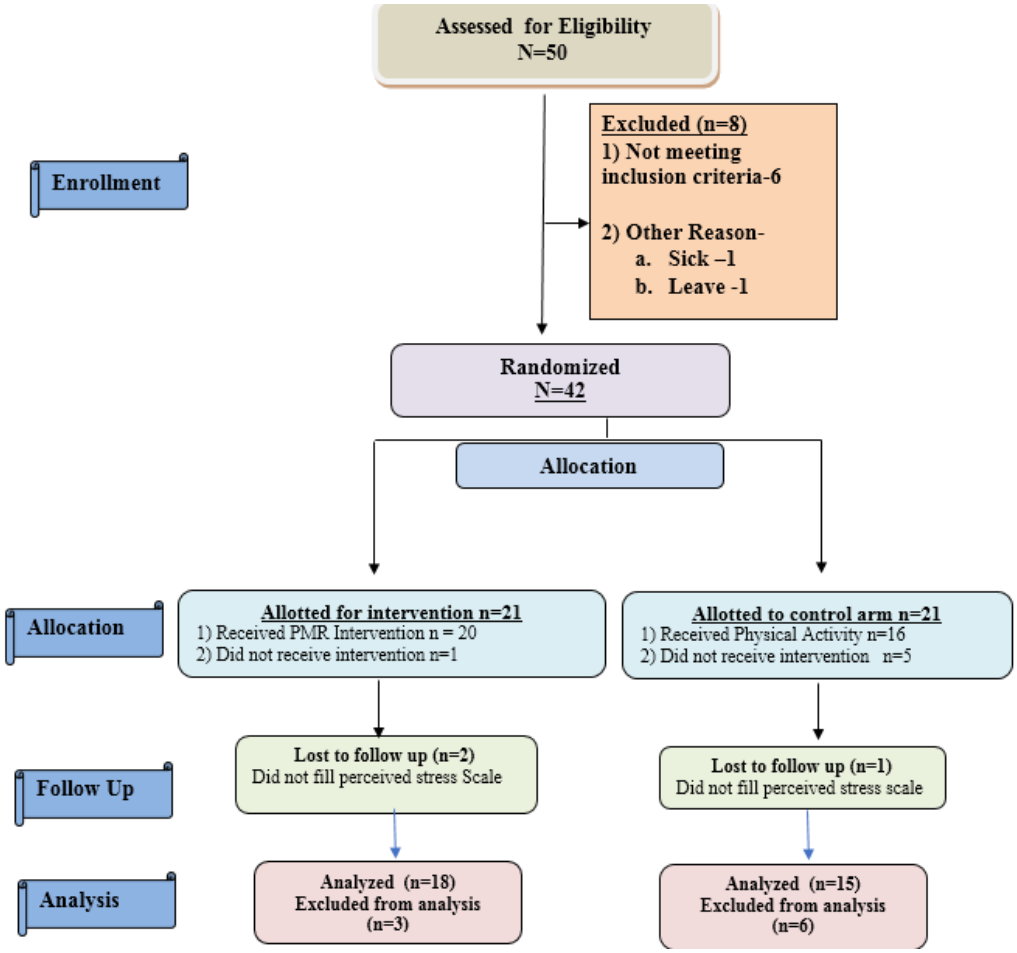


Fig 1

Findings

1. Demographic Variables

The results obtained in the present study showed that subjects mean age in the study and control group were 19 and 18.6 years respectively. 37% of the participants willingly joined nursing and 56% joined on the wish of their parents and 7 % were not interested in nursing. 74% and 60 % of experimental and control group participants father were working in private

firm. 49% and 36% of experimental and control group participants father have completed their education up to graduation. 41 % and 56% of experimental and control group mother of participants were working.

2. Frequency Distribution

The frequency distribution of the study and control group is as follows

Table 1

Frequency Distribution of Study Group		
Stress Score Categorization	**Percentage Pre Intervention (n=25)**	**Percentage Post Intervention (n=18)**
0-13 (Low Stress)	12%	64%
14-26 (Moderate Stress)	76%	32%
27-40 (High Perceived Stress)	12%	4%

