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Original Article

Is there any Effect of Progressive Muscle Relaxation Exercise on Anxiety and Depression of the Patient with Coronary Artery Disease?

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ABSTRACT

Background and purpose: Cardiovascular disease frequently coexists with psychiatric disorders. The cardiovascular disease and psychiatric disease is not two independent illnesses. The development of cardiac disease occurs as a complication of emotional or psychiatric problems and conversely, the development of psychiatric disorders are also seen as complications of cardiovascular disease. This study was conducted to assess the effect of progressive muscle relaxation exercise on anxiety and depression with coronary artery disease patients in a selected hospital Kolkata.

Methods: Forty Coronary artery disease patients were selected by randomized technique. One group pre-test with multiple time treatment intervention research design was applied. On 1st day anxiety and depression were assessed and followed by video-based teaching on progressive muscle relaxation exercise was given. Then patient were practicing progressive muscle relaxation exercise from second to sixth day under supervision. Patients performed progressive muscle relaxation exercise in presence of investigator and it was checked through criteria checklist.

Results: Out of forty patients, 25% patient had severe depression and 55% patient had moderate anxiety in pre-test but after administration of progressive muscle relaxation exercise it reduced by 2.5% and 22.5% respectively. This difference was statistically significant as evident from t value (6.68)

Conclusion: Non-pharmacological therapy i.e progressive muscle relaxation exercise is very much effective in reducing anxiety and depression among coronary artery disease patient. So Progressive muscle relaxation technique is needed as a part of other therapies and to be practiced by the nurse in the day to-day activities.

Keywords: Progressive muscle relaxation techniques, anxiety, depression, coronary artery disease patients.

1. INTRODUCTION

Since ancient times, the heart has been a symbol of our emotions. But, scientists have uncovered a physical link between emotions and heart health. From life experience we all know that stress, anxiety, fear, depression, anger are negative emotions and there is a strong link between negative emotional states, brain circuitry, inflammation, which increases the risk of heart disease [1].

Emotional stress causes a negative chain reaction within the body. Due to stress anxiety, depression stress hormones are released from the body. It causes the heart to beat more rapidly and blood vessels to narrow to help push blood to the centre of the body. The hormones also increase blood pressure. Coronary heart disease, hypertension, and stroke, are the three most common conditions of cardiovascular diseases [2].

Research indicates there is a link between anxiety, depression and heart disease. One in five women and one in eight men will experience depression at some time in their life. On average, one in four people will experience anxiety [3].

Compared with the general population, individuals suffering from depression have an increased risk which is highest in the presence of concomitant cardiovascular disease [4].

Progressive muscle relaxation is a well established behavioural therapy for alleviating psychological distress in patients with chronic illness and cardiac diseases. The science of the heart mind interaction highlights its merits of use among cardiac patients. A review study indicated that the non – physical approach of relaxation was more effective in bringing about a psychologically calming effect, whereas the physical approach of relaxation, which uses muscular activity to relieve body tension, had greater effect on physiological outcomes [2], [8-10].

Many studied were conducted to see the effect of non-pharmacological therapy on anxiety and depression throughout the world as well as in India, but in West Bengal it was not done before. And from the literature review it comes out that non pharmacological therapies have a positive influence on both physical and psychosocial outcome of patients with coronary heart disease. Non pharmacological therapy has no harm, instead lots of benefits, as successful as some anti-depressants, but much cheaper [11-15].

Hence this study was conducted to find out the effect of progressive muscle relaxation exercise on anxiety and depression of coronary artery disease patient.

2. MATERIALS AND METHODS

The quasi-experimental research design was conducted from November to December at N.R.S Medical College and Hospital. Institutional Ethical committee permission was sought. Administrative permission was taken from N.R.S Medical college and Hospital. Anonymity and confidentiality were maintained. Informed consent was obtained from each participant in this study.

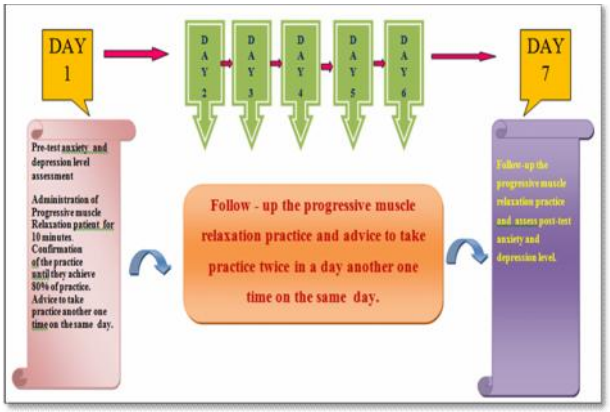
2.1 The objectives of the study were

1. To assess the anxiety level before and after progressive muscle relaxation exercise.
2. To assess the depression level before and after progressive muscle relaxation exercise.
3. To evaluate the effect of progressive muscle relaxation exercise in terms of change in anxiety and depression of coronary artery disease patients.
4. To determine the relationship between depression and anxiety level of the patients before and after progressive muscle relaxation exercise.

