

**A STUDY TO ASSESS THE EFFECTIVENESS OF JACOBSON'S
PROGRESSIVE MUSCLE RELAXATION TECHNIQUE ON BLOOD
PRESSURE AND STRESS AMONG HYPERTENSIVE
CLIENTS AT VILANKURICHI, COIMBATORE.**

By

K. M. KASTHURI

A Dissertation submitted to The Tamil Nadu Dr. M.G.R. Medical University,
Chennai, in partial fulfillment of requirement for the Degree of

MASTER OF SCIENCE IN NURSING

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INTERNAL EXAMINER

EXTERNAL EXAMINER

CERTIFICATE

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J	Tool- Tamil <ul style="list-style-type: none">• Section A- Demographic variables.• Section B- Blood pressure measurement.• Section C- Modified Sheldon Cohen's perceived stress scale.

CHAPTER I

INTRODUCTION

Hypertension is a common disorder of major clinical and public health importance. It is a powerful independent predictor of premature death and disability. Hypertension is called as silent killer disease because people who have it are often symptom free. Hypertension is a major chronic life style disease and an important public health problem worldwide (**Smeltzer SC, Bare BG, 2001**).

High blood pressure (HBP) or hypertension means high pressure (tension) in the arteries. It does not mean excessive emotional tension, but emotional tension and stress can temporarily increase blood pressure. Normal blood pressure is below 120/80mmHg; blood pressure between 120/80mmHg and 139/89mmHg is called "pre-hypertension", and blood pressure of 140/90mmHg or above is considered high (**Jay W. Markes, 2010**).

The categories of blood pressure levels established by the 7th Joint National Committee (JNC VII) on detection, treatment and prevention of high blood pressure were optimal, normal and high normal. Optimal systolic blood pressure is less than 120mmHg and diastolic blood pressure is less than 80mmHg. In normal category systolic blood pressure is less than 130mmHg and diastolic blood pressure is less than 85mmHg. In high normal category systolic blood pressure is 130-139mmHg and diastolic blood pressure is 85- 89mmHg. Based on the category of hypertension JNC VII states that there is a direct relation between the risk of morbidity and mortality from hypertension and higher

the level of blood pressure, either systolic or diastolic the greater the risk **(Black JM, Hawk JH, 2004)**.

Hypertension has a higher prevalence, incidence and severity. The prevalence of hypertension among adults in developed countries is 25% and similar prevalence has also been observed in developing countries ranging from 10% to 20%. Different levels of blood pressure produce variety of structural changes in the body. It will cause stroke, heart disease, renal failure and other complication. For these reasons hypertension has been considered as a main health problem among adults. The non modifiable risk factors of hypertension are heredity, age and sex. The modifiable risk factors of hypertension are diet, level of exercise, obesity and excessive alcohol intake **(Park K, 2005)**.

A spike in blood pressure is a direct result of stress. The body responds to physical or mental stress by releasing a surge of hormones in preparation for a fight or flight response. This results in faster heart rate and narrowed blood vessels, both of which increase blood pressure. Once the cause of the stress is resolved, heart rate and blood pressure return to normal. Over time damage to the kidneys, heart and blood vessels can occur with chronic hypertension. A long-term increased stress levels have been found to be a strong predictor of future hypertension **(Cheryl Jones, 2009)**.

All individuals suffer with stress at any point of their life time: death of the family member, divorce, education, occupation and illness etc. The type of stress varies from person to person at different stages of life and it varies from time to time. Stress is the immediate effect to the threat or danger. Day to day activities and ongoing tension can also cause

stress. This may slowly damage the physical and psychological health. Day to day stress can result with changes in the physiology. It can lead to the state of hypertension (**Mathar Mohideen N, 2009**).

Many studies support a good efficacy of relaxation training in decreasing stress, moreover in general review on therapeutic use of relaxation response in stress related diseases found that relaxation techniques appear to be highly recommendable. It also increases the feelings of self- control (**Rowa K, Antony MM, 2005**).

There are many ways of achieving relaxation. Progressive muscle relaxation is a primary method that is easily learned. Many empirical studies have used progressive muscle relaxation in various populations with beneficial physiological effect. For example reduces heart rate and blood pressure. Many empirical studies found beneficial psychological effect. For example reduces stress related symptoms (**Collins JA, Rice VH, 1997**).

Jacobson progressive muscle relaxation technique is the most popular approach in practice is based on alternate contraction and relaxation of skeletal, facial and respiratory muscles which induces physical and mental relaxation (**Salt VL et al., 2007**).

NEED FOR THE STUDY

Hypertension is a highly prevalent disease. If hypertension is not properly managed it can cause serious problems. It accounts for 62% cerebrovascular disease and 49% of cardio vascular disease burden. More than a quarter of the world's adult population had hypertension in 2000 and this proportion would increase to 29 % (972 million) by 2025. Men

and women had similar overall prevalence of hypertension and prevalence increases with age consistently (**WHO, 2002**).

In India, the prevalence of hypertension to be increasing rapidly in urban areas, and the same trend is spreading gradually to rural areas. The recent pooled analysis of several epidemiological studies in India suggests that hypertension is present in 25% of adults in urban areas and in 10% of adults in the rural areas. The same study estimated that there was about 66 millions hypertensive in India (32 million in rural and 34 million in urban). Weighted prevalence for hypertension drawn from various studies was 164.18/1000 adults in urban area and 157.44/1000 adults in rural areas. In India 70% of people are poor and majority of them live in rural areas. Most people with hypertension are unaware of their disease (**Gupta R, 2004**).

In Tamil Nadu, the overall prevalence of hypertension was 20%. It was higher among men (23.2 per cent) than women (17.1 per cent). Those with hypertension satisfied the characteristic risk factors: they were older, had significantly higher body mass index, waist circumference and waist-to-hip ratio, besides higher cholesterol levels. However, even those in the age group of 20-29, 3.8% of the men were hypertensive as against 3.1% women (**Shashank Joshi, Rakesh Parikh, 2007**).

It is well known that acute stress raise blood pressure acutely. It increases the risk of hypertension. Socio environmental and psychological stress has been associated with higher blood pressure. Increased cardiovascular and sympathetic nervous system activity may be a mechanism for the stress-hypertension link .Therefore stress management may be useful for treating hypertension (**Wilkind I, Halling K, 2000**).

Conditions associated with stress include depression, phobia and chronic fatigue. Furthermore accumulated stress can predispose to medical conditions such as chronic headache, hypertension, ulcer and heart diseases. Some physicians estimate that stress may contribute 90% of all illness. Stress accounts for 80% of modern day diseases and at least need general practitioner consultation **(Bell JA, 2000)**.

Progressive muscle relaxation is an important means of reducing stress levels and preventing some of its damaging effects on the body. It uses up the adrenalin and other hormones which the body produces under stress and relaxes the muscles. It will help to strengthen the heart and improve blood circulation. It is a widely used physical-based approach. It has also been used for decreasing psychological stress and blood pressure **(Townsend MC, 2005)**.

Studies support the non pharmacological means of managing hypertension that are gradually developing, the most common being relaxation. Relaxation can adjust the reaction of the hypothalamus to the sympathetic nerves, which allow the body to decrease the heart rate, blood pressure, metabolism and respiration rate as well as reduce oxygen consumption and muscle tension. This allows the body to maintain a healthier and more balanced state while allowing the client to achieve mental calmness **(Rogers Poppeu, 2000)**.

The investigator from her experience have observed and come across the hypertensive clients associated with stress, but they were given medication and routine care only. They were so ignorant in use of Jacobson muscle relaxation therapy in management of hypertension.

These concepts enlighten the researcher to do this study and give information on Jacobson's muscle relaxation therapy. Therefore the investigator felt that there should be a scientific study to investigate the effect of Jacobson muscle relaxation therapy on reducing blood pressure and stress among hypertensive clients.

STATEMENT OF THE PROBLEM

A Study To Assess The Effectiveness Of Jacobson's Progressive Muscle Relaxation Technique On Blood Pressure And Stress Among Hypertensive Clients At Vilankurichi, Coimbatore.

OBJECTIVES

- To assess the level of blood pressure and stress in both experimental and control group.
- To provide Jacobson's progressive muscle relaxation technique to experimental group.
- To reassess the level of blood pressure and stress in both experimental and control group.
- To compare the level of blood pressure and stress in both experimental and control group.
- To assess the effectiveness of Jacobson's muscle relaxation technique in experimental group.
- To associate the findings with the selected demographic variables.

OPERATIONAL DEFINITIONS

Effectiveness

Refers to the outcome of Jacobson's progressive muscle relaxation technique in reduction of blood pressure and stress among hypertensive clients.

Jacobson's Progressive Muscle Relaxation Technique

Refers to the systematic technique of tensing and relaxing various muscle groups throughout the body to produce a state of relaxation.

Blood Pressure

Refers to pressure of the blood within the arteries. It is produced primarily by the contraction of the heart muscle.

Stress

Refers to the perceived state of disturbed homeostasis produced by a stimulus, condition or event called the stressor.

Hypertensive Clients

Refers to the clients who have blood pressure of 140/90 mmHg and above this value.

