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EFFECTIVENESS OF PROGRESSIVE MUSCLE RELAXATION ON POSTTRAUMATIC STRESS AMONG PATIENTS WITH MYOCARDIAL INFARCTION

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ABSTRACT

Aim: The main purpose of the randomized controlled trial research study was to assess the effectiveness of progressive muscle relaxation on posttraumatic stress among patients with myocardial infarction. **Background:** Depression in the elderly is a significant public health problem. Since geriatric depression has important medical, social, and financial consequences, investigation of depression in old age continues to evoke interest. Geriatric depression is under recognized because of various factors. The risk factors that make elderly to become depressed are physical function reduction, chronic illness, death of the life partner and poor socio economic conditions. **Design:** An Experimental time series research design. **Methodology:** The research design adopted was Randomized controlled trial. The setting selected for the study was general medical wards in Sri Ramachandra Hospital, Chennai. The samples selected for the study were patients with myocardial infarction. The sample size comprised of 40 patients with myocardial infarction. The sampling technique selected for the study was Simple random sampling technique. **Findings:** There was an association between the level of posttraumatic stress and age of myocardial infarction patients during the study group during the posttest at the level of $P < 0.01$. Statistically significant association was existing between the level of posttraumatic stress among myocardial infarction patients with respiration during the posttest of the study group at $P < 0.05$. **Conclusion:** The present study findings suggested that progressive muscle relaxation enhance physical, emotional, mental and social functioning among patients with myocardial infarction. It enhances overall developmental functioning that in turn enhances proper functioning of an individual.

KEYWORDS

Effectiveness, Progressive muscle relaxation and Patients with myocardial infarction.

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INTRODUCTION

For many years, cardiac disease patients have thought to be exhibiting characteristic emotional features. Nonetheless, the present understanding between affective disorders and the heart may be implanted to the mid, 19th century, with the publication of William's text about "nervous and

sympathetic palpitations of the heart". This had been followed within late 1800s by a various number of works that perceived the concept of neurologically basis, or "neurasthenic", cardiac problems. During the 20th century, magnificent advances had occurred in areas of certain issues related to mood which belonged to Coronary Artery Disease and abrupt or unexpected cardiac death. To overcome stress, it is of a great importance to acquire how to relax. It is, at times, unacceptable to experience relaxation and being tense simultaneously. Individuals who live with great levels of stress very often find it hard not knowing how to get into a state of relaxation by releasing the tension in their muscles that contributes experiencing stress.

Gupta R. (2005)¹ identified the existence of Coronary Heart Disease (CHD) in India had been estimated to be about 3-4% in rural areas and 8-10% in urban areas with a grand total of 28.8 million being affected according to the population-based cross-sectional surveys that were conducted. The approximate estimate amount is comparable to that figure of 31.8 million being affected, which was taken from the extrapolations of the Global Burden of Diseases Research Study. However, these numerical values are likely underrates since they do not value for those individuals with asymptomatic Coronary Heart Disease.

By using Progressive Muscle Relaxation, one can counteract these physiological, psychological changes to accomplish a "relaxation state". A relaxation state is experienced when following techniques to slow the breath and heart rate to calm the body down. When the muscles of various groups are relaxed, they do not require much oxygen when they remain tensed. This will certainly allow redirection of blood from the muscles that are tensed to various areas of the human body that reduces many unpleasant psycho physiological effects of stress.

Need for the study

Buselli EF and Stuart EM (1999)² conducted a study on 'Influence of Psychosocial Factors and Biopsychosocial Interventions on outcomes after Myocardial Infarction' where Management of the patient with myocardial infarction may extend

beyond the physiologic to include psychosocial factors that may adversely effects on cardiac health. Psychosocial factors were identified such as depression, coronary-prone behavior, social isolation and stress are related to increase cardiac death and illness. Various interventions including behavioral therapies, techniques that elicit the relaxation response, meditation, exercises, and increasing social network, may play a role in improving health outcomes.