2.2 Hypothesis

- H_1 : After giving progressive muscle relaxation exercise post-test depression level is different from pre-test depression level at 0.05 level of significance [16].
- H_2 : After giving progressive muscle relaxation exercise post-test anxiety level is different from pre-test anxiety level at 0.05 level of significance.
- H3: There is a relationship between anxiety and depression of the coronary artery disease patients at 0.05 level of significance.
- H4 : There is an association between pre-test anxiety level with selected variables at 0.05 level of significance.
- H5 : There is an association between pre-test depression with selected variables at 0.05 level of significance.

Research Design: The quasi-experimental research design was adopted [17, 18].



O1…… x ……O2

O1- Pre-test anxiety and depression level assessment
X- Teaching of progressive muscle relaxation exercise.
O2- Post-test anxiety and depression level assessment.

Fig 1: Schematic representation of research design

Sample and sampling technique: Fifty samples were selected by random sampling techniques but it reduced to forty due to sample mortality.

Inclusion criteria for selection of the participants were-

- Patients who do not have body discomfort.
- Patient with coronary artery disease.

2.3 Data collection tools *and techniques*

Background information was collected by demographic Proforma. It consisted of 13 items and it was validated by nine experts. The validity index was 0.86.

Anxiety and depression were assessed by Hospital Anxiety and Depression Scale (HADS) [5], [19-21]. The copyright permission was taken for this standardized tool. The reliability of the tool was established by calculating of internal consistency by Crohn beck alpha and calculated 'r' was 0.89.

3. RESULTS

Table 1: Frequency and percentage distribution of patients in terms of their background information.(N= 40)

Sl.No	Demographic variables	Frequency	Percentage (%)
1	Age--		
a)	29-41 Years	7	17.5
b)	42-51 Years	8	20
c)	52-61 Years	16	40
d)	Above 61 Years	9	22.5
2.	Sex—		
a)	Male	28	70
b)	Female	12	30
3.	Marital Status—		
a)	Married	34	85
b)	Unmarried	3	7.5
c)	Widow	3	7.5
4.	Type of family—		
a)	Nuclear	34	85
b)	Joint	6	15
5.	History of any psychiatric disease.		
a)	No	40	100

Table 1 reveals that highest i.e 40% was in the age group of 52-61 years and 70% were male patients. It also indicated that 85% patients were married and were they living in a nuclear family.

N= 40

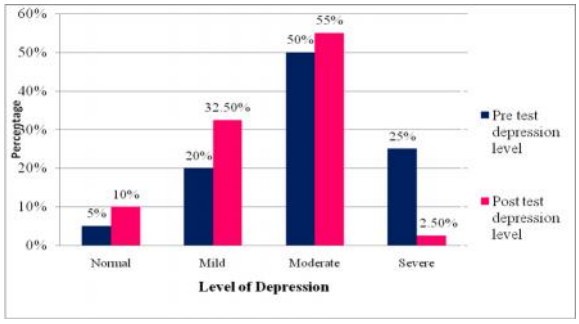


Fig 2: Frequency and percentage distribution of patients according pre-test and post-test depression level

Table 2: Mean, Mean difference, Standard deviation and 't' value of pre-test and post-test depression level N=40

Particular	Mean	Mean difference	SD	SDE	t
Pre-test depression score	12.27	1.8	2.65	0.42	6.68*
Post-test depression score	10.47		1.88	0.29	

*P < 0.05

The figure 3 highlights that among 40 patients , in pre-test 25% patients had severe depression level but in post-test only 2.5% patient had severe depression level. .

Further the table -2 shows that mean pre-test depression score was higher than the mean post-test depression score with Mean difference (1.8). This difference was found statistically significant (P < 0.05).

This indicated that progressive muscle relaxation exercise was effective in reducing depression level among coronary artery disease patients.

N= 40

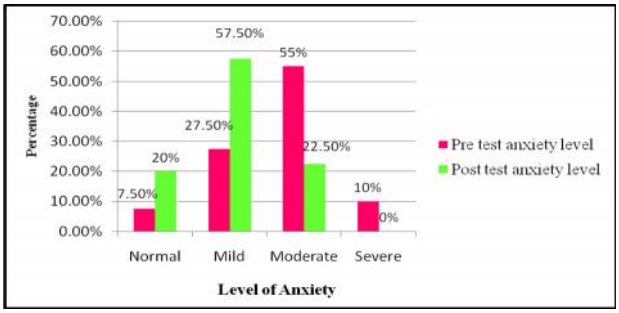


Fig 3: Frequency and percentage distribution of patients according to pre-test and post-test anxiety level.

Table 3: Mean, Mean difference, Standard deviation and 't' value of pre-test and post-test anxiety level. N=40

Particular	Mean	Mean difference	SD	SDE	't'
Pre-test anxiety score	11.15	1.68	2.22	0.34	7.83*
Pos test anxiety score	9.47		1.31	0.23	

*P < 0.05

The figure 4 shows that in pre-test highest anxiety level i.e 55% patient had moderate level of anxiety and 10% had severe level of anxiety but in post-test only 22.5% patient had moderate anxiety level.