ASSUMPTIONS

- Most of the hypertensive clients have stress.
- Most of the clients do not practice Jacobson's progressive muscle relaxation technique.
- Practice of Jacobson's progressive muscle relaxation technique will reduce blood pressure and stress.

HYPOTHESIS

H₁- There is a significant difference between pretest and post test level of blood pressure after Jacobson's progressive muscle relaxation technique.

H₂- There is a significant difference between pretest and post test level of stress after Jacobson's progressive muscle relaxation technique.

LIMITATIONS

The study is limited to,

- The clients who are between the age group of 40-65 years.
- The clients who are willing to participate.
- The clients who are able to mobilize.
- The clients who are the residents of the vilankurichi.

PROJECTED OUTCOMES

- The findings of the study will identify the need and effectiveness of simple non pharmacological measure of hypertension.
- The findings of the study will help the clients to relax and promote their quality of life.

CONCEPTUAL FRAME WORK

This study was aimed at determining the effect of Jacobson's progressive muscle relaxation technique on blood pressure and stress in client with hypertension and its relationship. The conceptual framework of this study is based on Betty Neuman's health care system model which considers the client to be an open system interacting with the environment (Wesley, 1992).

SYSTEM MODEL

The person has core consisting of basic structures which encompasses the factors or energy resources necessary for the client's survival. The basic structure is surrounded by three lines; first is the line of resistance, and then the normal line of defense and the outer most is the flexible line of defense. The line of resistance represents the internal factors of the person that help defend against a stressor. The solid line outside the line of resistance is the normal line defense. It represents a stability state for the individual following adjustment made to stressors. The flexible line of defense is depicted in the model as broken line outside the normal line of defense. This line act as a protective barrier to prevent stressors from breaking through the normal line of defense.

STRESSORS

Neuman defines stressor as the tension producing stimuli with the potential for causing disequilibrium. The stressor is classified into intra personal, interpersonal and extra personal factors. The intrapersonal factors include age, sex, education, occupation and income. The interpersonal factors which are capable of producing status are imbalanced relationship with family, friends and co- workers. The extra personal factors include job stress, social responsibilities and physical surroundings.

REACTION

Degree of reaction determined by natural and learned resistance which is manifested by strength of line of resistance, normal and flexible line of defense. In client with essential hypertension the flexible line of defense inability to protect themselves from the stressor. The stressor broke through the normal line of defense causing a reaction manifested as

increased blood pressure, increased stress and decreased well being status.

NURSING INTERVENTIONS

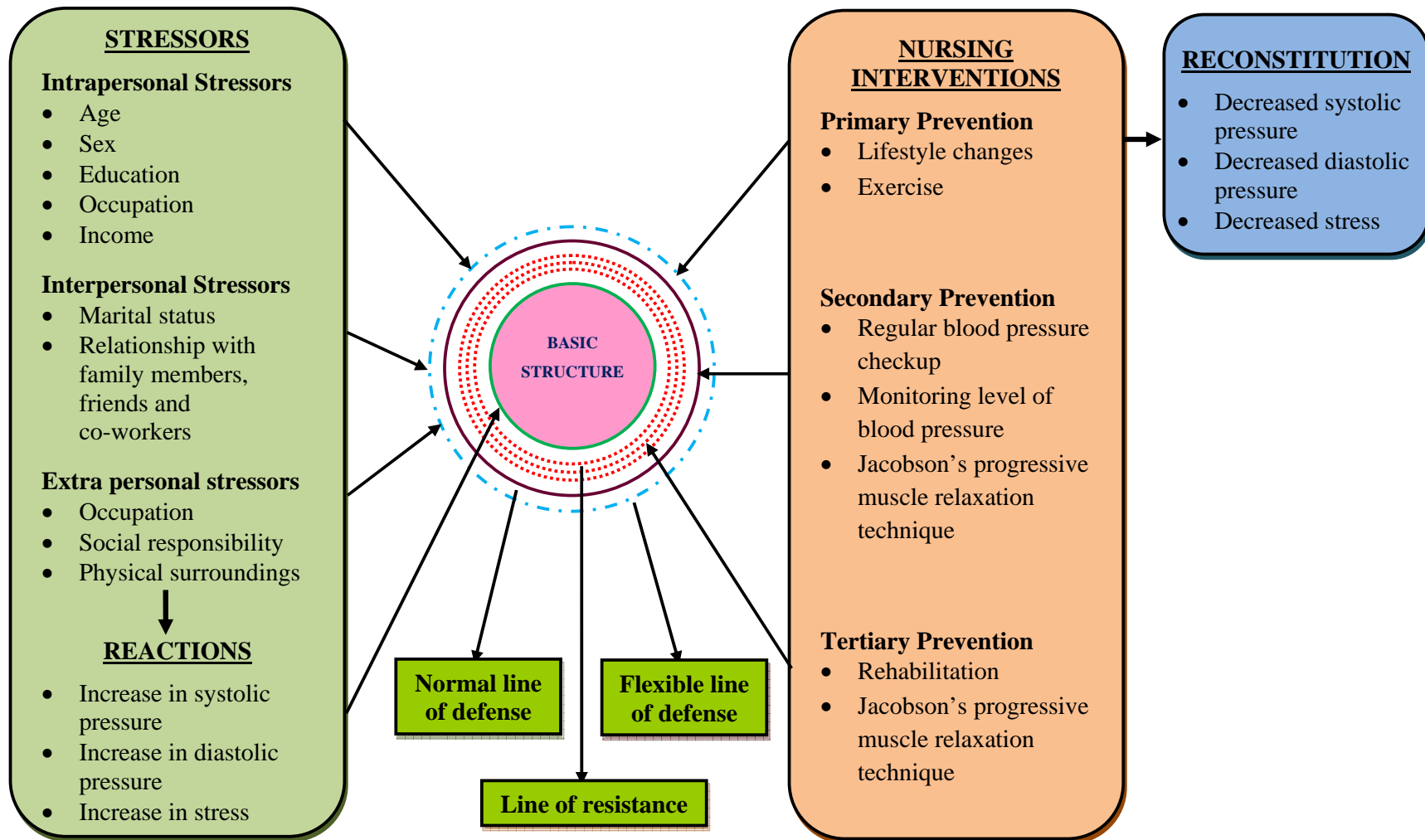
Goal of nursing is to keep the clients stable. The maintenance of stability requires intervention directed by counteracting movement towards illness. It includes primary, secondary and tertiary prevention. Primary prevention aims at preventing the stressor from occurring through lifestyle changes and exercise. Secondary prevention refers to interventions after a reaction occurs which include regular blood pressure checkup for early detection and Jacobson's progressive muscle relaxation technique. Tertiary prevention refers to interventions after active treatment include rehabilitation and Jacobson's progressive muscle relaxation technique.

RECONSTITUTION

Reconstitution involves stabilization of the system and movement back toward the normal line of defense. It is in terms of reduction in systolic and diastolic blood pressure, and stress level.

FIGURE - 1

MODIFIED BETTY NEUMAN'S HEALTH CARE SYSTEM MODEL (1995)



CHAPTER II

REVIEW OF LITERATURE

Review of literature is an important step in the development of any research project. It helps the investigator to analyze what is known about the topic and to describe methods of inquiry used in earlier work including the success and short coming. It gives a broad understanding of the problem.

A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. A well-structured literature review is characterized by a logical flow of ideas **(Dellinger A, 2005)**.

Section A: Studies related to hypertension

Section B: Studies related to relationship between hypertension and stress

Section C: Studies related to effectiveness of Jacobson's progressive muscle relaxation technique on blood pressure and stress.

SECTION A: STUDIES RELATED TO HYPERTENSION

A cross sectional study was under taken to find out prevalence of hypertension and its associated risk factors in a rural area of Tamil Nadu, among a sample of 406 individuals(45- 60 years) selected by cluster systematic random sampling technique. Chi- square test and multiple logistic regressions were employed. The overall prevalence of

hypertension was 33% and higher among sedentary type (41%). In bivariate analysis many of the independent variables correlated with hypertension, but in multivariate analysis, only body mass index, family history and age remained significant (**Subburam R, 2009**).

A cross sectional study was estimated the prevalence of hypertension and examined its association with some socio economic factors in Bavi district, Vietnam. A representative sample consist of 2000 adults aged 25-64 years were selected randomly and surveyed in 2002. Socio economic status of the study samples was estimated by assessing their educational, occupational and economic conditions. The prevalence of hypertension was 14.1%. Only 17.4% of them were aware of their hypertensive status. Men were hypertensive more often than women and age was positively associated with hypertension. Among men those with lower educational, occupational status and richer socio economic status were more likely to be hypertensive. More women with lower socio economic status were hypertensive (**Minch V, 2005**).

A cross sectional study was conducted on multifactorial analysis of blood pressure variations in a rural community of West Bengal among adult person. The study variables included were age, education, family assets, and systolic and diastolic blood pressure. Individual role of these factors were analyzed and observed that, age was most important explaining about 16.57% of systolic blood pressure and 7.9% of diastolic blood pressure variations, occupation 3.18% and 0.66%, education 0.21% and 0.02% and family assets score was nil. The research concluded that two important factors (age, occupation) significantly contribute for the systolic and diastolic blood pressure. Independently education level and

family asset score contributed very little to the total variations of systolic and diastolic blood pressure **(Sadhukhan, 2005)**.

