ARTICLES

EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION TECHNIQUE ON BLOOD PRESSURE AMONG HYPERTENSIVE PATIENTS

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ABSTRACT

A quasi experimental study was conducted to assess the effectiveness of Jacobson's progressive muscle relaxation technique on blood pressure among hypertensive patients in selected destitute homes. The objectives of the study were to assess the pretest and post test level of blood pressure among experimental and control group, to compare the post test level of blood pressure between the experimental and control group, to compare the mean differences of blood pressure between experimental and control group and to find out the association between pretest level of blood pressure and selected demographic variables. Quasi experimental, non-equivalent control group design was selected for the study. The sample composed of 60 hypertensive patients (30 in experimental and 30 in control group) were selected by using non probability purposive sampling technique. The conceptual framework was based on Wiedenbach's helping art theory (1963). Pretest and post test was conducted for both experimental group and control group by using socio demographic proforma and mercury sphygmomanometer. Intervention was given only for the experimental group for 26 days. The result showed that the mean difference of pretest and post test systolic blood pressure in the experimental group was 13.67 with SD = 9.52 and in the control group was 2.33 with SD = 2.54 with a difference in mean difference of 11.34. The calculated 't' value 7.78 is significant at p <0.01 level with df 58. The mean difference of pretest and post test diastolic blood pressure in the experimental group was 4 with SD = 6.56 and in the control group was 0.33 with SD= 1.9 with difference in mean difference of 3.67. The calculated 't' value 5.78 is significant at p <0.01 level with df 58. Hence it was proved that Jacobson's progressive muscle relaxation technique was effective in reducing systolic and diastolic blood pressure among hypertensive patients. The result was showed that statistically no association between the pretest levels of blood pressure and selected socio demographic variables.

Keywords: *Jacobson's progressive muscle relaxation technique; blood pressure; hypertensive patients; destitute*

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INTRODUCTION

Life is not merely to be alive, but to be healthy and wealthy. Living in good health makes the life more colorful and enthusiastic. A sound health makes the society, family and individual in prosperous.

Hypertension is a major chronic lifestyle disease and is an important public health problem. It is a very common condition under cardio vascular diseases. It is ranked as fourth top most disease on the basis of its prevalence. Hypertension is a major health problem and one of the biggest challenges of the 21st century. It affects approximately one billion individual worldwide. Hypertension is also a „silent factor" leading to many deaths attributed to stroke and heart attacks. It is also related to increase the severity of atherosclerosis, nephropathy, peripheral vascular diseases, aortic aneurysms and heart failure. The prevalence of hypertension is increasing over the years globally. In India the overall incidence of hypertension is estimated to be 66 million and that is in a period of three to six decades, prevalence of hypertension has increased by about 30 times among urban dwellers and by about 10 times among the rural inhabitants.

In 1983 World Health Organization (WHO) is recommended the use of non- pharmacological approaches in the treatment of hypertension; there are several types of relaxation therapies such as stretch release relaxation, Jacobson"s progressive muscle relaxation (JPMR), cognitive imagery relaxation, yogas and some types of meditations.6 Here, Jacobson"s progressive muscle relaxation technique is used because of its better reported results, its simplicity in performance and easy independent practice at home. The deep relaxation technique produces an immediate reduction in state of anxiety.

Background of the study

Hypertension is defined as a persistent elevation of the systolic blood pressure at a level of 140 mm of Hg or higher and diastolic blood pressure at the level of 90 mm of Hg or higher. Hypertension is an important global health challenge in both economically developing and developed countries because of its high prevalence and resulting cardiovascular diseases and chronic kidney diseases. It is also considered as a global epidemic. Hypertension is a condition that afflicts 1 billion people worldwide and is a leading cause of morbidity and mortality. According to estimates there are 31.5 million hypertensive in rural and 34 million in urban population in India. It is one of the most common lifestyle diseases today, with every third person we meet, having suffered from it.

Primary or essential hypertension is elevated blood pressure without an identified cause and accounts for 90% to 95% of all cases of hypertension. Secondary hypertension is elevated blood pressure with a specific cause that often can be identified and corrected. This accounts for 5-10% of hypertension in adults. Hypertension is more prevalent in men than in women until age 55, it is more prevalent in women than men.

According World Health Organization (WHO) hypertension is classified into 3 grades of hypertension. They are: Systolic blood pressure in mm of Hg Grade 1 140-159, Grade 2 160-179 and Grade 3 ≥180 and Diastolic blood pressure in mm of Hg Grade 1 90-99, Grade 2 100-109 and Grade 3 ≥110.10. A cross sectional study conducted at Delhi (2016) to assess the prevalence of hypertension and determination of its risk factors among 1005 samples by using random sampling method the data was collected. The result showed that there is a significant burden of hypertension in individuals more than 35 year than those less than 35 years. The past few years have witnessed an increased interest in the non- pharmacological treatment approaches to essential hypertension. The management of mild elevations of blood pressure can be achieved by non-pharmacological measures. In traditional or modified form, relaxation training had been the focus of more clinical and research attention, for a long period of time. Relaxation strategies have been used for centuries as integral components of major philosophical, theological and therapeutic traditions.