Lane *et al* (2001)³ empirically examined the relationships between stress and quality of life among patients with myocardial infarction. The study concluded that stress decreases the individuals functional aspects and affects the quality of life.

G.A. Fava and C. Ruini (2010)⁴ concluded relaxation practice that is supervised intensively with psycho education will improve the recovery from an ischemic cardiac event that helps to secondary prevention.

In low and middle income countries, the occurrence of deaths is 80% and disability is 85% from that of CVD specifically. The Indian subcontinent may be a region of many others having the greatest burden of CVD worldwide.

The practice of Progressive Muscle Relaxation can be taken up as a natural muscle relaxer and is mainly helpful since it is effective in accomplishing a relaxation state, so that a state of keeping the mind calm of an individual is achieved. When one is mentally stressed, unconsciously he or she tenses his or her muscles. The tension that is being held in the most of the muscles can cause pain and discomfort. Normally during this stage, the individual might experience headache, backache, stomach pain and mostly will concentrate over the head, face, neck which increases the mental stress. Techniques of progressive muscle relaxation brings an end to this recurring stressed-mind of tense-muscle cycle. The technique involves contraction and relaxation of groups of muscle over the face, neck, shoulder, stomach, hands and legs practicing those steps in 20-30 minutes with two sessions given to each individual a day for three consecutive days.

The researcher felt that the patients with myocardial infarction should overcome stress, in order to

prevent further complications which are triggered by factors influencing stress. In addition to the medications, relaxation techniques can also be taught to such patients to reduce the significant level of stress more effectively. Among the various procedures available, the investigator has found that progressive muscle relaxation is more effective in reducing stress and anxiety. This motivated the researcher to conduct this study, so that the stress level among patients with myocardial infarction will be reduced and further complications can be prevented.

Statement of the problem

Effectiveness of progressive muscle relaxation on posttraumatic stress among patients with myocardial infarction.

Objectives

Assess the posttraumatic stress among patients with myocardial infarction.

Determine the effectiveness of progressive muscle relaxation on posttraumatic stress.

Associate the posttraumatic stress among patients with myocardial infarction with selected demographic variables.

Hypothesis

There is a significant difference on posttraumatic stress among patients with myocardial infarction who practice progressive muscle relaxation than who do not.

Assumptions

Relaxation techniques improves the sense of well-being.

Individuals diagnosed with myocardial infarction experiences psychological morbidity.

Psycho education strengthens the self-concept.

Review of literature

An extended review of literature and research studies were done through primary and secondary sources which has enabled the investigator to collect further ideas to support the selected problem. The reviewed literature were subdivided into following sections: Studies related to posttraumatic stress and myocardial infarction and Studies related to progressive muscle relaxation and posttraumatic stress. Penumetsa SC, Mallidi J, Friderici JL, Hiser W, and Rothberg MB (2000)⁵ conducted a study on

the outcome of patients who were admitted for chest pain observation. Patients underwent stress tests within 30 days and results were abnormal in 12.5% of the patients and also they had underwent cardiac catheterization to overcome the feeling of stress. The study insists that most patients who are admitted with certain low risk chest pain normally undergo a period of stress. Richardson (2006)⁶ conducted a study on posttraumatic stress existence and also the risk of continual or intermittent myocardial infarction subjects. Myocardial infarction can induce posttraumatic stress and as a cycle, this acute coronary syndrome induced posttraumatic stress may increase patient's risk for subsequent cardiac symptoms and death rate. The analysis suggested that posttraumatic symptoms that are clinically significant induced by acute coronary syndrome are prevalent in a moderate form and are associated with a great risk for periodical cardiac outcomes. Nemeroff CB, Musselman DL, Evans DL (1998)⁷ identified that the relationship between CVD and stress is properly established. Stress is also associated with an high pitfall or threat of coronary artery disease and myocardial infarction, congestive heart failure. The morbidity and mortality of patients having cardiovascular disease accompanying stress are significantly on a high note than in patients not being much stressed.