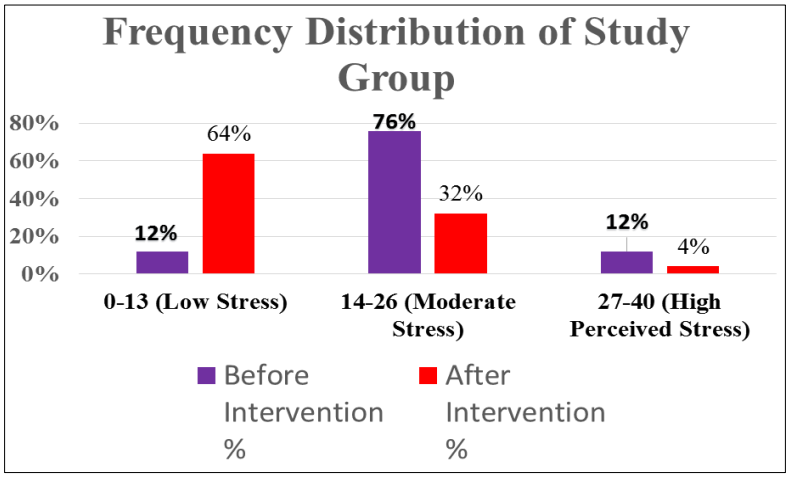


Fig 2

Table 2

Frequency Distribution of Control Group		
Stress Score Categorization	**Percentage Pre Intervention (n=25)**	**Percentage Post Intervention (n=15)**
0-13 (Low Stress)	12%	32%
14-26 (Moderate Stress)	60%	52%
27-40 (High Perceived Stress)	28%	16%

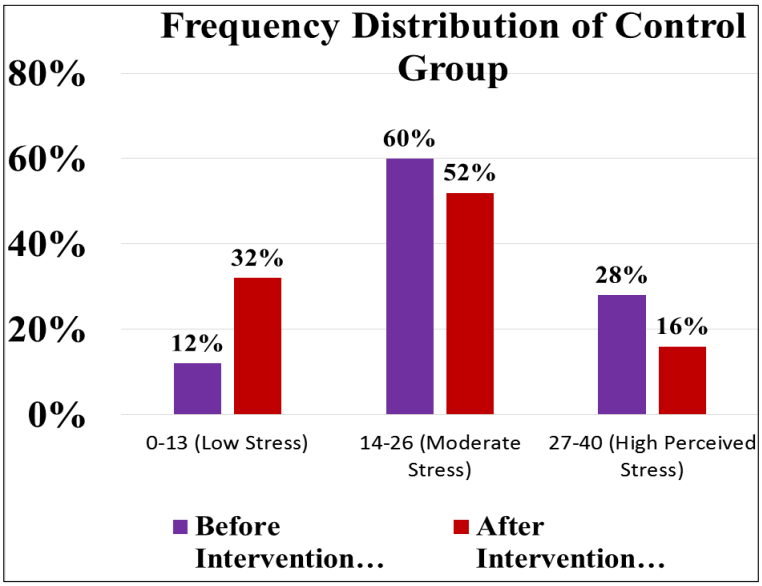


Fig 3

Comparison of Study & Control Group Post Intervention

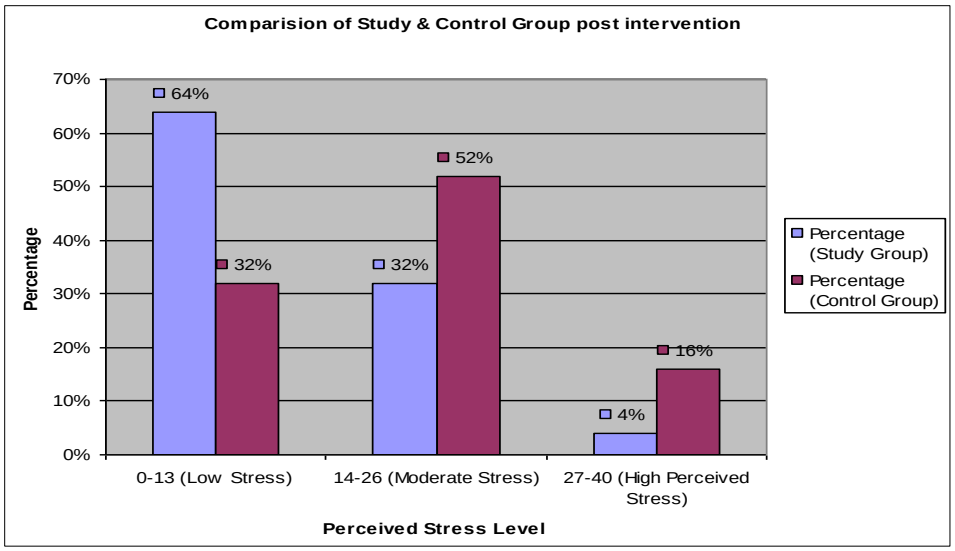


Fig 4

3. Assess the mean Stress among B.Sc Nursing Students before intervention

The mean stress score before intervention was 23 in study group and 21.71 in control group.