Jacobson conducted the first psycho physiological study of relaxation. He found that when subjects deeply relaxed their skeletal muscles, they would not show a normal startle response to a loud noise. Later Jacobson developed a technique called Progressive Relaxation" which was designed to bring about a deep state of muscle relaxation. He believed that such a state could reduce arousal in both the central nervous system and the autonomic nervous system and as a result could restore or promote psychological and physical well-being.

The view was consonant with the popular James-Lange theory of emotion, which held that there was a close and interactive relationship between bodily states (eg: muscle tension) and emotional states (eg: feelings of anxiety). Thus it followed that by reducing skeletal muscle tension, a person could reduce anxiety and its negative consequences.

In the 1950s, progressive relaxation characterized by an active approach to relaxation had emerged as the technique of choice over other passive forms of relaxation. Another major influence on the development of relaxation techniques was the demand for quicker and more cost-effective methods of teaching. As a result an astonishing array of „self-help" approaches to relaxation emerged, including a large number of self-help manuals and audio-cassette programs.

Statement of the problem

A study to assess the effectiveness of Jacobson"s Progressive muscle relaxation technique on blood pressure among hypertensive patients in selected destitute homes at Pathanamthitta district.

Assumptions

•Jacobson"s progressive muscle relaxation technique may be effective in reducing blood pressure in hypertensive patients.

Hypotheses

H01 :- There will be no significant difference in the pretest and post test levels of blood pressure among hypertensive patients in experimental group.

H1 :- There will be a significant difference in pretest and post test levels of blood pressure among hypertensive patients in experimental group.

H02 :- There will be no significant difference in pretest and post test levels of blood pressure among hypertensive patients in control group.

H2 :- There will be a significant difference in pretest and post test levels of blood pressure among hypertensive patients in control group.

H03 :- There will be no significant difference in posttest levels of blood pressure among hypertensive patients between experimental and control group.

H3 :- There will be a significant difference in posttest levels of blood pressure among hypertensive patients between experimental and control group.

H04 :- There will be no significant difference in mean difference of blood pressure among hypertensive patients in control group and experimental group.

H4 :- There will be a significant difference in mean difference of blood pressure among hypertensive patients in control group and experimental group.

H05:- There will be no significant association between mean pretest levels of blood pressure and selected demographic variable in the experimental group and control group.

H5:- There will be a significant association between mean pretest levels of blood pressure and selected demographic variable in the experimental group and control group.

METHODOLOGY

Research approach: The research approach used for the study was quantitative approach.

Research design: Quasi experimental pretest- post test control group research design was quasi experimental, non-equivalent control group design.

Variables:

Independent variable: Jacobson progressive muscle relaxation technique

Dependent variable: Blood pressure is the dependent variable among hypertensive patients.

Setting of the study: The study was conducted in two different old age homes in Pathanamthitta district, Dharmagiri Mandiram, Kumbanad and Gilgal Ashwas Bhavan, Eraviperror were selected conveniently by the

researcher. The setting of the present study was Dharmagiri Mandiram, Kumbanad as experimental group and the samples from Gilgal Ashwas Bhavan, Eraviperror as control group.

Population; The total strength of the Dharmagiri Mandiram was 92 in which 56 members were hypertensive and in Gilgal Ashwas Bhavan, a total of 375 members were present in which 90 were hypertensive.

Sample; 30 in experimental group and 30 samples in control group;

Sampling technique; Non-probability sampling Purposive sampling

Tools:

1. Socio demographic Proforma

Tool 1: Socio demographic Proforma

Socio demographic proforma included 25 items such as age in years, gender, marital status, religion, educational qualification, type of family, previous occupation dietary pattern, duration of stay in the destitute home, history of addiction, type of exercise, exercise pattern, duration of hypertension, family history of hypertension among first degree relatives, pattern of follow up, major co-morbidity, frequency of taking antihypertensive drugs, number of antihypertensive drugs, name of anti-hypertensive drugs used by the patient, Frequency of checking blood pressure, family history of stroke, family history of heart attack, dietary restrictions, consumption of fatty food and fried items, use of extra table salt. The purpose of this was to determine the association of pretest level of hypertension with selected socio demographic variables.

Technique: Structured Interview Schedule.

Tool 2: Mercury sphygmomanometer and Blood pressure chart

Mercury sphygmomanometer was used to collect the systolic and diastolic blood pressure and Blood pressure chart was used to record the pre and post systolic and diastolic blood pressure of the experimental and control group.

Technique: Bio physiological technique.

Reliability of Tool: Test retest method and the value was found to be 0.91 by Karl Pearson‟s correlation formula which indicated the instrument was reliable.

Data collection process

Data collection process is the precise, systematic gathering of all data information relevant to the research purpose or objectives, or hypothesis of a study.