Furthermore the table-3 highlights that mean pre-test anxiety score was higher than mean post-test anxiety score (Mean difference 1.68). This mean difference was statistically significant as evidenced from paired't' test value 7.83 for df (39) at 0.05 level of significance.

This indicated that progressive muscle relaxation exercise was effective in reducing anxiety level among coronary artery disease patients [22].

Table 4: Mean, Correlation Co-efficient and ' t' value between pre-test and post-test depression and anxiety level of the patients—N= 40

Sl.no	Variables	Mean	Co-relation Co-efficient(r)	't' value
1. Pre-test	Depression score	12.27	0.414	2.80*
	Anxiety score	11.15		
2. Post-test	Depression score	10.5	0.341	2.23*

	Anxiety score	9.3

*P < 0.05

The table -4 shows that the pre-test value of co-relation co efficient (r) was 0.414 which lies between 0 and + 1 (0<0.414<1).Thus it signifies moderately positive correlations and is statistically significant ($t_{(38)}$ =2.23, P < 0.05)

It also shows that the post test value of co-relation co efficient (r) was 0.341 which lies between 0 and + 1 (0<0.341<1).Thus it signifies moderately positive correlations and is statistically significant as evident from 't' value of 2.23 for df (38).

Table 5: Association between the pre-test anxiety level of patients and selected demographic variables (N= 40)

Sl. No	Variables	df	α-level	Tabulated Chi-squire value	Calculated pre-test Chi-squire value
1.	Age	3	0.05	7.82	2.29
2.	Sex	1	0.05	3.54	0.749
3.	Occupation	1	0.05	3.54	4.94*
4.	Marital Status	2	0.05	5.99	2.94
5.	Type of family	1	0.05	3.84	0.008
6.	Per capita income per month	3	0.05	7.82	0.786
7.	History of any co-morbid disease	1	0.05	3.84	0.398
8.	Previous history of hospitalization	1	0.05	3.84	0.397
9.	No of days in hospital	3	0.05	7.82	1.342
10.	Use of any stress reduction methods	1	0.05	3.84	1.572

The table 5 showed that only there was association between pre-test anxiety score and occupation as evident from chi-square value that is 4.94 which is more than the table value at 0.05 level of significance.

Table 6: Association between the pre-test depression level of patients and selected demographic variables (N= 40)

Sl. no.	Variables	df	α-level	Tabulated Chi-squire value	Calculated pre-test Chi-squire value
1.	Age	3	0.05	7.82	0.735
2.	Sex	1	0.05	3.54	1.61
3.	Occupation	3	0.05	7.82	2.53
4.	Marital Status	2	0.05	5.99	6.22*
5.	Type of family	1	0.05	3.84	1.60
6.	Per capita income per month	3	0.05	7.82	5.28
7.	History of any co-morbid disease	1	0.05	3.84	0.836
8.	Previous history of hospitalization	1	0.05	3.84	6.04*
9.	No of days in hospital	3	0.05	7.82	2.83
10.	Use any stress reduction methods	1	0.05	3.84	3.47

The table 6 showed that there was association between pre-test depression level and marital status and previous history of hospitalization as evident from chi-square value i.e 6.22 and 6.04 which was more than the table value at 0.05 level of significance.

4. DISCUSSION

In the present study 25% patients had severe depression and 55% had moderate anxiety before video based teaching on progressive muscle relaxation exercise.

The findings of the present study consistent with other study conducted by Eng Ho Siew *et al* found that 13.6% coronary artery disease patients had moderate and severe anxiety and 7.3% had moderate or severe depression at the end of three months hospitalization [6], [23-25].

In this study after administration of progressive muscle relaxation exercise ,there was difference between pre and post-test depression and anxiety score which was statistically significant ($t_{39=}$ 6.685 and 7.83, P < 0.05 respectively). So it was concluded that progressive muscle relaxation exercise is effective in reducing anxiety and depression [26].

It was also seen another study conducted by S Lolak *et al* to see the effectiveness of progressive muscle relaxation training on anxiety and depression among 83 patients for eight weeks. Primary outcome was evaluated by the Hospital Anxiety and Depression Scale. Results showed that, there was an overall significant improvement of anxiety and depression within each group over time (p < 0.0001) [6, 7].

5. CONCLUSION

The patient with coronary artery disease suffers from anxiety and depression. Progressive muscle relaxation exercise is effective for reducing anxiety and depression of coronary artery disease patient. So progressive muscle relaxation exercise can be introduced to the patients who are admitted with coronary artery disease.

Author's contribution

MM conceived the study, designed methodology, organize & contributed in data analysis, guiding treatment administration; supervise the research work & correction of manuscript.

CA wrote proposal, plan and executed the experimentation. She also had done data collection, data management and reporting. She constructed the manuscript.

MK did substantive contribution in constructing the idea, planning research design, took responsibilities in logical interpretation and presentation of results, finalization of research.

PK contributed towards sampling process, tool development, research design and development of treatment.

All authors provided critical feedback and helped shaping the research, analysis and manuscript.

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