Conceptual framework

The conceptual framework for this study was adopted from Roy's Adaption Model which was designed by Sr. Callista Roy in the year 1976. Roy's model focuses on the concept of adaptation. The theory is considered an individual as an open system, adjusts with stimuli of self and environment. Person as a holistic adaptive system in constant interaction with internal and external environment to maintain integrity. Successful adaptation occurs that leads to optimal health, well-being, quality of life, and death with dignity .In this study, the patients with acute myocardial infarction are considered to be an open adaptive system. The system consists of three components which are Input, through put and Output. Input is the Progressive Muscle Relaxation which was given to the study group by the investigator whereas no intervention was given to the

control group. Throughput is the regular practice of Progressive Muscle Relaxation which was demonstrated by the investigator that will improve interpersonal relationship, increase self-esteem, decrease tension and help the person to maintain an emotionally balanced life. Progressive Muscle Relaxation was not practiced by the control group. The technique involves contraction and relaxation of groups of muscle over the face, neck, shoulder, stomach, hands and legs practicing those steps in 20-30 minutes with two sessions given to each individual a day for three consecutive days. Output is the reduction in the level of posttraumatic stress leading to adaptive behaviour for the study group. In the control group, no changes occur in the level of posttraumatic stress leading to maladaptive behaviour.

MATERIAL AND METHODS

The research design adopted was Randomized controlled trial. The study sample was patients with myocardial infarction admitted to general medical wards in Sri Ramachandra Hospital, at Chennai. The sample size consisted of 40, with 20 in the control group and the study groups. 40 samples who fulfilled the inclusion criteria in the homes were selected using lottery method. The Inclusion criteria for sample selection were Patient with myocardial infarction who are physically fit as certified by the physician, able to speak and understand English/Tamil, willing to participate in the study. Patient with myocardial infarction who have undergone any relaxation technique and who scored high acuity of posttraumatic stress were excluded. Data were gathered during 16.06.2012 to 16.07.2012. The tool used for the study has two sections. Section A, Background variables consist of include age in years, gender, educational status, occupation, monthly income, residence and the type of diet. Section B, The Perceived Stress Scale was formulated by Cohen, S., and Williamson, G. (1988)⁸. There were a series of ten questions that the individual marked based on the events from the past one month after the occurrence of a traumatic event being experienced. Each statement had a number of five choices to mark which were reversely scored,

that is, 0 or 4- Never, 1 or 3- Almost never, 2- Sometimes, 3 or 1- Fairly often, 4 or 0- Very often, respectively which the patient had to mark in order to indicate how he or she is perceiving stress at the moment of testing. For every assessment, there was an interpretation to one of three acuity ranges: Low, Medium, and High. Each item was scored 0-4, as indicated below. The ten items, possible range for total was 0-40. There was no time limit in specific for the patients to mark their thoughts but were asked to mark it as quickly as possible.

Ethical consideration

Institutional ethics committee approval was obtained from the university prior to beginning data collection. Participation in the study was completely voluntary and participant underwent informed consent process prior to commencing study.

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from 40 patients with myocardial infarction. Statistical analysis is a method in which enables to convert quantitative data into meaningful and understandable information. Statistical procedures enable the investigator to summarize, organize, evaluate, interpret and communicate the numeric information.

Table No.1 reveals that the number and percentage distribution of demographic variables of 40 patients with myocardial infarction in the study and control groups. Both the groups depicted that 1(5%) was in the age group of 26-35 yrs and 13(65%) in 46-55 yrs. There were 14(70%) males and 6(30%) females in the study group and 17(85%) males and 3(15%) females in the control group. Regarding residence, both the groups depicted an equal number of 15(75%) from the urban and 5(25%) from the rural areas. Regarding the educational status in the study group, 15(75%) had Hr. Sec and 2(10%) had college level of education. Where as in the control group, 2(10%) belonged to non-formal education and 9(45%) had primary school education. Focusing on the occupational status of the study group, 14(70%) were employed and 1(5%) was retired and not working. In the control group, 18(90%) were employed and 1(5%) was retired and unemployed.