A prospective cohort study was estimated in the residual risk for hypertension among 1298 older US adults from the Framingham Study who were aged 55 to 65 years shows, the residual lifetime risks for developing stage 1 high blood pressure ($\geq 140/90$ mm Hg) were 90% in 55 to 65-year old participants. The risk for developing hypertension was approximately 60% higher for men than women. In contrast, the residual lifetime risk for stage 2 high blood pressure ($\geq 160/100$ mm Hg) was considerably lower in both sexes, likely due to a marked increase in management of individuals with substantially elevated blood pressure **(Ramachandran S. Vasan, 2002)**.

A study was conducted to estimate the prevalence, awareness, treatment and control rates of hypertension in a suburban area of Kathmandu valley among adult population (age >18 years). Blood pressure was measured twice using standardized mercury sphygmomanometer, and an average of the two readings was taken. Total numbers of subjects were 1114 (men: 541, women: 573). Overall prevalence of hypertension was 19.7% (22.2% in men and 17.3% in women). Prevalence of hypertension in age group of >40 years was 36%. Awareness, treatment and control rates were 41.1%, 26% and 6% respectively **(Deewakar Sharma, 2006)**.

A study was conducted to examine the prevalence of hypertension, its management and control, and the use of antihypertensive medication, diet and exercise in Chinese adults residing in the San Francisco community. Blood pressure was measured on 708 Chinese adults (295

men and 413 women; age range from 19-98 years) and hypertension defined as BP>140/90 mmHg. Although 202 patients(41%) received antihypertensive medications, only 28(14%) achieved BP control and in examining the self management of hypertension, it was found that only 45% of patients used low sodium diets and 49% performed regular exercises (**Diana S. Lau, 2005**).

A study was conducted to evaluate the hypertensive crises in an emergency department during 12 months of observation and the frequency of end-organ damage with related clinical pictures during the first 24 hours. Hypertensive crises (76% urgencies, 24% emergencies) represented more than one fourth of the medical urgencies-emergencies. The most frequent signs were headache (22%), epistaxis (17%), faintness, and psychomotor agitation (10%) in hypertensive urgencies and chest pain (27%), dyspnea (22%), and neurological deficit (21%) in hypertensive emergencies. The types of end-organ damage associated with hypertensive emergencies included cerebral infarction (24%), acute pulmonary edema (23%) and hypertensive encephalopathy (16%) as well as cerebral hemorrhage, which accounted for only 4.5%. Hypertension that was unknown at presentation was present in 8% of hypertensive emergencies and 28% of hypertensive urgencies (**Bruno Zampaglione, 1996**).

A prospective observational study investigated the associations of diastolic blood pressure with stroke and coronary heart disease with total 420000 individuals, 843 strokes, and 4856 coronary heart disease events, 6-25 years of follow-up. The prolonged differences in usual diastolic blood pressure of 5, 7.5, and 10 mmHg were respectively associated with at least 34%, 46%, and 56% less stroke and

at least 21%, 29% and 37% less coronary heart disease. The diastolic blood pressure results suggest that, a lower blood pressure should eventually confer a lower risk of vascular disease (**Mac Mahon S, 2000**).

A randomized control trials show that reductions in diastolic and systolic blood pressure levels are associated with highly significant reductions in morbidity and mortality from heart disease and stroke and death from all causes. For example, average reductions of 5-6mmHg of diastolic blood pressure in large, randomized, placebo- controlled trials conferred reductions of about 38% in incident stroke, 16% in incident coronary heart disease events, 21% in composite vascular events, and 12% in death from all causes (**Whelton PK, 1999**).

SECTION B: STUDIES RELATED TO RELATIONSHIP BETWEEN HYPERTENSION AND STRESS

A study reported that the perception of stress is a coordinate response of the body's physiological system to protect an individual from any physical and mental harm. Within cardiovascular system the release of catecholamine from the nerves and adrenal medulla leads to an increase in blood pressure allowing individual to fight or flight from a perceived threat. Over stimulation of the stress response may lead to wear and tear of system and subsequent disease like hypertension, coronary heart disease (**Stuart GW, 2004**).

A study was found that the relationship between parental hypertension and heart rate (HR), systolic (SBP) and diastolic blood pressure (DBP) levels of 103 healthy college-age men, during resting conditions and stressful situations. Sons of hypertensive parents (N = 25) showed higher HR and SBP than sons of normotensive parents (N = 78)

during rest and stress, but these differences were greatest during the stressful situations. No reliable differences in DBP were seen. A subsample of 45 subjects, including 14 with hypertensive parents were also monitored during a second stress, only trends toward HR or BP differences related to parental hypertension were seen for this stress, although HR and SBP differences during the stressful situations were significant even in this smaller group. Since the incidence of high blood pressure is known to be higher among the offspring of hypertensive parents, these findings suggest that cardiovascular responses to certain types of stress may help predict future risk of hypertension **(Janice L. Hastrup, 2007)**.

A prospective study showed the adverse effects of chronic mental stress. Chronic mental stress can come in a variety of forms, and may originate in the external environment or from within the individual. Example job stress has adverse effects on the development of hypertension and coronary artery disease. Job strain, which is defined as a combination of low control and high demands at work, has been associated with increased blood pressure and coronary heart disease outcomes, particularly in men **(Thomas G. Pickering, 2009)**.

A study tested the association between the work stress and risk of hypertension. Participants included 109 male white-collar workers (age 47.2 ± 5.3) were monitored on 2 workdays and 1 nonworkday for ambulatory blood pressure and heart rate variability. All findings were adjusted for possible differences in posture and physical activity between the work stress groups. High imbalance was associated with a higher heart rate during work and directly after work, a higher systolic blood pressure during work and leisure time on all 3 measurement days. The

values during sleep were more predictive for mild hypertension than the values during work. The results from the present study suggest that the detrimental effects of work stress are partly mediated by increased heart rate reactivity and an increase in systolic blood pressure level to a stressful workday (**Tanja GM, Vrijkotte, 2000**).

A study was conducted to examine whether blood pressure reactions to mental stress predicted future hypertension. Data were available for 796 male public servants, between 35 and 55 years of age upon entry to the study. Systolic blood pressure reactions to mental stress were positively correlated with follow-up screening systolic blood pressure and to a lesser extent, follow-up diastolic pressure. The results of this study provide modest support for the hypothesis that heightened blood pressure reactions to mental stress contribute to the development of hypertension (**Douglas Carroll, 2001**).

SECTION C: STUDIES RELATED TO EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION TECHNIQUE ON BLOOD PRESSURE AND STRESS

A study was conducted to describe the physiological process of progressive muscle relaxation; it shows that relaxation is a quiescence of skeletal muscle activity, as measured peripherally by the electromyogram (EMG). At the neurological level a diminished motor neuron output and reduced proprioceptive input citing as evidenced by reduced magnitude and increased latency of spinal motor reflexes when a person is relaxed. As a result of reduced afferent and efferent activity in the skeletal- motor system, autonomic and cortical arousal is decreased, citing anatomical and physiological data supporting a correlation between these systems (**Rogers Poppeu, 2000**).

A study was examined whether relaxation was found to be superior or equivalent to control conditions. The likelihood of producing significant physiological reductions via progressive relaxation appears to be greater when multi-session, subject-controlled training is conducted with subjects for whom physiological activity contributes to a presenting clinical problem (**Borkovec TD, 2002**).

An experimental study of relaxation techniques used to control a variety of clinical symptoms was synthesized using meta-analysis. Effect sizes for three types of comparison, experimental-control, experimental-placebo, and pre-post, ranged from 0.43 to 0.66, demonstrating that relaxation techniques moved the client from the 50th to the 67th percentile of an untreated group at minimum and from the 50th to the 75th percentile at maximum. The relaxation technique demonstrated evidence of effectiveness, particularly for chronic problems such as hypertension and headache (**Hyman Ruth B, 1999**).

A quasi experimental study examined the effects of progressive muscle relaxation on blood pressure and psychological status in clients with essential hypertension. The researcher recruited a convenience sample 40 subjects from a hypertension outpatient clinic, in that 20 subjects received progressive muscle relaxation training once a week and practiced at home daily for 4 weeks. Progressive muscle relaxation (PMR) training had an immediate effect, reducing systolic blood pressure 5.44mmHg, diastolic blood pressure 3.48mmHg. After 4 weeks of PMR training, further decreases in systolic blood pressure 5.1mmHg, diastolic blood pressure 3.1mmHg occurred. PMR significantly lowered patients' perception of stress and it enhanced their perception of health. PMR is beneficial for patients with essential hypertension (**Sheila Sheu, 2003**).