•**Step 1**: For conducting the study, researcher underwent a certification programme on Jacobson‟s progressive muscle relaxation technique prior to main study.

•**Step 2**: Formal written permission was obtained from the authorities of Gilgal Ashwas Bhavanam. On the first day of data collection pretest was conducted for the hypertensive patients in the control group which was done by assessing the blood pressure at three consecutive intervals of 5 minutes apart and the lowest among the three values are considered as the pretest value. The first 30 participants who were fulfilling the sampling criteria were selected for the control group by using purposive sampling technique. Informed consent was taken from the samples and socio- demographic proforma was administered by using structured interview technique was done on 1-12-16. The purpose of the study was explained and confidentiality was assured.

•**Step 3**: Formal written permission was obtained from the authorities of Dharmagiri Mandiram. The pretest was conducted for the hypertensive patients in the experimental group which was done by assessing the blood pressure at three consecutive intervals of 5 minutes apart and the lowest among the three values are considered as the pretest value. The first 30 participants who were fulfilling the sampling criteria were selected for the experimental group by using purposive sampling technique. Informed consent was taken from the samples and socio- demographic proforma was administered by using structured interview technique was done on 2-12-16. The purpose of the study was explained and confidentiality was assured.

•**Step 4**: Jacobson‟s progressive muscle relaxation technique was taught and demonstrated to the experimental group was supervised daily morning, 10 minutes duration for a period of 26 days from 3-12-16 to 31-12-16.

•**Step 5**: Post test was conducted after 26 days of intervention on 29th and 30th day of data collection period for both control and experimental group respectively by assessing the blood pressure at three consecutive intervals of 5 minutes apart and lowest among the three values was considered as post test value.

