A QUASI-EXPERIMENTAL PRE-TEST-POST TEST GROUP DESIGN TO ASSESS THE EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION EXERCISE ON BLOOD PRESSURE AMONG PATIENT WITH HYPERTENSION IN SACRED HEART HOSPITAL AT THOOTHUKUDI

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ABSTRACT:

The objectives of the study were to 1. determine the pre-test and post-test level of blood pressure among patients with Hypertension in experimental and control group. 2. assess the efficacy of Jacobson's progressive muscle relaxation exercise on blood pressure among patients with Hypertension in experimental group. 3. Associate the selected socio demographic variables with the level of blood pressure in experimental group. Hypothesis H0: There will not be a significant difference between pre and post test level of blood pressure after Jacobson's progressive muscle relaxation exercise among patient with Hypertension in experimental and control group. H1: There will be a significant decrease in the level of blood pressure after Jacobson's progressive muscle relaxation exercise among patient with Hypertension in experimental group. H2: There will be significant association between post test levels of blood pressure with selected demographic variables in experimental group. H01: There will not be significant association between post test levels of blood pressure with selected demographic variables in experimental group. Review of literature was organised based on review related to Jacobson's progressive muscle relaxation and Jacobson's progressive muscle relaxation on blood pressure. The tool was validated by experts and found to be valid for the study. Sampling Technique: Sample was selected by using non probability convenience sampling method. Results: the data was tabulated, analyzed and interpreted by using descriptive and inferential statistics. After the detailed analysis this study leads to following conclusions, longer day of intervention shows significant decrease in the level of blood pressure. Major findings show that there is significant decrease in the level of blood pressure after Jacobson's progressive muscle relaxation exercise among patient with Hypertension in experimental group. It was statistically significant at ($P < 0.001$). Hence the stated hypothesis was accepted.

Key Words: Jacobson's Progressive Muscle Relaxation Exercise, Blood Pressure, Hypertension.

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INTRODUCTION

Hypertension is an important public health challenge in both economically developing and developed countries. Significant numbers of individuals with hypertension are unaware of their condition and, among those with diagnosed hypertension, treatment is frequently inadequate. Measures are required at a population level to prevent the development of hypertension and to improve awareness, treatment and control of hypertension in the community.

The level of blood pressure can be reduced by pharmacological and non pharmacological methods. The British Hypertension Society (2009) guidelines proposed that effective blood pressure control is achieved through a combination of pharmaceutical and non pharmaceutical therapies. Pharmaceutical management has been the primary means of providing relief from high blood pressure. Although pharmaceutical medication continues to serve as a major contributor for control of blood pressure, non pharmaceutical techniques are being increasingly used to control of blood pressure. Non pharmacological interventions are particularly useful when (a) medications are inadequate to control blood pressure; clients are waiting for medications to take effect; (c) when side effects or client concern make the use of medications problematic. There is now considerable evidence that an array of mind-body therapies can be used as effective adjuncts to conventional medical treatment for a number of common clinical conditions.

PROBLEM STATEMENT

A Quasi-experimental pre-test-post test group design to assess the effectiveness of Jacobson's progressive muscle relaxation exercise on blood pressure among patient with hypertension in Sacred Heart Hospital at Thoothukudi.

OBJECTIVE OF THE STUDY

The objectives of the study were to

- determine the pre-test and post-test level of blood pressure among patients with Hypertension in experimental and control group.
- assess the efficacy of Jacobson's progressive muscle relaxation exercise on blood pressure among patients with Hypertension in experimental group.
- associate the selected socio demographic variables with the level of blood pressure in experimental group.

HYPOTHESIS

H0: There will not be a significant difference between pre and post test level of blood pressure after Jacobson's progressive muscle relaxation exercise among patient with Hypertension in experimental and control group.

H2: There will be a significant decrease in the level of blood pressure after Jacobson's progressive muscle relaxation exercise among patient with Hypertension in experimental group.

H3: There will be significant association between post test level of blood pressure with selected demographic variables in experimental group.

H01: There will not be significant association between post test level of blood pressure with selected demographic variables in experimental group.

ASSUMPTION

- Patient will have inadequate knowledge on management of hypertension using non pharmacological measures, muscle relaxation exercises
- Administration of Jacobson's progressive muscle relaxation exercise may reduce the blood pressure levels.
- There may be improvement in the quality of life after performance of regular Jacobson's progressive muscle relaxation exercise.

DELIMITATIONS

- This study was delimited to patients with elevated blood pressure more than 140 mmHg.
- This study was delimited for the period of four weeks.