A retrospective study was conducted to determine if progressive muscle relaxation could be taught as effectively in group situations as in individual situations and if progressive muscle relaxation reduced blood pressure, 15 essential hypertensive were taught progressive muscle relaxation. Nine were taught individually, whereas the remaining six were taught as a group. The sessions were once weekly for 4 weeks. Blood pressure measurements were made at the beginning and end of each session, as well as at the beginning of the first and last session. No differences were found between these methods of instruction. Decreases in both systolic and diastolic blood pressures from the beginning to the end of each session were found, as well as decreases in systolic pressure from session one to session four. It was concluded that group instruction and individual instruction are equally effective, and progressive muscle relaxation is effective in reducing blood pressure (**Charlotte Nath, 2007**).

A study examined the effects of progressive muscle relaxation on blood pressure of hypertensive clients. After collection of baseline data, 22 clients received group relaxation training followed by individual monitoring sessions over a 6-week period. The 22 persons in the control group did not receive relaxation training. The group instructed in relaxation had a lower mean systolic blood pressure than the nontrained group at 4- month follow-up. While the relaxation-trained group showed a significant decrease in diastolic pressure from baseline to follow-up, the difference between trained and non-trained groups at follow-up was significant. Relaxation taught initially in group with individual follow-up visits, resulted in continued practice of relaxation and subsequent

lowering of blood pressure in subjects with essential, uncomplicated hypertension (**Nola J. Pender, 2007**).

The empirical study examined the effects of three relaxation therapies for the reduction of high blood pressure in nine Chinese subjects. Subjects were randomly assigned to three groups: (a) progressive muscle relaxation, (b) stretch release relaxation and (c) cognitive imagery relaxation. Systolic, diastolic blood pressure and heart rate were assessed in a baseline session, the 8th post-treatment session, and a 30-days follow-up session. Data was analyzed using ANOVA and Paired sample *t* -test. One-Sample Kolmogorov-Smirnov Tests for the normal distribution were performed among the three groups. Results revealed that in the context of the study all relaxation therapies can reduce blood pressure in Chinese subjects, but stretch release relaxation and progressive muscle relaxation therapies appeared to be more effective in lowering blood pressure compared to cognitive imagery relaxation (**Paul Yung, 2001**).

A study was conducted on a 10-week relaxation treatment focused on home practice and self-monitoring of blood pressure for the purpose of lowering blood pressure in patients with essential hypertension. Comparisons were made among relaxation (n=13), relaxation in combination with electromyographic biofeedback (n=14), and a control condition in which patients simply monitored their blood pressure (n=14). These three groups of patients, all of which received antihypertensive medication, were compared with a fourth group that practiced relaxation without drug therapy (n = 17). Relaxation and relaxation/biofeedback were equally effective in reducing blood pressure recorded at home in the morning and evening and produced greater decreases than in the control

group. Relaxation without drugs, although somewhat more effective than self-monitoring, did not reduce blood pressure as much as the two conditions in which medication was combined with relaxation **(Goldstein, 2004)**.

A study on blood pressure-lowering effects of a group stress management program conducted with hypertensive employees at the worksite were assessed and replicated. Both systolic and diastolic blood pressure were significantly reduced from a baseline period to the end of a 10-week stress management training period (Group 1, N = 22). A control Group (Group 2, N = 18), showed no significant systolic and diastolic blood pressure reduction over a comparable time period. When Group 2 was then given stress management training, the resulting systolic and diastolic blood pressure reductions were significant. When blood pressure was recorded 3 years later, there were significant reductions for both systolic and diastolic blood pressure. The frequency of relaxation practice and the amount of blood pressure reduction achieved during relaxation practice were significantly correlated with blood pressure reduction after the stress management program. It was also found that the stress management program lowered health care costs and increased health supportive behavior **(Charlesworth, 2004)**.

A randomized controlled trial tested the efficacy and feasibility of two stress education approaches for the management of mild hypertension in older African Americans with 3 months of follow-up in city health center. There were 213 African American men and women screened, 127 individuals (aged 55 to 85 years with initial diastolic pressure of 90 to 109 mmHg, systolic pressure of \leq 189 mmHg) were selected. Both mental (Transcendental Meditation) and physical

(Progressive muscle relaxation) stress- reduction approaches were compared with each other. Progressive muscle relaxation reduced systolic pressure by 10.7 mmHg and diastolic pressure by 6.4 mmHg. Transcendental Meditation lowered systolic pressure by 4.7 mmHg and diastolic pressure by 3.3 mmHg. The reductions in the progressive muscle relaxation group were significantly greater than the Transcendental Meditation group for both systolic blood pressure and diastolic blood pressure. Both mental and physical stress-reduction techniques demonstrated efficacy in managing mild hypertension in this sample of older African Americans. Of these two techniques progressive muscle relaxation was approximately twice as effective as Transcendental Meditation (**Robert H. Schneider, 2005**).

A comparative study was conducted to compare the efficacy of two relaxation techniques in reducing pulse rate and blood pressure among highly stressed females (undergraduate, post graduate, graduate and research scholars) from Guru Nanak Dev University, Amritsar. The researcher randomly selected 30 highly stressed female subjects and assigned into three groups (N=10 each) (a) group 1 receiving galvanic skin resistance biofeedback, (b) group 2 receiving progressive muscle relaxation training, (c) group 3 control. The stress level was determined by using Comprehensive Anxiety Test Questionnaire. Pulse rate and blood pressure were measured before and after training on day 1 and day 10. Results indicate that progressive muscle relaxation training can significantly reduce high pulse rate and blood pressure as compared to other two groups (**Archana Khanna, 2007**).

CHAPTER III

RESEARCH METHODOLOGY

INTRODUCTION

Research methodology is the techniques used to structure a study and together analyze information in a systematic fashion (**Polit and Beck, 2007**).

In this section, the following topics are discussed in relation to methodology adopted by the investigator. It includes research design, setting of the study, variables, population, sample size, sampling technique, sample selection criteria, description of the tool, content validity, reliability, pilot study, method of data collection and plan for data analysis.

RESEARCH DESIGN

The term research design is the overall plan for addressing a research question, including specifications for enhancing the study's integrity (**Polit and Beck, 2004**)

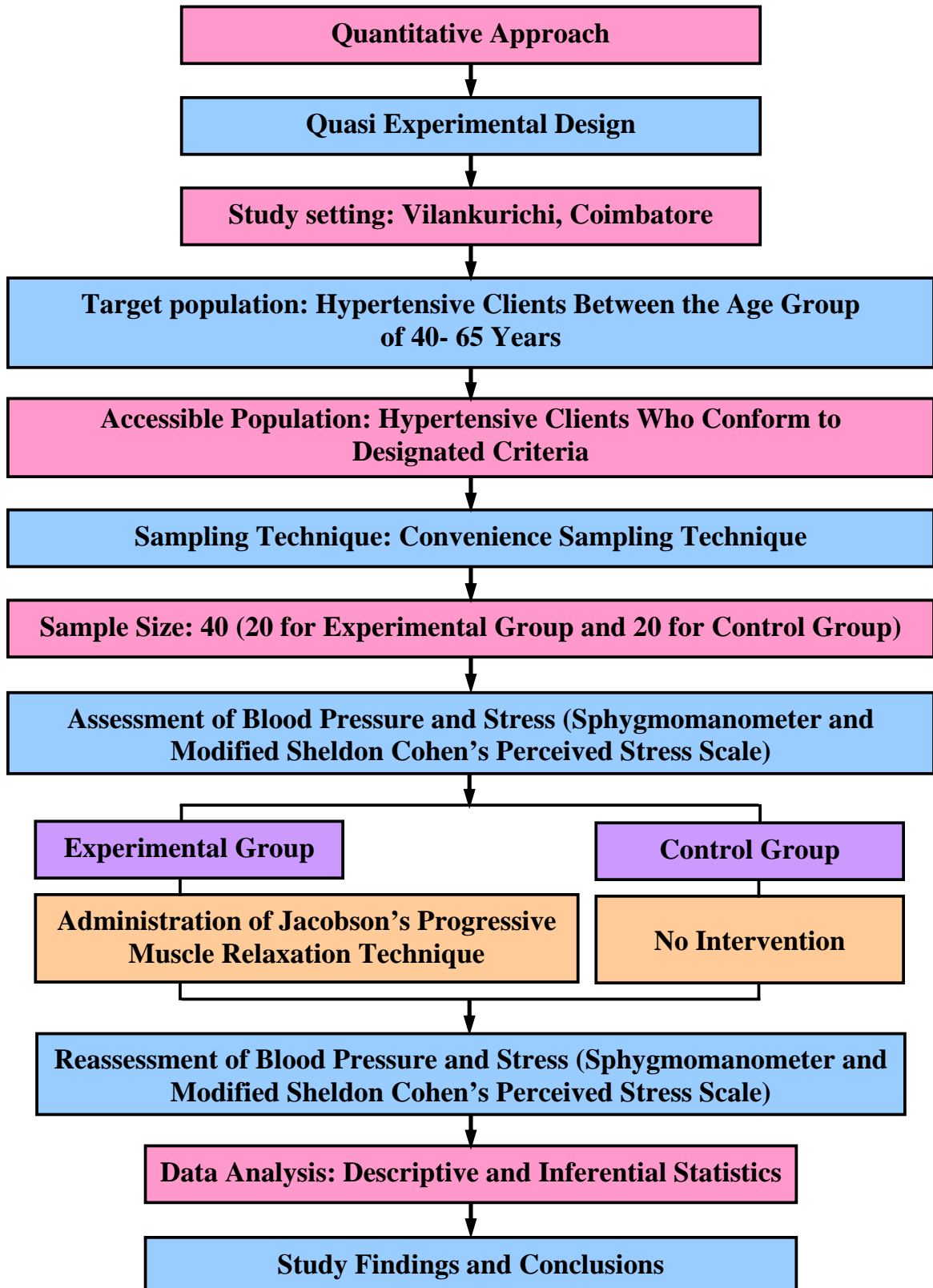
Quasi experimental research design was adopted in this study with an experimental and control group.