Plan for data analysis; frequency and percentage, paired t test, independent variables, chi-square
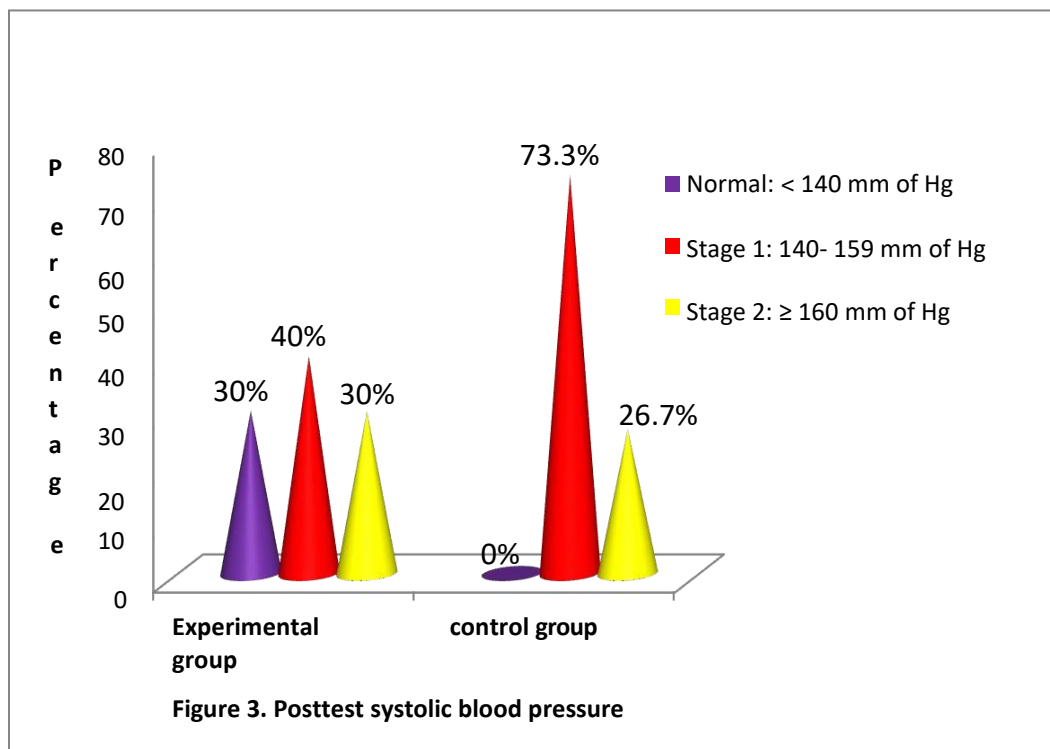
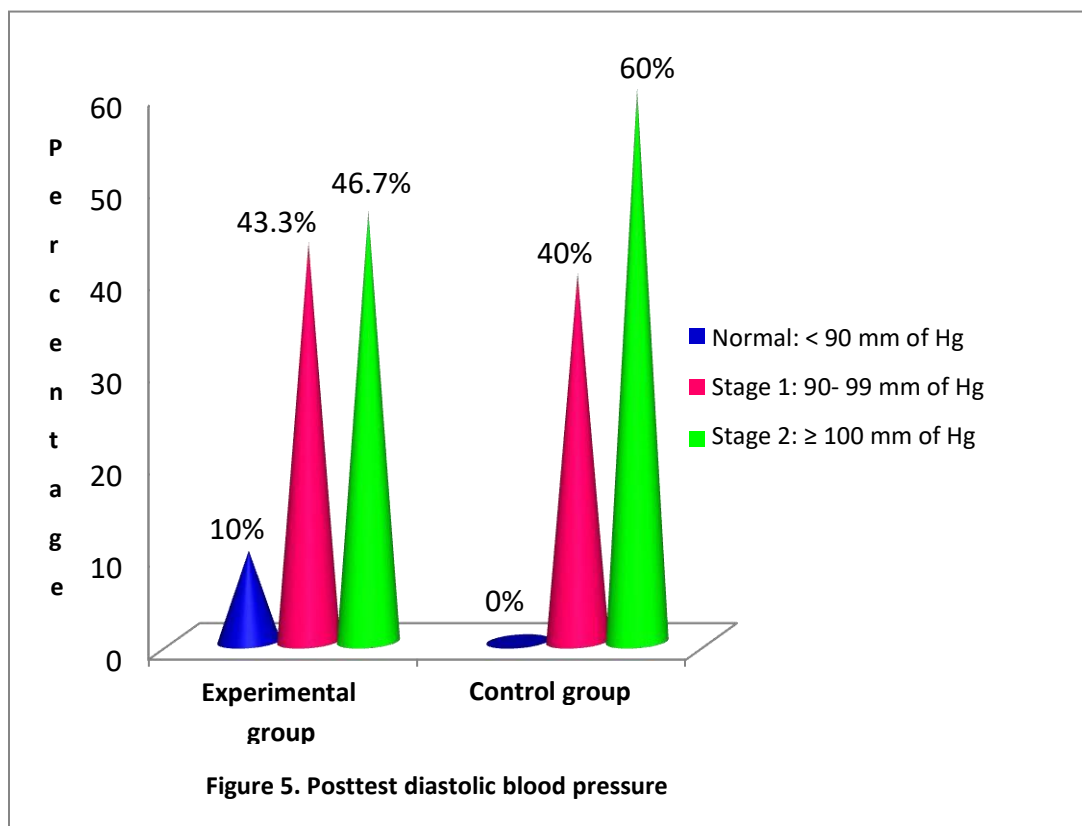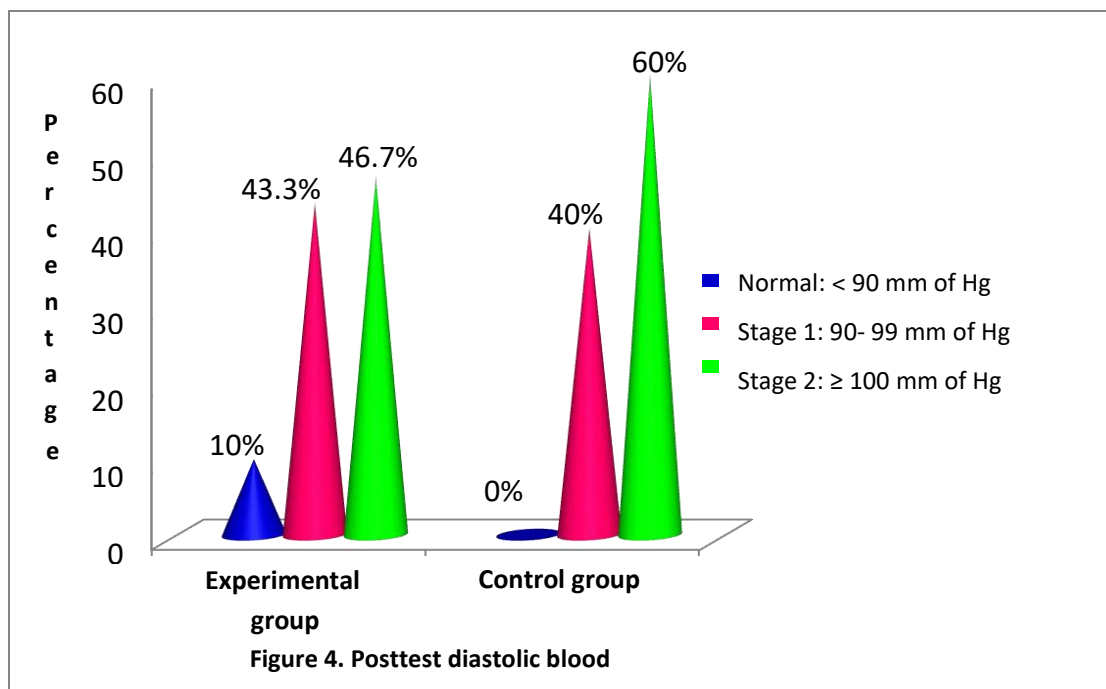**Section I: Description of socio demographic characteristics of the subjects**
(43.3%) of the subjects belonged to the age group of 50-60 years.
(53.3%) of the subjects were females.
(50%) of the subjects were unmarried.
(56.7%) of the subjects were Christians.
(56.7%) of the subjects were having education qualification upto high school.
(86.7%) of the subjects belonged to nuclear family.
(46.7%) of the subjects were home makers.
(83.3%) of the subjects were non vegetarians.
(43.3%) of the subjects were staying in destitute homes for one to three years.
(46.7%) of the subjects were not having any history of addiction.
(60%) of the subjects were not doing any type of exercise.
(36.7%) of the subjects were having hypertension for five to ten years.
(60%) of the subjects were having the family history of hypertension among first degree relatives.
(100%) of the subjects were having regular pattern of follow up.
(36.7%) of the subjects were having endocrine problems as the major co- morbidity.
(60%) of the subjects were taking antihypertensive drugs at morning time.
(80%) of the subjects were taking only one antihypertensive drug.
(73.4%) of the subjects were taking antihypertensive drug belonged to the family of angiotensin converting enzyme.
(100%) of the subjects were checking the blood pressure daily.
(46.7%) of the subjects were not having family history of stroke.
(56.7%) of the subjects were not having family history of heart attack.
(76.6%) of the subjects were not having any type of dietary restrictions.
(100%) of the subjects were consuming fatty foods and fried items occasionally.
(56.7%) of the subjects were not using extra table salt.