MATERIALS AND METHODS

The research design selected for the study was a Quasi-experimental pre-test-post test group design to assess the effectiveness of Jacobson's progressive muscle relaxation exercise on blood pressure among patient with hypertension in Sacred Heart Hospital at Thoothukudi. The study was conducted in Sacred Heart Hospital at Thoothukudi. Sacred Heart Hospital is a 500 bedded multi specialty hospital and located in heart of the Thoothukudi city. It has medical/Surgical bed occupancy of 100. The average number of patients admitted in hospital was 50-60 per day. The target population of the study was all the patients who are getting admitted in the hospital with the history of hypertension and high blood pressure more than 140 mmHg admitted in Sacred Heart Hospital at

Thoothukudi. Patients who got admitted in the hospital with the history of hypertension and high blood pressure more than 140 mmHg and taking treatment for Hypertension in Sacred Heart Hospital at Thoothukudi. The sample size was to 20 patients. A non probability convenience sampling was employed to choose the samples. The patients subjected to Jacobson's progressive muscle relaxation exercise were identified from Joseph, Paula, Mary and William's ward of Sacred Heart Hospital for the study based on the inclusion and exclusion criteria laid for the study. Extensive review of literature, discussion and views of experts enhanced the development of the tool. The tool consists of 2 parts which includes: Part 1- Demographic data of patient which consists of study variables like age, sex, religion, education, occupation, physical activity, life style habits. Part 2- Clinical Variable it includes presence of history of hypertension, type of anti hypertensive medication, family history of hypertension, weight in kilograms.

Ethical consideration: Ethical approval was taken from institutional Ethical Committee. A written informed consent was taken from each participant. Confidentiality and anonymity of the subjects were maintained.

RESULTS:

Table 1: Frequency and percentage distribution of demographic variables of the patients with hypertension in the experimental and control group.
n = 20 (10+10)

Demographic Variables	Experimental Group		Control Group		Chi-Square Test for Homogeneity
	No.	%	No.	%	
Age in year					$\chi^2=0.476$ d.f=2 p = 0.788 N.S
35 – 45	2	20.0	1	10.0	
46 – 55	5	50.0	5	50.0	
56 & 60	3	30.0	4	40.0	
Sex					$\chi^2=0.220$ d.f=1 p = 0.639 N.S
Male	7	70.0	6	60.0	
Female	3	30.0	4	40.0	
Occupation					$\chi^2=7.667$ d.f=3 p = 0.053 N.S
Non skilled	1	10.0	3	30.0	
Skilled worker	1	10.0	5	50.0	
Profession	6	60.0	2	20.0	
Business	2	20.0	0	0	
Education status					$\chi^2=12.000$ d.f=4 p = 0.017 S*
No formal education	1	10.0	0	0	
Primary education	0	0	3	30.0	
Secondary school	0	0	1	10.0	
Higher secondary	3	30.0	6	60.0	
Graduate & above	6	60.0	0	0	$\chi^2=5.000$ d.f=1 p = 0.025 S*
Doing any kind of physical activity					
Walking	4	40.0	0	0	
Jogging	-	-	-	-	
Swimming	-	-	-	-	
None	6	60.0	10	10.0	$\chi^2=1.533$ d.f=3 p = 0.675 N.S
Lifestyle habits					
Eating too much of sodium salt	1	10.0	3	30.0	
Drinking alcohol	2	20.0	1	10.0	
Lack of physical activity	4	40.0	4	40.0	
Smoking tobacco	3	30.0	2	20.0	$\chi^2=8.571$ d.f=3 p = 0.036 N.S
CLINICAL VARIABLES					
Present history of hypertension					
3 – 6 months	6	60.0	1	10.0	
6 – 9 months	2	20.0	4	40.0	
9 – 12 months	2	20.0	1	10.0	

Demographic Variables	Experimental Group		Control Group		Chi-Square Test for Homogeneity
	No.	%	No.	%	
1 year & above	0	0	4	40.0	
Type of antihypertensive medication					$\chi^2=6.381$ d.f=2 p = 0.041 S*
α -Adrenergic Blockers	4	40.0	3	30.0	
β - Adrenergic Blockers	1	10.0	6	60.0	
Combined α & β - Adrenergic Blockers	5	50.0	1	10.0	
Family history of hypertension					$\chi^2=0.000$ d.f=1 p = 1.000 N.S
Yes	3	30.0	3	30.0	
No	7	70.0	7	70.0	
Family member affected with hypertension					$\chi^2=0.875$ d.f=2 p = 0.646 N.S
Father	2	50.0	2	66.7	
Mother	1	25.0	1	33.3	
Both	1	25.0	0	0	
Grand parents					
Weight in kilograms					$\chi^2=4.476$ d.f=3 p = 0.214 N.S
50 – 60 kgs	2	20.0	1	10.0	
61 – 70 kgs	4	40.0	3	30.0	
71 – 80 kgs	2	20.0	6	60.0	
Above 89 kgs	2	20.0	0	0	