With regard to the source of income of the study group, 10(50%) were in Rs. 10,000/---Rs20,000/-, and only 4(20%) were in Rs. <10,000/-. But in the control group 10(50%) were in Rs. <10,000/- and 3(15%) in Rs. 10,000/---20,000/-. In the type of diet, both the groups revealed that 3(15%) were vegetarians and 17(85%) were non-vegetarians.

Table No.2 depicts the distribution of clinical variables among patients with myocardial infarction with posttraumatic stress from both the study and control groups. Under the aspect of blood pressure in the study group, 15(75%) were in between 100/70mmHg to 130/90mmHg, and 2(10%) were > 130/90mmHg. In the control group, 12(60%) were in the range of 100/70mmHg to 130/90mmHg, and 1(5%) was below 100/70mmHg. With regard to the heart rate in the study group, 14(70%) had a heart rate within the range of 81/mt-100/mt and only 1(5%) had it above 100/mt. In the control group, 9(45%) were in the range of 61/mt-80/mt, 8(40%) within 81/mt-100/mt and 3(15%) above 100/mt. Regarding co-morbid illness of the study group, 12(60%) fell in the category of others, and 2(10%) with hypertension. Where as in the control group, 11(55%) fell in the category of others, and 2(10%) with diabetes mellitus and bronchial asthma each. As far as the respiration rate is concerned, 11(55%) were in the category between 18/mt-20/mt and 8(40%) were above 20/mt in the study group. In the control group, 11(55%) had it above 20/mt and 9(45%) were in between 18/mt and 20/mt.

Figure No.1 emphasizes that the number percentage distribution of the level of posttraumatic stress among patients with myocardial infarction during the pretest and posttest of the study and the control group. Twenty(100%) fell in the category of having moderate acuity of posttraumatic stress in both the groups during the pretest. In the posttest, 19(95%) had low acuity and 1(5%) had a moderate acuity in the study group and 20(100%) remained in the moderate acuity in the control group.

Figure No.2 shows that in the study group, posttraumatic stress mean was 13.30 with a SD of 2.43 and the mean of the control group was 1.35 with a SD of 0.49. There was a statistically

significant difference between the pretest and posttest in the study group at the level of $P<0.001$. Table No.3 describes that the comparison of the overall effectiveness of progressive muscle relaxation on posttraumatic stress among patients with myocardial infarction between the study and control groups. There was a statistically significant difference on the level of posttraumatic stress between the study and control group at the level of $P<0.001$.

MAJOR FINDINGS

1. Twenty (100%) fell in the category of having moderate acuity of posttraumatic stress in both the groups during the pre-test. In the post-test, 19(95%) had low acuity and 1(5%) had a moderate acuity in the study group and 20(100%) remained in the moderate acuity in the control group.
2. In the study group, posttraumatic stress mean was 13.30 with the SD of 2.34 and the control group mean was 1.35 with the SD of 0.49. There was a statistically significant difference in the effectiveness of progressive muscle relaxation between the pre-test and post-test in the study group and control group at the level of $P<0.001$.
3. In the comparison of the overall value of progressive muscle relaxation on the level of posttraumatic stress among patients with myocardial infarction, there was a statistically significant difference on the level of posttraumatic stress between the study group and the control group at $P<0.001$.
4. There was an association between the level of posttraumatic stress and age of myocardial infarction patients in the study group during the post-test at the level of $P<0.01$.
5. There was a statistically significant association existing between the level of posttraumatic stress among myocardial infarction subjects with respiration during the post-test of the study group at $P<0.05$.

LIMITATIONS

1. The study was limited to patients diagnosed with myocardial infarction.
2. The evaluation of progressive muscle relaxation on posttraumatic stress was limited to one post-test.