Section II: Description of Pretest level of Blood pressure among Experimental group and Control group

Figure 1. Pretest systolic blood

Figure 2. Pretest diastolic blood pressure
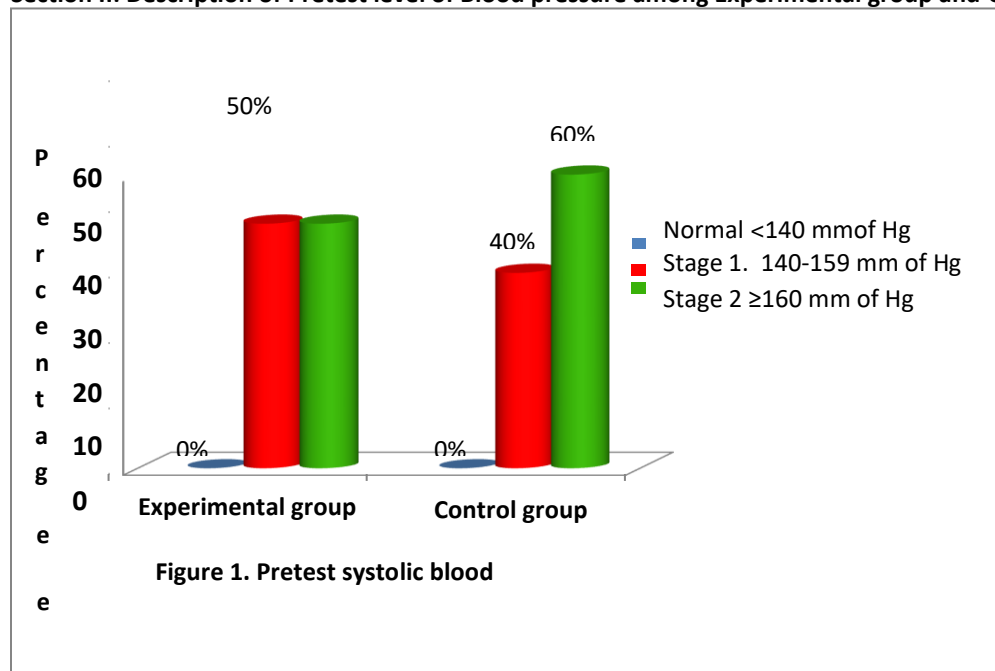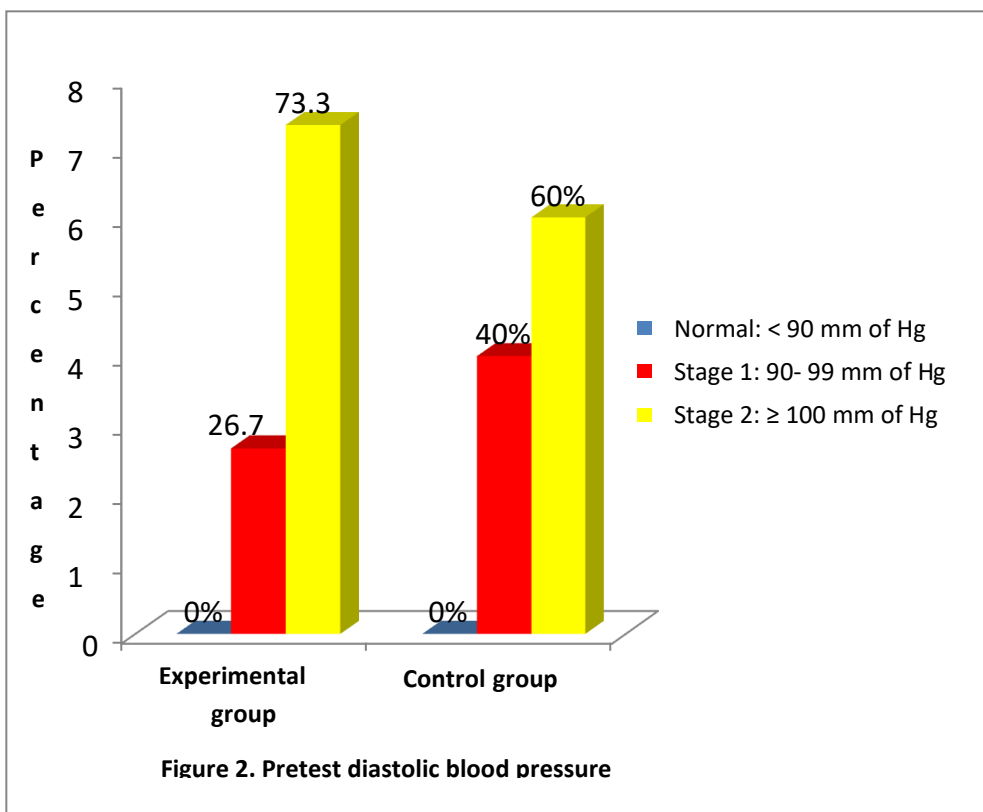
Section III: Description of Posttest level of blood pressure among experimental and control group.