*p<0.05, S – Significant, N.S – Not Significant

The table 1 shows that in most of them 5(50%) in the experimental and control group were aged between 46 – 55 years, 7(70%) of experimental and 6(40%) of control group were male, 6(60%) of the experimental group and 5(50%) of the control group were professionals and skilled worker, 6(60%) of experimental group and control group were graduates & above and had higher secondary education, 6(60%) of experimental group and 10(10%) of control group were not doing any kind of physical activity, 4(40%) both in experimental and control group had lack of physical activity, 6(60%) of experimental group were having hypertension for 3 – 6 months and 4(40%) of control group were having hypertension for 6 – 9 months, 5(50%) of experimental group and 6(60%) of control group were taking antihypertensive medication of combined α & β - Adrenergic Blockers and β - Adrenergic Blockers, 7(70%) of both the groups had no family history of hypertension and 4(40%) of experimental group and among those had family history of hypertension 2(50%) of fathers in the experimental and control group were affected with hypertension. 6(60%) of control groups were weighing 61 – 70 kgs and 71 – 80 kgs respectively.

Table 2: Association of post test diastolic blood pressure (Day 5) with selected demographic variables of the patients with hypertension in the experimental group.

n = 10

Demographic Variables	No.	Post Test (Day5)		One Way ANOVA / Unpaired 't' value
		Mean	S.D	
Age in year				
35 – 45	2	96.0	19.79	F=0.273 p = 0.769 N.S
46 – 55	5	89.60	7.79	
56 & 60	3	91.33	7.57	
Sex				
Male	7	90.29	10.86	t=0.692 p = 0.512 N.S
Female	3	94.0	6.0	
Occupation				F=3.330

Demographic Variables	No.	Post Test (Day5)		One Way ANOVA / Unpaired 't' value
		Mean	S.D	
Non skilled	1	90.0	-	p = 0.098 N.S
Skilled worker	1	82.0	-	
Profession	6	88.67	7.12	
Business	2	105.0	7.07	
Education status				F=0.131 p = 0.880 N.S
No formal education	1	90.0	-	
Primary education	0	-	-	
Secondary school	0	-	-	
Higher secondary	3	94.0	10.39	
Graduate & above	6	90.33	10.61	t=1.064 p = 0.321 N.S
Doing any kind of physical activity				
Walking	4	88.0	5.16	
Jogging	-	-	-	
Swimming	-	-	-	F=1.158 p = 0.400 N.S
None	6	93.67	11.41	
Lifestyle habits				
Eating too much of sodium salt	1	88.0	-	
Drinking alcohol	2	88.0	2.83	F=1.039 p = 0.403 N.S
Lack of physical activity	4	98.0	11.66	
Smoking tobacco	3	86.0	6.93	
CLINICAL VARIABLES				
Present history of hypertension				F=0.496 p = 0.629 N.S
3 – 6 months	6	94.67	11.08	
6 – 9 months	2	89.0	1.41	
9 – 12 months	2	84.0	2.83	
1 year & above	0	-	-	
Type of antihypertensive medication				t=0.538 p = 0.628 N.S
α -Adrenergic Blockers	4	93.0	5.29	
β - Adrenergic Blockers	1	82.0	-	
Combined α & β - Adrenergic Blockers	5	92.0	12.49	
Family history of hypertension				F=5.500 p = 0.289 N.S
Yes	3	94.0	10.39	
No	7	90.29	9.69	
Family member affected with hypertension				
Father	2	97.0	4.24	
Mother	1	82.0	-	F=6.004 p = 0.031 S*
Both	1	100.0	-	
Grand parents				
Weight in kilograms				
50 – 60 kgs	2	94.0	8.49	
61 – 70 kgs	4	88.0	5.16	F=6.004 p = 0.031 S*
71 – 80 kgs	2	82.0	0.00	
Above 89 kgs	2	105.0	7.07	

*p<0.05, S – Significant, N.S – Not Significant

The table 2 shows that the demographic variable weight in kilograms (**F=6.004, p=0.031**) had shown statistically significant association with post test diastolic blood pressure among patients with hypertension at p<0.05 level and

the other demographic variables had not shown statistically significant association with post test diastolic blood pressure among patients with hypertension.