Nursing implications

In the mental health team, nurse plays a vital role in educating, training and providing various psychosocial therapies. The psychiatric nurse should be aware of the stress associated with caring of the patients with myocardial infarction and its management using various nursing strategies that promotes removal of unwanted burden and stress, which helps them to lead an independent and productive life. Therefore this study has important implications in;

Nursing practice

Hospital

Most of the patients with myocardial infarction will be experiencing posttraumatic stress during their daily activities. They will be suffering from physical, emotional, mental and social dimensions of their day to day practice, which severely affect their work performance and socialization skills. These patients may be required some complementary alternative therapies to relieve from posttraumatic stress. Progressive muscle relaxation can be implemented as a part of the treatment to be carried out by these patients in their day to day activities in times of experiencing difficulties. The psychiatric nurse needs to motivate these patients to practice progressive muscle relaxation in their daily life as a part of them. Thus it is the psychiatric nurse's responsibility to identify those burden and to carryout necessary nursing strategies to overcome them.

Community

The psychiatric nurse can carry out progressive muscle relaxation as a part of psychiatric rehabilitation in the community. In the family, the nurse can identify the level of the posttraumatic stress among patients with myocardial infarction and prevent them from being severe by implementing progressive muscle relaxation techniques. The nurse should encourage the patients to carry out

progressive muscle relaxation as a part of their day to day activities.

Nursing education

Posttraumatic stress existing in their life events can lead to impaired socialization skills and work performance. The concept and importance of progressive muscle relaxation is to be emphasised in the aspect of nursing education. The nursing students need to be educated to the core regarding progressive muscle relaxation, so as to preserve the physical, emotional, mental and social functions among patients with myocardial infarction. The knowledge of the nurse educators should be updated from time to time with the emerging trends.

Nursing administration

The nurse administrator must periodically evaluate the nursing interventions used in the hospitals. The nurse administrator ought to organize and conduct programs based on progressive muscle relaxation and proper resources and materials should be arranged for the nursing staff to implement progressive muscle relaxation for patients with myocardial infarction to preserve and promote their well-being. The nurse administrator must take essential steps like organizing and encouraging the staff to participate in programs like continuing nursing education and workshops, as these measures will help to keep abreast of the current trends in patient care.

Nursing research

Nursing practice creates initiation of ideas for research. Evidence based practice is a cornerstone for professional nursing practice which enhances patient care standard quality and creates a foundation of nursing care. Team response is to be generated among nurses to perform the research and implement it in practice. More research should be conducted on progressive muscle relaxation among patients with myocardial infarction and measures to overcome posttraumatic stress. The findings of the research should be utilized in clinical practice. They should be able to seek, acquire and apply pertinent research findings for effective nursing execution.

Table No.1: Frequency and percentage distribution of the demographic variables among patients with myocardial infarction in the study and the control group (N=40)

| S.No | Demographic Variables | Study Group (n=20) | | Control Group (n=20) | | χ^2 and p value |
|------|----------------------------|-----------------------|------|-------------------------|------|-------------------------|
| | | No. | % | No. | % | |
| 1 | Age in years | | | | | 0.444 0.931 NS |
| | a) 26 - 35 yrs | 01 | 05.0 | 01 | 5.0 | |
| | b) 36 - 45 yrs | 05 | 25.0 | 04 | 20.0 | |
| | c) 46 - 55 yrs | 13 | 65.0 | 13 | 65.0 | |
| | d) >55 yrs | 01 | 05.0 | 02 | 10.0 | |
| 2 | Gender | | | | | 1.290 0.256 NS |
| | a) Male | 14 | 70.0 | 17 | 85.0 | |
| | b) Female | 06 | 30.0 | 03 | 15.0 | |
| 3 | Residence | | | | | 0.000 1.000 NS |
| | a) Urban | 15 | 75.0 | 15 | 75.0 | |
| | b) Rural | 05 | 25.0 | 05 | 25.0 | |
| 4 | Educational Status | | | | | 10.667 0.014 NS |
| | a) Non-literate | - | - | 02 | 10.0 | |
| | b) Primary | 03 | 15.0 | 09 | 45.0 | |
| | c) Hr. Sec | 15 | 75.0 | 05 | 25.0 | |
| | d) College | 02 | 10.0 | 04 | 20.0 | |
| 5 | Occupational Status | | | | | 3.300 0.348 NS |
| | a) Retired | 01 | 5.0 | 01 | 5.0 | |
| | b) Employed | 14 | 70.0 | 18 | 90.0 | |
| | c) Unemployed | 04 | 20.0 | 01 | 5.0 | |
| | d) Not working | 01 | 5.0 | 00 | 0 | |
| 6 | Income (Rs/month) | | | | | 6.418 0.040 * |
| | a) Rs. < 10,000/- | 04 | 20.0 | 10 | 50.0 | |
| | b) Rs. 10000/- - 20000/- | 10 | 50.0 | 03 | 15.0 | |
| | c) Rs. 21000/- - 30000/- | 06 | 30.0 | 07 | 35.0 | |
| | d) Rs. > 30000/- | - | - | - | - | |
| 7 | Type of Diet | | | | | 0.000 1.000 NS |
| | a) Vegetarian | 03 | 15.0 | 03 | 15.0 | |
| | b) Non vegetarian | 17 | 85.0 | 17 | 85.0 | |