Figure 3. Posttest systolic blood pressure

Figure 4. Posttest diastolic blood

Figure 5. Posttest diastolic blood pressure

Section IV: Comparison of the pretest and post test levels of blood pressure among experimental group.
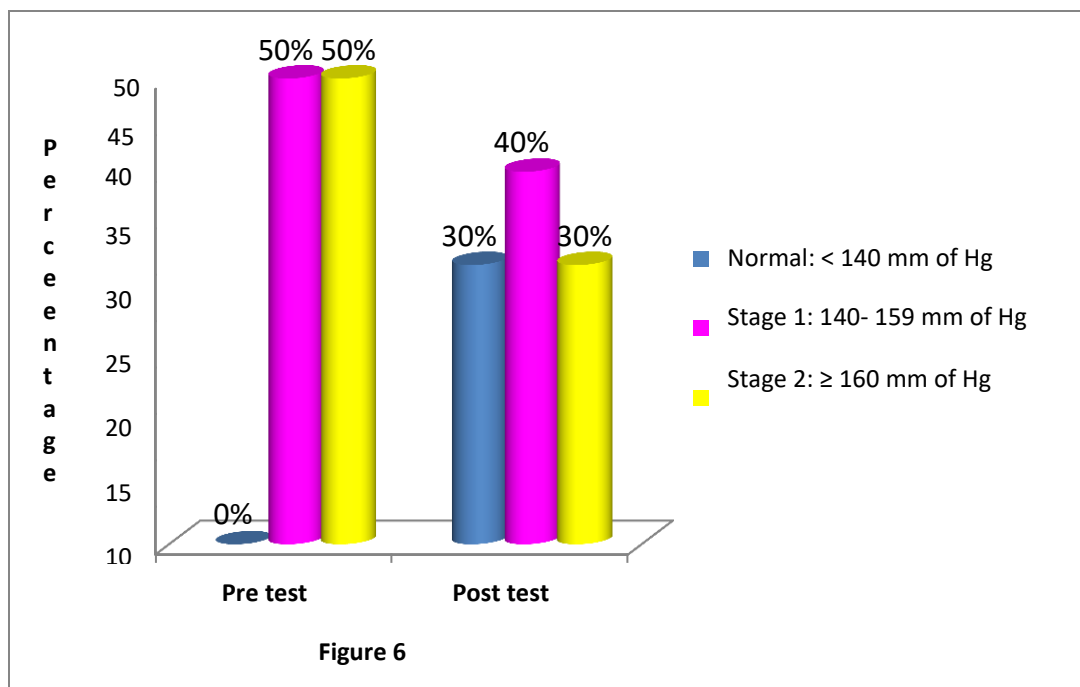
Figure 6

Table. 1 Mean, SD, Mean difference and calculated t-value to Compare the pretest and post test systolic blood pressure among experimental group.

Test	Mean	S.D	Mean Difference	df	t	p-value
Pretest	100	10.95				
			4	29	3.88	p<0.01**
Posttest	96	7.52				

**Highly significant at p<0.01   Table value-2.76

Comparison of the pretest and post test levels of Diastolic blood pressure among experimental group.

Table 2. Mean, SD, Mean difference and calculated t-value to compare the pretest and post test diastolic blood pressure among experimental group.