DISCUSSION:

Major findings reveal that the study used quasi experimental design, with total of 20 samples in that 10 in experimental and 10 in control group in Christian Mission Hospital. The selected experimental group underwent PMR exercise for five days and had an immediate effect, reducing pulse rate 2beats/min, systolic blood pressure 4 mm Hg, and diastolic blood pressure 2 mm Hg. PMR significantly lowered patients' perception of stress, and it enhanced their perception of health.

Sheu, Sheila. (2003) conducted a study to examine the effect of progressive muscle relaxation (PMR) on blood pressure and psychosocial status in clients with essential hypertension. The study, which used a quasi-experimental design, recruited a convenience sample of 40 subjects from a hypertension outpatient clinic. Twenty subjects received PMR training once a week and practiced at home daily for 4 weeks. PMR training had an immediate effect, reducing pulse rate 2.35beats/min, systolic blood pressure 5.44 mm Hg, and diastolic blood pressure 3.48 mm Hg. After 4 weeks of PMR training, further decreases in pulse rate (2.9 beats/min), systolic blood pressure (5.1 mm Hg), and diastolic blood pressure (3.1 mm Hg) occurred. PMR significantly lowered patient's perception of stress, and it enhanced their perception of health. PMR is beneficial for patients with essential hypertension, and nurses may use it to enhance their independent function as well as their quality of life.

Comparison reveals that a longer day of intervention shows significant decrease in the level of blood pressure. In Sheila's study PMR exercise was practiced for 4weeks and had an immediate effect of decreases in pulse rate (2.9 beats/min), systolic blood pressure (5.1 mm Hg), and diastolic blood pressure (3.1 mm Hg) occurred. In my study due to time consideration, after five days had an immediate of decrease in pulse rate 2beats/min, systolic blood pressure 4 mm Hg, and diastolic blood pressure 2 mm Hg. The paired 't' test value of level of systolic blood pressure within the experimental group. The paired' test value was 26.734 which was statistically significant at the level of $p < 0.001$. Reveals that the level of systolic blood pressure was reduced among patients with hypertension after Jacobson's progressive muscle relaxation.

Chris Cottier(2010) effects of progressive muscle relaxation (PMR) and of attention control were investigated in a prospective randomized trial of borderline or mild hypertensive patients. Both groups received PMR and had the same number of clinic return visits. After 22 weeks the average mean home BP in PMR decreased 3 mm Hg, whereas in controls BP increased 2 mm Hg. Progressive muscle relaxation had significant effect on the clinic BP. The response to PMR was uniform. The responders also showed a decrease of anxiety scores during the trial. Progressive muscle relaxation is a time-consuming procedure. Blood pressure responses do substantially exceed the placebo effects in unselected patients. However, relaxation may be suitable for young, anxious patients with mild hypertension who have a high resting sympathetic tone.

Comparison reveals that a longer day of intervention shows significant decrease in the level of blood pressure. In Chris Cottier's study PMR exercise was practiced for 22weeks and had an effect of average mean home BP in experimental decreased to 3 mm Hg, whereas in controls BP increased to 2 mm Hg. In my study, after five days had an immediate of systolic blood pressure 4 mm Hg, and diastolic blood pressure 2 mm Hg. PMR significantly lowered patient's perception of stress, and it enhanced their perception of health. PMR is beneficial for patients with essential hypertension, and nurses may use it to enhance their independent function as well as their quality of life. The demographic variable weight in kilograms ($F=6.004$, $p=0.031$) had shown statistically significant association with post test diastolic blood pressure among patients with hypertension at $p<0.05$ level and the other demographic variables had not shown statistically significant association with post test diastolic blood pressure among patients with hypertension. The Major findings show that there was a significant decrease in the level of blood pressure before and after Jacobson's progressive muscle relaxation exercise among patients with Hypertension in experimental group. It was statistically significant at ($P<0.001$). Hence the stated hypothesis was accepted.

Conclusion and Recommendation: After the detailed analysis this study leads to following conclusions, longer day of intervention shows significant decrease in the level of blood pressure. Major findings show that there was significant decrease in the level of blood pressure after Jacobson's progressive muscle relaxation exercise among patient with Hypertension in experimental group. It was statistically significant at ($P<0.001$). Hence the stated hypothesis was accepted.

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