4. Testing the Hypothesis

To evaluate the effectiveness of PMR Therapy

Testing the hypothesis I: There is a significant difference in the level of stress before and after administrating PMR among B.Sc. (N) 1st Year students

Table 3

Groups	Pre-Intervention		Post-Intervention		Paired t value (df=17)	P Value	Level of Significant 0.05%
	Mean	Std. Deviation	Post Intervention Mean	Std. Deviation			
Study	23	5.44	12.3	4.64	9.67	2.11	S*

* S= Significant

The tabulated "t" value for degree of freedom (17) is 9.67 and calculated value greater than tabulated value at 0.05 level of significance which is statistically acceptable level of significance. Thus, H1 is accepted

Testing the hypothesis II : There is a significant difference in the level of stress before and after administrating Physical Activity among B.Sc. (N) 1st Year students

Table 5

Groups	Pre-Intervention (n=21)		Post-Intervention (n=15)		Paired t value (df=14)	P Value	Level of Significant 0.05%
	Mean	Std. Deviation	Post Intervention Mean	Std. Deviation			
Control	21.71	4.96	21.5	5.13	0.24	2.15	NS*

* NS = Not Significance

The tabulated "t" value for degree of freedom (14) is 0.24 and calculated value is less than tabulated value at 0.05 level of significance which is not statistically acceptable level of significance. Thus, H2 is rejected

Testing the hypothesis III: Mean post test stress score of study group who underwent PMR technique is significantly lower than the control group who undergo physical activity.

Table 6

Groups	Post-Intervention		Unpaired t value (df=17)	P Value	Level of Significant 0.05%
	Post Intervention Mean	Std. Deviation			
Study Group	12.33	4.64	5.77	2.11	S*
Control Group	21.73	5.13			

* S= Significant

The tabulated "t" value for degree of freedom (17) is 5.77 and calculated value greater than tabulated value at 0.05 level of significance which is statistically acceptable level of significance and The effect size of PMR intervention in reducing stress compared with Physical Activity was analyzed through Cohin's test and the result is D=1.89(larger effect), So this indicates that PMR technique in comparison to Physical Activity has larger effect in reducing stress. Thus H3 is accepted

Outcome

On the basis of results it could be concluded that PMR is an effective technique to reduce the stress of B.Sc Nursing Students. There is significant difference between post test stress score of control and study group which concludes that PMR is effective technique to reduce the stress of B.Sc Nursing Students.

Discussion

Stress among B.Sc Nursing students is common due to many factors. Therefore, application of stress reducing techniques is very important among nursing students. In the present study there was significant difference in the perceived stress of B.Sc Nursing First Year Students in the study and control group. Dehghan –Nayery *et al.* reported that PMR leads to a reduction in stress and improvement of quality of life among adolescent girls.

Conclusion

Based on the study findings it could be concluded that PMR is the most effective way to reduce stress. Convenience, cost efficacy and independency of practice are among the major advantage of this technique in reducing the stress of B.Sc Nursing Students.

Recommendations

Further Qualitative, Quantitative or mixed method research could be conducted on the effectiveness of PMR techniques on a larger scale so that the results could be generalisable. It is suggested to conduct educational programs concerning this method to reduce the stress among B.Sc Nursing Students.

Implications

- The findings of the study have implications for Nursing Practice, Nursing Education, Nursing Administration and Nursing Research.

Nursing Practice

- Nurses play a vital role in healthcare delivery system and taking measures to prevent psychiatric problems. PMR is an inexpensive intervention in order to reduce stress.
- The nurses can provide awareness to the people regarding this intervention.
- The nurse should have skills regarding various therapies to relieve stress which in turn helps in preventing psychiatric illness and making their life more hopeful even though affected by illness.

Nursing Education

- The established use of PMR can be used to teach as a stress reduction method to the nursing students, patients and caregivers of the client.
- Nursing students should be trained to acquire skill in assessing the stress of clients in different settings and to intervene with the appropriate literature so that they can be prevented from taking anti depressive and other medicines to relieve stress.

Nursing Research

- Usage of PMR therapy in clinical practice is relatively an unexplored area as far as India is concerned.
- Many more research studies could be done to assess the efficacy of this highly feasible and less expensive therapy in various other conditions and settings.
- The present study is just an initial attempt and it will encourage and motivate health personnel to do many more research studies in this rea.
- The new investigators can use the findings and the methodology as a reference material.

Nursing Administration

- The administrative nursing can also provide training of PMR Therapy for staff nurses, student nurses and other allied profession. The nurse authors should take a keen interest in the PMR therapy for the effective use in various areas like clinical practice, community and home health Care.

References

1. Chan KS, Twinn S. An analysis of the stressors and coping strategies of Chinese. Journal of Clinical Nursing. 2007; 16(1):185-93.
2. Indian Journal of Holistic Nursing. 2010; 6(1):19-22.
3. Corey L, Wald A, Patel R, Sacks SL, Tyring SK, Warren T *et al*. Once-Daily valacyclovir to reduce risk of transmission of Genital Herpes. N Engl J Med. 2004; 350:26-30. [PubMed]
4. Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB. 3rd ed. 503 Walnut street, Philadelphia, PA, USA: Williams and Wilkins, a Walters Kluwer business Lippincott; Designing clinical research. 2007, 256-59.
5. William A. 4180 IL route 83, suite 101 Long Groove, IL: Waveland Press, Inc; 9580; Oleckno. Essential epidemiology principles and applications. 166-68.