Test	Mean	S.D	Mean difference	df	t	p-value
Pretest	100	10.95				
			4	29	3.88	p<0.01**
Posttest	96	7.52				

**Highly significant at p<0.01   Table value – 2.76

Section V: Comparison of the pretest and post test levels of blood pressure among control group.
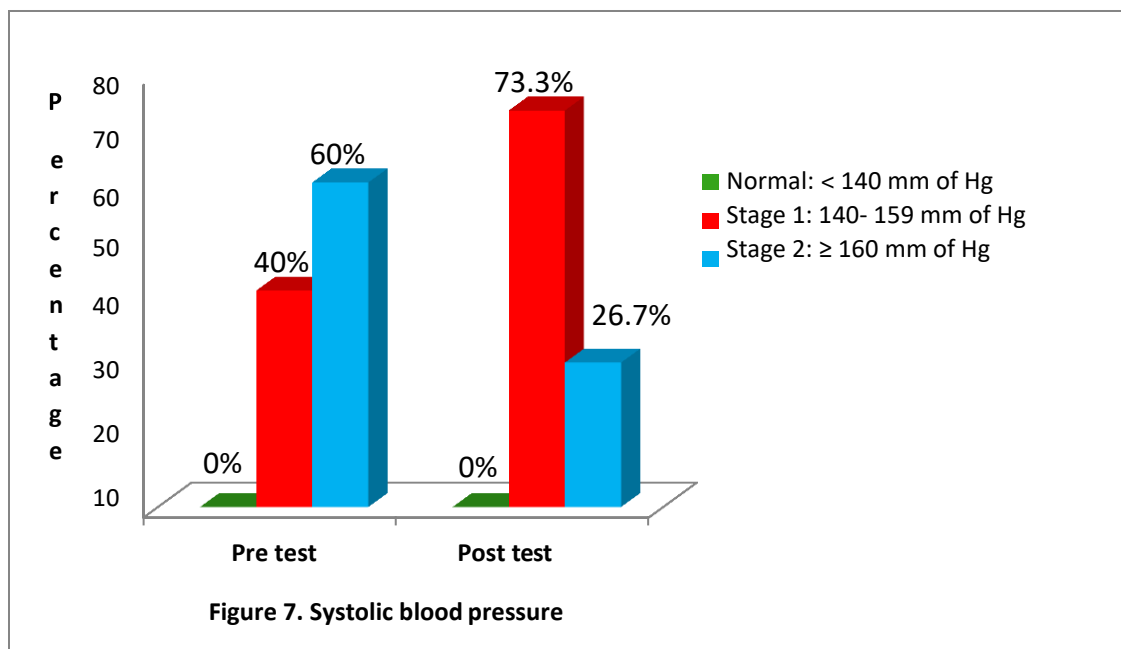
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Figure 7. Systolic blood pressure

Table 3.Mean, SD, Mean difference and calculated t-value to compare the pretest and post test systolic blood pressure among Control group.

Test	Mean	S.D	Mean difference	df	t	p-value
Pretest	155.33	17.84				
			2.33	29	2.44	p<0.05*
Post test	153	16.16				

*Significant at p<0.05   Table value -2.05
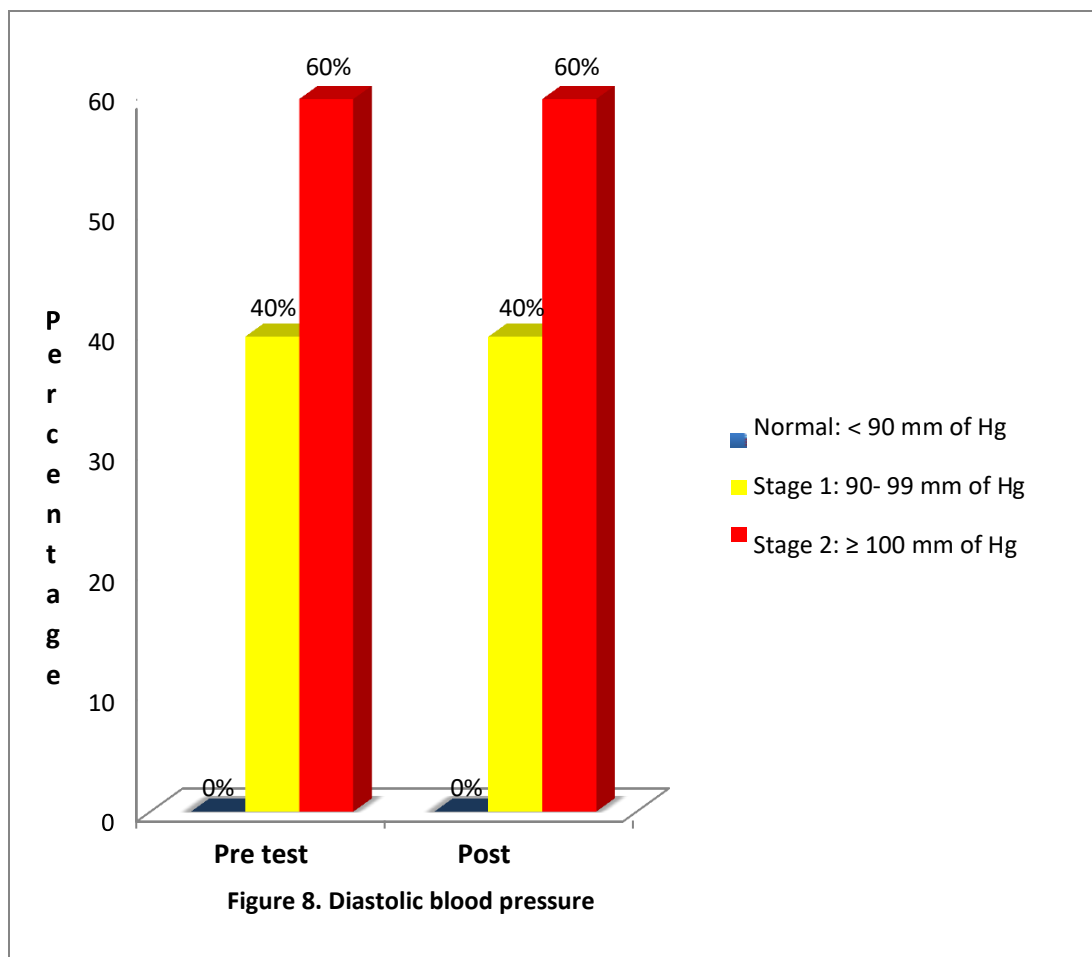
Section VI: Comparison of the post test levels of blood pressure between experimental and control group.