Experimental Group : O₁ x O₂

Control Group : O₃ - O₄

- O₁- Assessment of the level of blood pressure and stress in experimental group
- x - Administration of Jacobson's progressive muscle relaxation technique to experimental group
- O₂- Reassessment of the level of blood pressure and stress in experimental group
- O₃- Assessment of the level of blood pressure and stress in control group
- O₄- Reassessment of the level of blood pressure and stress in control group

FIGURE - 2
SCHEMATIC REPRESENTATION OF STUDY DESIGN



SETTING OF THE STUDY

Settings are the more specific places where data collection occurs **(Polit and Beck, 2004)**.

The study was conducted in Vilankurichi. It is located at the south part of Coimbatore. It is approximately 5 km from the K. G. College of Nursing, Saravanampatti. It has the population of 5007. Total numbers of male and female population above 40- 65 years are 930.

VARIABLES

Variables are the measurable characteristics of a concept and consist of logical group of attributes **(Polit and Beck, 2007)**.

Independent Variable

Jacobson's progressive muscle relaxation technique.

Dependent Variables

Blood pressure and stress

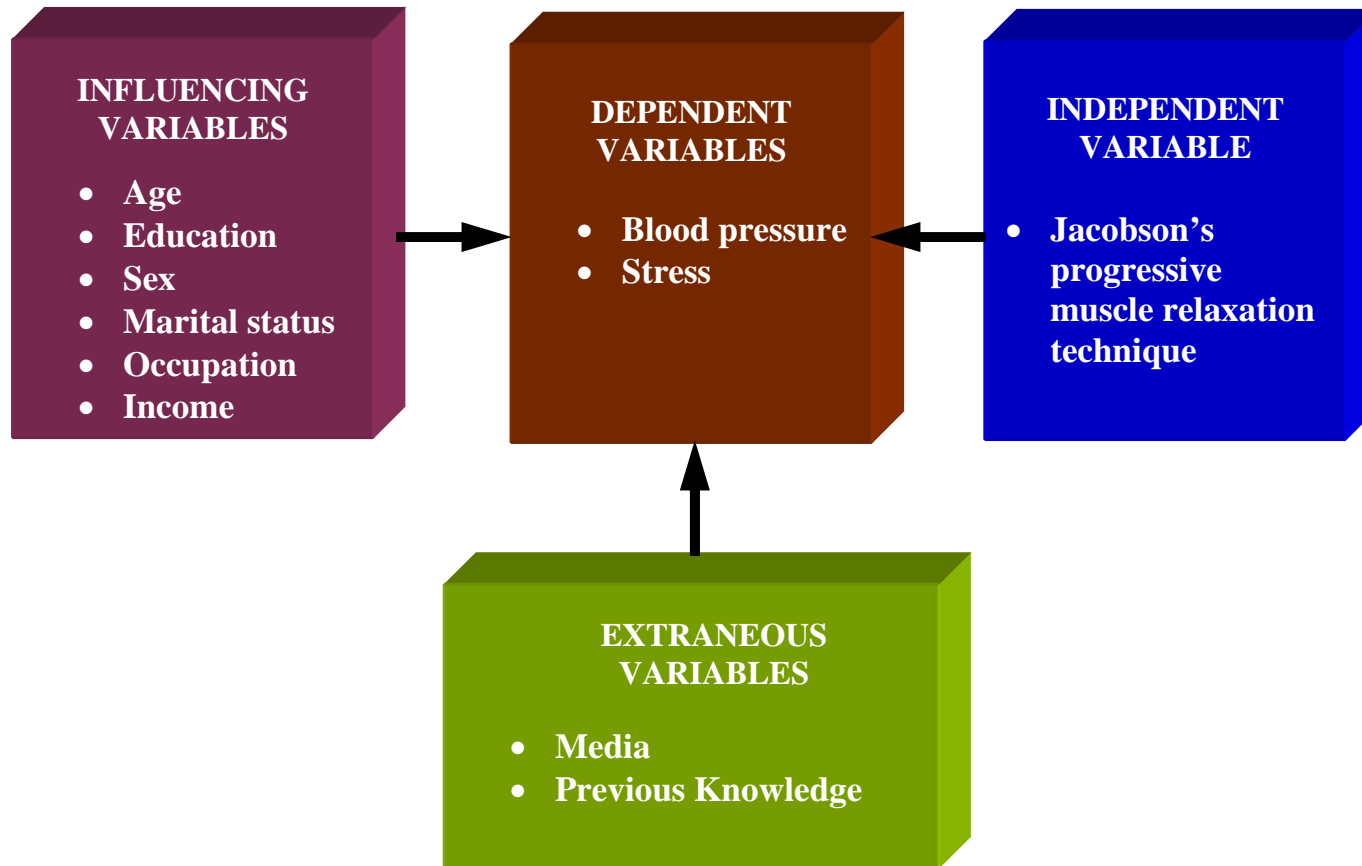
Influencing Variables

Age, Education, Sex, Marital status, Occupation, Income

Extraneous Variables

Medias, Previous knowledge

FIGURE - 3
RELATIONSHIP OF VARIABLES



POPULATION

Population represents the entire aggregation of cases that meet a designed set of criteria that are accessible to the researcher for a study and from whom the researcher is able to make generalizations (**Polit and Beck, 2004**).

The total population between the age group of 40-65 years is 930. Target population is 256. Target population refers to hypertensive clients between the age group of 40- 65 years in Vilankurichi.

SAMPLE SIZE

Sample is the subset of population selected to participate in a research study. Sample size is determined by using Mahajan's formula.

Sample size $n = 4pq/L^2$

Where

4 = constant number

p = percentage population

q = 100- p

L = allowable error

$$p = \frac{\text{Target population}}{\text{Total population}} \times 100$$

$$= \frac{256}{930} \times 100$$

$$p = 28$$

$$q = 100- 28$$

$$q = 72$$

$$L = 15$$

$$n = \frac{4 \times 28 \times 72}{15 \times 15} \times 100$$

n = 36

Sample size = 40

According to this the investigator decided to have 40 samples for the present study.

SAMPLING TECHNIQUE

Sampling is a process of selecting a portion of the designated population to represent the entire population. Convenience sampling technique was adopted in this study.

SAMPLE SELECTION CRITERIA

Inclusion Criteria

- The clients who are between the age group of 40-65 years.
- The clients who are able to communicate in Tamil or English.
- The clients who are willing to participate.
- The clients who are able to mobilize.
- The clients who have hypertension between 0- 3 years.

Exclusion Criteria

- The clients who have musculoskeletal problem like sprain and fracture.
- The clients who are unable to concentrate or learn due to mental problem.
- The clients who are the previous recipient of any type of relaxation training.

DISCRIPTION OF THE TOOL

Tools are the procedure or instruments used by the investigator to collect data. The tool consist of three sections,

Section A: It comprises of items seeking information about demographic variables such as age, sex, education, occupation, marital status and type of family.

Section B: It comprises of blood pressure measurement.

Section C: It comprises of modified Sheldon Cohen's perceived stress scale- To assess the level of stress. It consists of 10 items to be asked to the samples.

The scoring key for the positive items has 4points for very often, 3points for fairly often, 2 points for sometimes, 1 point for almost never and 0 for never. The scoring key for negative items had the reverse scoring. Maximum possible score is 40 and minimum score is 0.

CONTENT VALIDITY

The content of the instrument used for study was validated by various experts. Minor modifications were made as per expert's opinion. These modifications were incorporated in the final preparation of the tool.

RELIABILITY

Reliability was tested by split- half method. The sample was first divided into equivalent halves and reliability was found for modified Sheldon Cohen's perceived stress scale which shows that $r_h = 0.8$. This indicated that the tool was reliable.

PILOT STUDY

The pilot study was conducted in Vilankurichi with 10 samples on first week of June, 2010. The tool was found to be feasible and practicable. The investigator later proceeded for the main study.

METHOD OF DATA COLLECTION

The study was conducted in Vilankurichi at Coimbatore. The data collection period was one month. The method of data collection was direct interview method. The investigator introduced self and got oral consent from the participants. The demographic variables were collected by using the baseline proforma. In pretest blood pressure was measured by sphygmomanometer and stress was assessed by modified Sheldon Cohen's perceived stress scale in both experimental and control group.