Table No.2: Frequency and percentage distribution of the clinical variables among patients with myocardial infarction in the study and control groups (N=40)

| S.No | Clinical Variables | Study Group (n=20) | | Control Group (n=20) | | χ^2 and p value |
|------|--------------------------|--------------------|------|----------------------|------|----------------------|
| | | No. | % | No. | % | |
| 1 | Blood Pressure | | | | | 4.111 0.128 NS |
| | a) < 100/70 mmHg | 03 | 15.0 | 01 | 5.0 | |
| | b) 100/70 to 130/90 mmHg | 15 | 75.0 | 12 | 60.0 | |
| | c) > 130/90 mmHg | 02 | 10.0 | 07 | 35.0 | |
| 2 | Heart rate | | | | | 7.636 0.054 NS |
| | a) \leq 60/mt | 02 | 10.0 | - | - | |
| | b) 61/mt - 80/mt | 03 | 15.0 | 09 | 45.0 | |
| | c) 81/mt - 100/mt | 14 | 70.0 | 08 | 40.0 | |
| | d) Above 100/mt | 01 | 5.0 | 03 | 15.0 | |
| 3 | Co-morbid Illness | | | | | 5.329 0.149 NS |
| | a) Diabetes mellitus | 06 | 30.0 | 02 | 10.0 | |
| | b) Hypertension | 02 | 10.0 | 05 | 25.0 | |
| | c) Bronchial asthma | - | - | 02 | 10.0 | |
| | d) Others | 12 | 60.0 | 11 | 55.0 | |
| 4 | Respiration rate | | | | | 1.674 0.433 NS |
| | a) Below 18/mt | 01 | 5.0 | - | - | |
| | b) 18/mt to 20/mt | 11 | 55.0 | 09 | 45.0 | |
| | c) Above 20/mt | 08 | 40.0 | 11 | 55.0 | |

Table No.3: Mean difference and standard deviation of progressive muscle relaxation on the level of posttraumatic stress among patients with myocardial infarction between study and control groups (N=40)

| S.No | Groups | MD | SD | Independent 't' test and P value |
|------|----------------|-------|------|----------------------------------|
| 1 | Study (n=20) | 13.30 | 2.43 | 21.559 0.000*** |
| 2 | Control (n=20) | 1.35 | 0.49 | |