Table 4. Mean, SD, Mean difference and calculated t-value to compare the post test levels Systolic blood pressure between experimental and control group

Test	Mean	S.D	Mean difference	df	t	p-value
Pretest	99.33	8.54				
			33	29	.99	p>0.02
Posttest	99	8.31				

Not significant   Table value -1.31

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Figure 8. Diastolic blood pressure

Section VI Comparison of the post test levels of blood pressure between experimental and control group.
Table 5. Mean, SD, Mean difference and calculated t-value to Compare the post test levels Systolic blood pressure between experimental and control group.

Test	Mean	S.D	Mean difference	df	t	p-value
Experimental	146	15.62				
			7	58	4.67	p<0.01**
Control	153	16.16				

**Highly significant at p<0.01   Table value -2.66

Table 6. Mean, SD and calculated t-value to compare the mean differences of diastolic blood pressure between experimental and control group.

Test	Mean	S.D	Mean difference	df	t	p-value
Experimental	96	7.52				
			3	58	4.99	p<0.01**
Control	99	8.31				

**Highly significant at p<0.01   Table value -2.66

Section VII: Comparison of the mean difference of blood pressure between experimental and control group.

Table 7. Mean, SD and calculated t-value to compare the mean differences of systolic blood pressure between experimental and control group.

Group	Mean Difference	S.D	Difference Mean difference	df	t	p-value
Experimental	13.67	9.52				
			11.34	58	7. 78	p<0.01**
Control	2.33	2.54				

**Highly significant at p<0.01   Table value -2.66

Section V11: Comparison of the mean difference of blood pressure between experimental and control group.
Table 8.Mean, SD and calculated t-value to compare the mean differences of systolic blood pressure between experimental and control group.

Group	Mean Difference	S.D	Difference in Mean difference	df	t	p-value
Experimental	13.67	9.52				
			11.34	58	7. 78	p<0.01**
Control	2.33	2.54				

**Highly significant at p<0.01   Table value -2.66

Table 9.Mean, SD and calculated t-value to compare the mean differences of diastolic blood pressure between experimental and control group.

Group	Mean Difference	S.D	Difference in Mean difference	df	t	p-value
Experimental	4	6.56	58	58	5.78	p<0.01**
Control	033	1.59				

**Highly significant at p<0.01   Table value -2.66

Section VIII; Association between pretest levels of blood pressure with selected socio demographic variables.
H05: There will be no significant association between the pretest level of blood pressure with selected socio demographic variables in experimental and control group.
H5: There will be a significant association between the pretest level of blood pressure with selected socio demographic variables in experimental and control group.
Association between pretest level of systolic blood pressure and selected socio- demographic variables.
The analysis showed that the calculated chi square value was less than the table value for all socio demographic variables. Hence the null hypothesis (H_{05}) was accepted and research hypothesis (H_5) was rejected with regard to systolic blood pressure with selected socio-demographic variables such as age, gender, marital status, educational status, duration of hypertension, family history of hypertension, co morbidity, previous occupation and using fatty food and fried items.
Association between pretest level of diastolic blood pressure and selected socio- demographic variables;
The analysis showed that the calculated chi square value was less than the table value for all socio demographic variables. Hence the null hypotheses (H_{05}) was accepted and research hypothesis (H_5) was rejected with regard to diastolic blood pressure with selected socio-demographic variables such as age, gender, marital status, educational

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status, duration of hypertension, family history of hypertension, co morbidity, previous occupation and using fatty food and fried items.

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