Jacobson's progressive muscle relaxation technique was given daily to the experimental group approximately for 30 minutes per sample for one month. Participants were asked to sit or lie down comfortably. Begin by taking three deep breaths; then start to tense each muscle for 5-7 seconds and relax each muscle group for 20- 30 seconds from foot to head. One session per day was provided during morning time.

Post test was conducted after one month by using same scale to find the effectiveness of Jacobson's progressive muscle relaxation technique.

PLAN FOR DATA ANALYSIS

Data was analyzed on the basis of objectives and hypothesis by using descriptive and inferential statistics.

Descriptive statistics: It was used to analyze the frequency, percentage, mean and standard deviation of the following variables.

- Demographic variables
- Level of blood pressure and stress

Inferential statistics: It was used to determine the comparison, relationship and association.

- 'Z' test was used to find out the comparison between experimental and control group.
- Paired 't' test was used to find out the effectiveness of Jacobson's progressive muscle relaxation technique in experimental group.
- Chi- square was used to find the association between demographic variables.

CHAPTER IV

ANALYSIS AND INTERPRETATION

Analysis is categorizing, ordering, manipulating and summarizing of data to obtain answers to reach hypothesis and questions.

This chapter deals with the analysis and interpretation of data, collected from 40 hypertensive clients between the age group of 40- 65 years, at Vilankurichi, Coimbatore, to evaluate the effectiveness of Jacobson's progressive muscle relaxation technique in clients with hypertension.

The findings based on descriptive and inferential statistical analysis are tabulated under the following headings:

Table - 1 Distribution of demographic variables of clients with hypertension.

Table - 2 Distribution of level of blood pressure in experimental and control group.

Table - 3 Distribution of level of stress in experimental and control group.

Table - 4 Comparison of level of blood pressure between the experimental and control group.

Table - 5 Comparison of level of stress between the experimental and control group.

Table - 6 Comparison of level of blood pressure within the experimental group.

Table - 7 Comparison of level of stress within the experimental group.

Table - 8 Association of level of systolic blood pressure in experimental and control group with selected demographic variables.

Table - 9 Association of level of diastolic blood pressure in experimental and control group with selected demographic variables.

Table -10 Association of level of stress in experimental and control group with selected demographic variables.

TABLE - 1
DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF CLIENTS
WITH HYPERTENSION

n₁+ n₂= 40

S. No.	Demographic Variables	Experimental Group (n ₁)= 20		Control Group (n ₂)= 20	
		No	%	No	%
1.	Age in years				
	a. 40- 49	3	15	2	10
	b. 50- 59	8	40	9	45
	c. 60- 65	9	45	9	45
2.	Sex				
	a. Male	2	10	4	20
	b. Female	18	90	16	80
3.	Education				
	a. Illiterate	6	30	9	45
	b. Primary school	8	40	6	30
	c. Secondary school	4	20	3	15
	d. Higher secondary school	1	5	1	5
	e. Degree	1	5	1	5
4.	Occupation				
	a. Employed	3	15	4	20
	b. Unemployed	17	85	16	80
5.	Income				
	a. < Rs.2000	3	15	5	25
	b. Rs. 2001- 4000	5	25	7	35
	c. Rs. 4001- 6000	8	40	4	20
	d. > Rs. 6001	4	20	4	20

6.	Marital status				
	a. Single	-	-	-	-
	b. Married	16	80	13	65
	c. Divorced	1	5	1	5
	d. Widow	3	15	6	30
7.	Type of family				
	a. Nuclear	15	75	14	70
	b. Joint	5	25	6	30

Above table shows the distribution of demographic variables among hypertensive clients.

Regarding age of hypertensive clients in experimental group, 3(15%) clients were aged between 40-49 years, 8(40%) clients were aged between 50-59 years and 9(45%) clients were aged between 60- 65 years. Where as in control group, 2(10%) clients were aged between 40-49 years, 9(45%) clients were aged between 50-59 years and 9(45%) clients were aged between 60- 65 years.

Considering sex of hypertensive clients in experimental group, 2(10%) clients were male and 18(90%) were female. Where as in control group, 4(20%) clients were male and 16(80%) were female.

With regard to education of hypertensive clients in experimental group, 6(30%) clients were illiterate, 8(20%) clients had primary school education and 4(10%) clients had secondary school education and 1(5%) client was belong to higher secondary education and 1(5%) client was belong to degree. Where as in control group 9(45%) clients were illiterate, 6(30%) clients had primary school education and 3(15%) clients

had secondary school education and 1(5%) client was belong to higher secondary education and 1(5%) client was belong to degree.

Above table denotes the occupations of hypertensive clients in experimental group, 3(15%) clients were employed and 17(85%) clients were unemployed. Where as in control group, 4(20%) clients were employed and 16(80%) clients were unemployed.

Regarding income of hypertensive clients in experimental group, 3(15%) clients had the income of less than Rs. 2000, 5(25%) clients income were between Rs.2001- 4000 and 8(40%) clients income were between Rs.4001- 6000 and 4(20%) clients had the income of more than Rs. 6001. Where as in control group, 5(25%) clients had the income of less than or equal to Rs. 2000, 7(35%) clients income were between Rs.2001- 4000 and 4(20%) clients income were between Rs.4001- 6000 and 4(20%) clients had the income of more than Rs. 6001.

Considering marital status of hypertensive clients in experimental group, 16(80%) clients were married, 1(5%) client was divorced and 3(15%) clients were widow. Where as in control group, 13(65%) clients were married, 1(5%) client was divorced and 6(30%) clients were widow.

With regards to type of family in experimental group, 15(75%) clients belong to nuclear family and 5(25%) clients were belong to joint family. Where as in control group, 14(70%) clients belong to nuclear family and 6(30%) clients were belong to joint family.

FIGURE - 4
DISTRIBUTION OF AGE OF EXPERIMENTAL AND CONTROL GROUP OF
HYPERTENSIVE CLIENTS



FIGURE - 5
DISTRIBUTION OF OCCUPATION OF EXPERIMENTAL AND CONTROL GROUP
OF HYPERTENSIVE CLIENTS



TABLE - 2
DISTRIBUTION OF LEVEL OF BLOOD PRESSURE IN
EXPERIMENTAL AND CONTROL GROUP

n₁+ n₂= 40

S.No.	Level of Blood Pressure (mmHg)		Experimental Group				Control Group			
			Pretest		Post test		Pretest		Post test	
			No	%	No	%	No	%	No	%
1.	Systolic blood pressure	Normal <130	-	-	3	15	-	-	-	-
		High normal 130- 139	-	-	5	25	-	-	1	5
		Mild hypertension 140- 159	17	85	10	50	17	85	15	75
		Moderate hypertension 160-179	2	10	1	5	2	10	4	20
		Severe hypertension >180	1	5	1	5	1	5	-	-
2.	Diastolic blood pressure	Normal <85	-	-	4	20	-	-	1	5
		High normal 85- 89	-	-	3	15	-	-	-	-
		Mild hypertension 90- 99	14	70	10	50	13	65	9	45
		Moderate hypertension 100- 109	3	15	3	15	7	35	6	30
		Severe hypertension >110	3	15	-	-	-	-	4	20

Above table shows the level of systolic blood pressure in experimental group, 17(85%) clients had mild hypertension, 2(10%) clients had moderate hypertension and 1(5%) client had severe

hypertension in pretest. Where as in post test 3(15%) clients had normal level of systolic blood pressure, 5(25%) clients had high normal level of systolic blood pressure and 10(50%) clients had mild hypertension, 1(5%) client had moderate hypertension and 1(5%) client had severe hypertension.

Among control group, 17(85%) clients had mild hypertension, 2(10%) clients had moderate hypertension and 1(5%) client had severe hypertension in pretest. Where as in post test 1(5%) client had high normal level of systolic blood pressure, 15(75%) clients had mild hypertension and 4(20%) clients had moderate hypertension.

Above table denotes the level of diastolic blood pressure in experimental group, 14(70%) clients had mild hypertension, 3(15%) clients had moderate hypertension and 3(15%) clients had severe hypertension in pretest. Where as in post test 4(20%) clients had normal level of diastolic blood pressure, 3(15%) clients had high normal level of diastolic blood pressure and 10(50%) clients had mild hypertension and 3(15%) clients had moderate hypertension.

Among control group, 13(65%) clients had mild hypertension and 7(35%) clients had moderate hypertension in pretest. Where as in post test 1(5%) client had normal level of diastolic blood pressure, 9(45%) clients had mild hypertension, 6(30%) clients had moderate hypertension and 4(20%) clients had severe hypertension.