*** - P<0.001

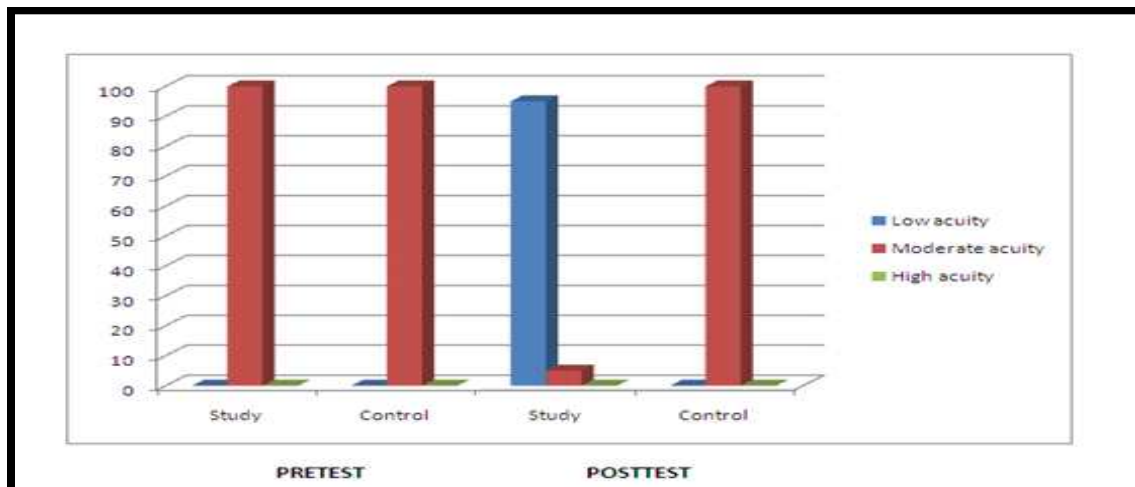


Figure No.1: Percentage distribution of the level of posttraumatic stress during the pre-test and post-test (N=40)

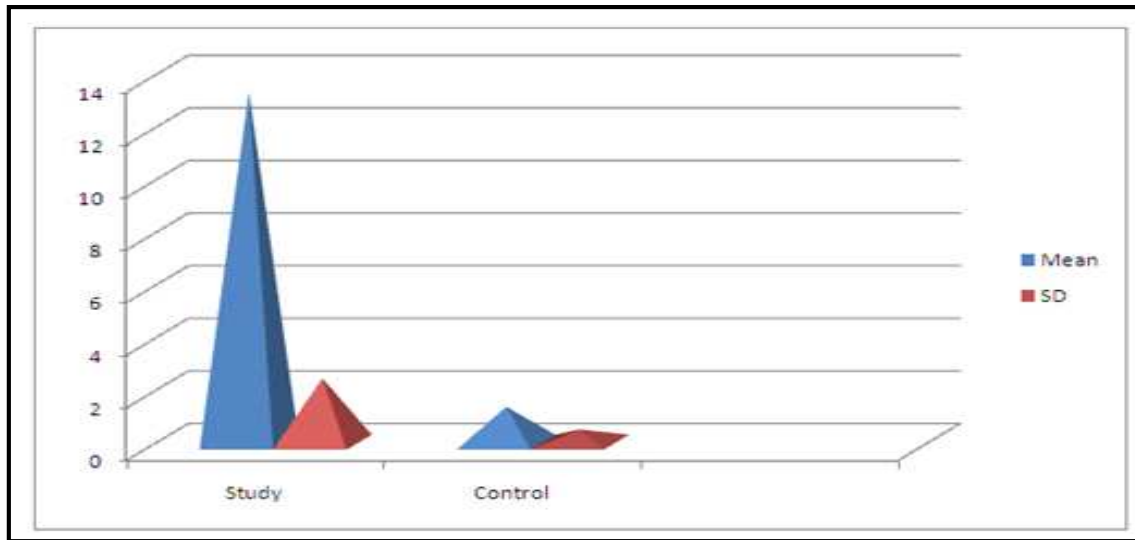


Figure No.2: Effectiveness of progressive muscle on the level posttraumatic stress (N = 40)

CONCLUSION

Disability is an important contribution to cause posttraumatic stress among patients with myocardial infarction to limit their performance and ability during rehabilitation. The present study findings suggested that progressive muscle relaxation enhance physical, emotional, mental and social functioning among patients with myocardial infarction. Progressive muscle relaxation aims to enhance overall developmental functioning that in turn enhances proper functioning of an individual.

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RECOMMENDATIONS

1. A similar study can be replicated with a larger sample size.
2. The study can be done on a longitudinal basis.
3. This study can be carried out with other neurological and psychiatric disorders.

This study can be conducted by using other research designs.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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