FIGURE - 6
DISTRIBUTION OF LEVEL OF SYSTOLIC BLOOD PRESSURE OF EXPERIMENTAL
AND CONTROL GROUP

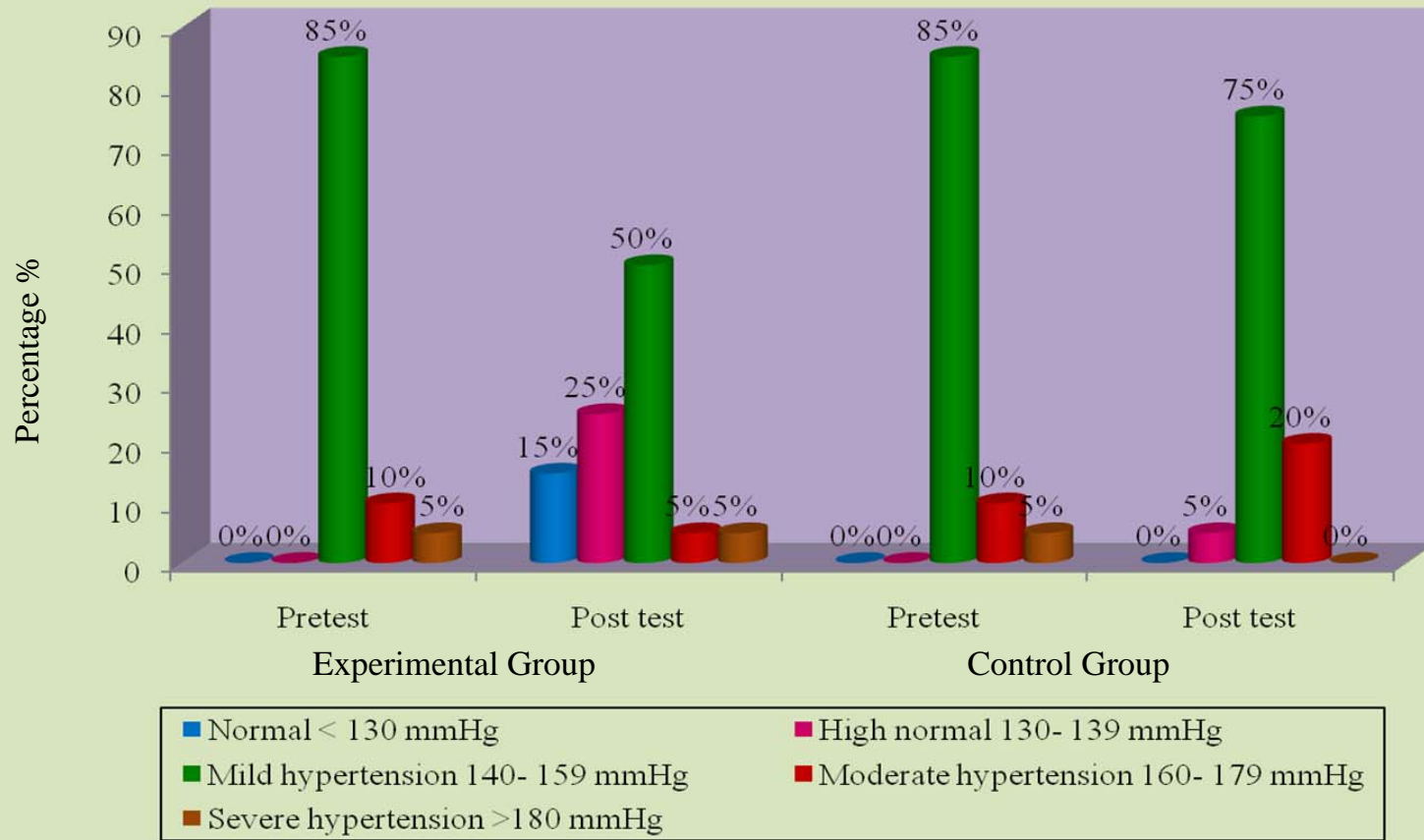


FIGURE - 7
DISTRIBUTION OF LEVEL OF DIASTOLIC BLOOD PRESSURE OF EXPERIMENTAL
AND CONTROL GROUP

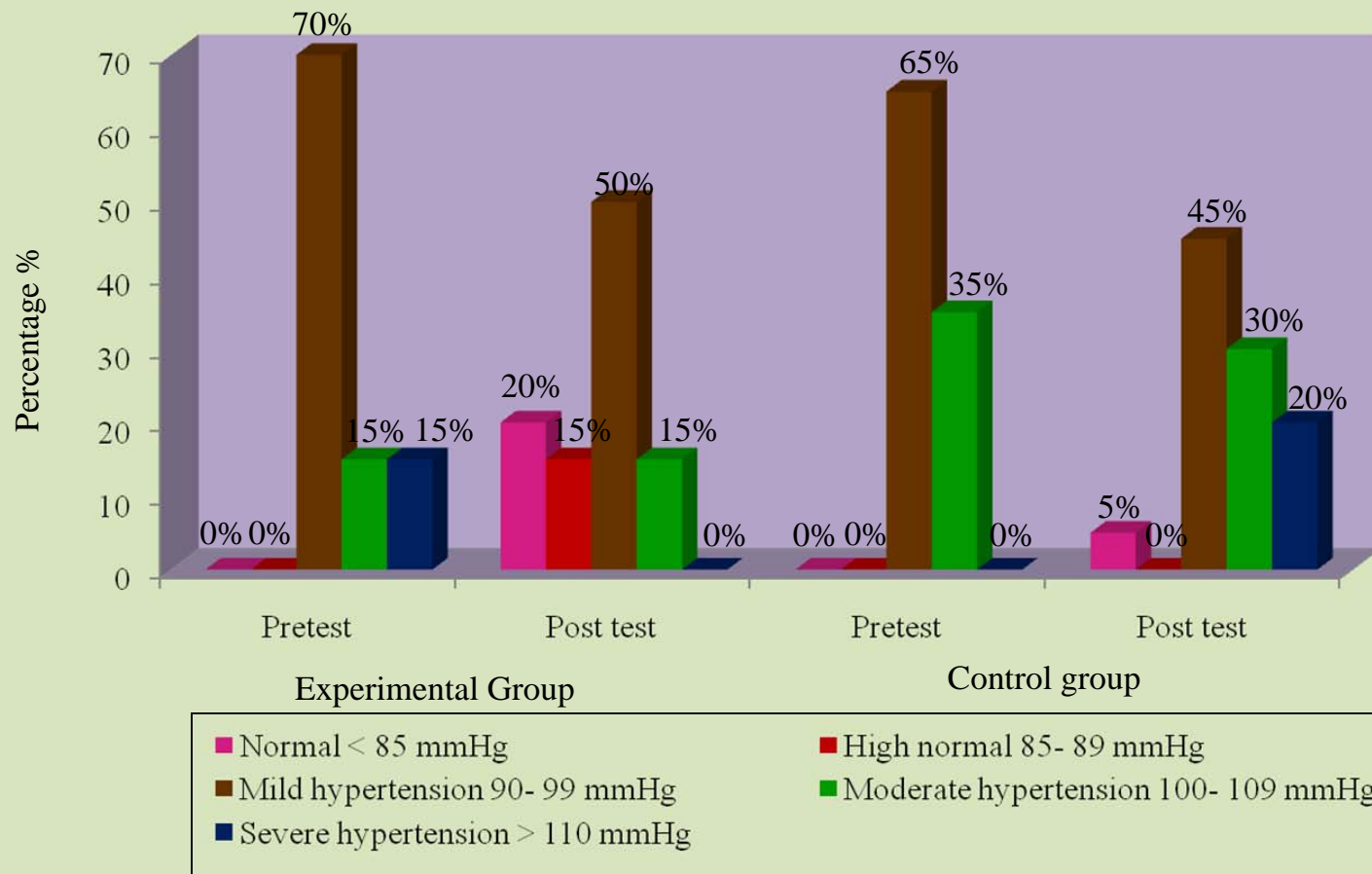


TABLE - 3
DISTRIBUTION OF LEVEL OF STRESS IN EXPERIMENTAL
AND CONTROL GROUP

n₁+ n₂= 40

S. No.	Level of Stress	Experimental Group				Control Group			
		Pretest		Post test		Pretest		Post test	
		No	%	No	%	No	%	No	%
1.	Normal 0- 10	-	-	3	15	-	-	-	-
2.	Mild stress 11- 20	6	30	14	70	6	30	6	30
3.	Moderate stress 21- 30	11	55	3	15	12	60	12	60
4.	Severe stress 31- 40	3	15	-	-	2	10	2	10

Above table shows the level of stress in experimental group, 6(30%) clients had mild stress, 11(55%) clients had moderate stress and 3(15%) clients had severe hypertension in pretest. Where as in post test 3(15%) clients had no stress, 14(70%) clients had mild stress and 3(15%) clients had moderate stress.

Among control group, 6(30%) clients had mild stress, 12(60%) clients had moderate stress and 2(10%) clients had severe stress in pretest and post test.

FIGURE - 8
DISTRIBUTION OF LEVEL OF STRESS OF EXPERIMENTAL AND CONTROL GROUP

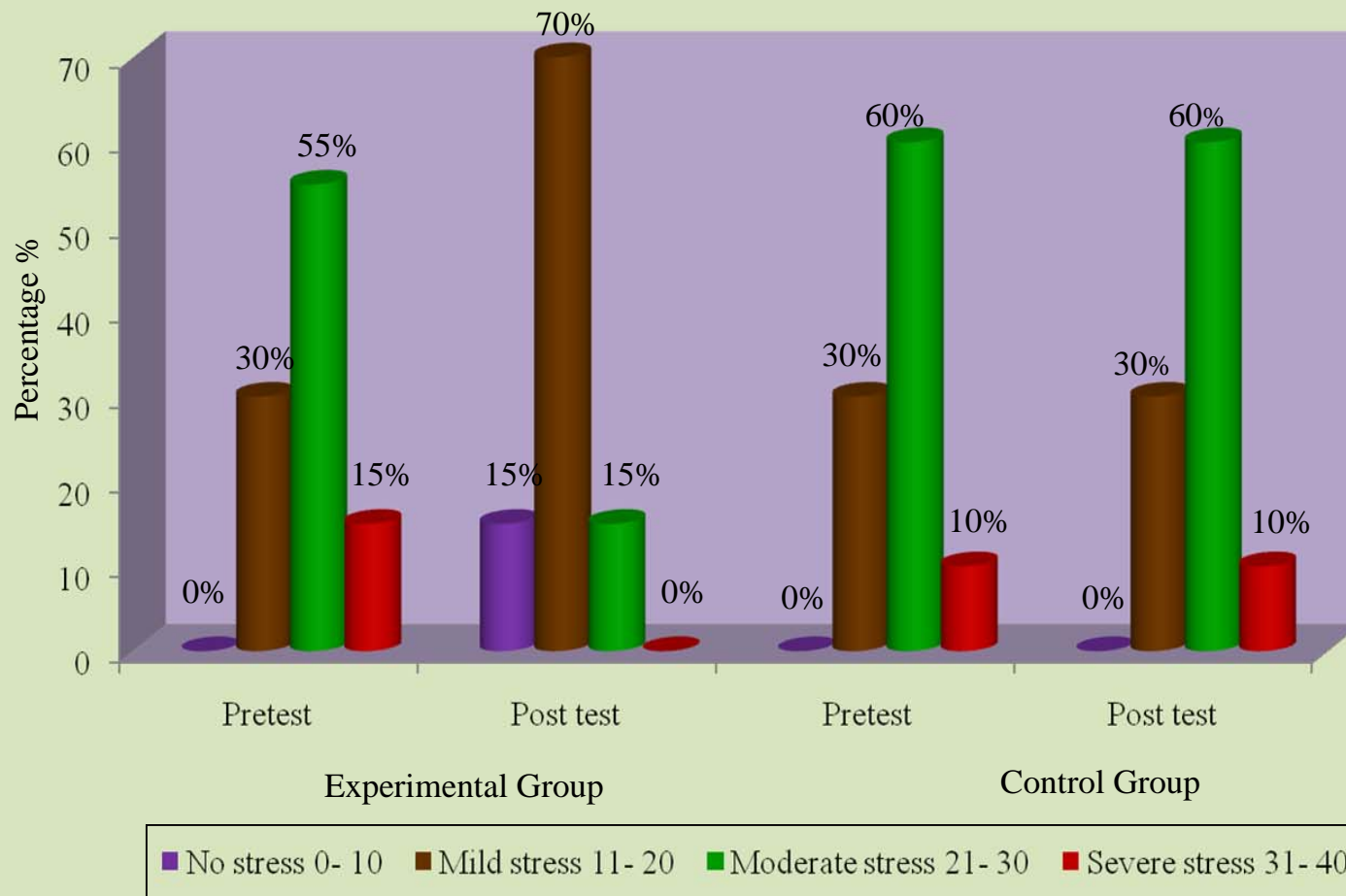


TABLE - 4
COMPARISON OF LEVEL OF BLOOD PRESSURE BETWEEN
THE EXPERIMENTAL AND CONTROL GROUP

n= 40

S.No.	Blood Pressure	Group	Mean	Standard Deviation	Calculated Value of 'Z'	Tabulated Value of 'Z' at 5% Level of Significance
1.	Systolic blood pressure	Experimental	142	13.14	2.1	1.96
		Control	150	9.06		
2.	Diastolic blood pressure	Experimental	91	5.73	2.0	1.96
		Control	95	6.78		

The calculated value of 'Z' is greater than the tabulated value of 'Z' at 5% level of significance. So the null hypothesis is rejected. It is concluded that there is a significant difference in the level of blood pressure between experimental and control group.

TABLE - 5
COMPARISON OF LEVEL OF STRESS BETWEEN THE
EXPERIMENTAL AND CONTROL GROUP

n= 40

Group	Mean	Standard deviation	Calculated value of 'Z'	Tabulated value of 'Z' at 5% level of significance
Experimental	17	7.74	3.8	1.96
Control	24	4.57		

The calculated value of 'Z' is greater than the tabulated value of 'Z' at 5% level of significance. So the null hypothesis is rejected. It is concluded that there is a significant difference in the level of stress between experimental and control group.

TABLE - 6
COMPARISON OF LEVEL OF BLOOD PRESSURE WITHIN
THE EXPERIMENTAL GROUP

n= 20

S. No.	Blood pressure	Experimental Group	Mean	Standard Deviation	Calculated Value of 't'	Expected Value of 't' at 5% Level of Significance
1.	Systolic blood pressure	Pre- test	150	14.97	3.1	2.093
		Post- test	142	13.14		
2.	Diastolic blood pressure	Pre- test	97	6.37	4.24	2.093
		Post- test	91	12.3		

The calculated value of 't' is greater than the tabulated value of 't' at 5% level of significance. So the null hypothesis is rejected. There is a significant difference between pretest and post test level of blood pressure in experimental group. It is concluded that Jacobson's progressive muscle relaxation technique is effective in reducing blood pressure among hypertensive clients.

TABLE - 7
COMPARISON OF LEVEL OF STRESS WITHIN THE
EXPERIMENTAL GROUP

n= 20

Experimental Group	Mean	Standard Deviation	Calculated Value of 't'	Expected Value of 't' at 5% Level of Significance
Pre- test	23	4.5	8.28	2.093
Post- test	17	5.06		

The calculated value of 't' is greater than the tabulated value of 't' at 5% level of significance. So the null hypothesis is rejected. There is a significant difference between pretest and post test level of stress in experimental group. It is concluded that Jacobson's progressive muscle relaxation technique is effective in reducing stress among hypertensive clients.

TABLE - 8
ASSOCIATION OF LEVEL OF SYSTOLIC BLOOD PRESSURE
IN EXPERIMENTAL AND CONTROL GROUP WITH
+SELECTED DEMOGRAPHIC VARIABLES

n = 20

S. No	Demographic Variables	Experimental Group			Control Group			Tabulated value of χ^2 at 5% level of significance
		Systolic Blood Pressure		Calculated Value of χ^2	Systolic Blood Pressure		Calculated Value of χ^2	
		Below Median	Above Median		Below Median	Above Median		
1.	Age in years							
	a. Below 60	7	4	<1	8	3	<1	3.84
	b. Above 60	4	5	NS	4	5	NS	
2.	Education							
	a. Illiterate	2	4	<1	5	4	<1	3.84
	b. Literate	9	5	NS	7	4	NS	
3.	Occupation							
	a. Employed	2	1	<1	3	1	<1	3.84
	b. Unemployed	9	8	NS	9	7	NS	
4.	Type of family							
	a. Nuclear	8	7	<1	9	5	<1	3.84
	b. Joint	3	2	NS	3	3	NS	

NS- Not Significant

The calculated value of χ^2 is lesser than the tabulated value of χ^2 at 5% level of significance. So the null hypothesis is accepted. It shows that,

- There is no association between age and level of systolic blood pressure.
- There is no association between education and level of systolic blood pressure.
- There is no association between occupation and level of systolic blood pressure.
- There is no association between type of family and level of systolic blood pressure.

TABLE - 9
ASSOCIATION OF LEVEL OF DIASTOLIC BLOOD PRESSURE
IN EXPERIMENTAL AND CONTROL GROUP WITH
SELECTED DEMOGRAPHIC VARIABLES

n = 20

S. No	Demographic Variables	Experimental Group			Control Group			Tabulated value of χ^2 at 5% level of significance
		Diastolic Blood Pressure		Calculated Value of χ^2	Diastolic Blood Pressure		Calculated Value of χ^2	
		Below Median	Above Median		Below Median	Above Median		
1.	Age in years							
	a. Below 60	7	4	<1	4	7	<1	3.84
	b. Above 60	5	4	NS	4	5	NS	
2.	Education							
	a. Illiterate	4	2	<1	2	7	<1	3.84
	b. Literate	8	6	NS	5	6	NS	
3.	Occupation							
	a. Employed	2	1	<1	2	2	<1	3.84
	b. Unemployed	10	7	NS	6	10	NS	
4.	Type of family							
	a. Nuclear	11	4	<1	6	8	<1	3.84
	b. Joint	2	3	NS	2	4	NS	

NS- Not Significant

The calculated value of χ^2 is lesser than the tabulated value of χ^2 at 5% level of significance. So the null hypothesis is accepted. It shows that,

- There is no association between age and level of diastolic blood pressure.
- There is no association between education and level of diastolic blood pressure.
- There is no association between occupation and level of diastolic blood pressure.
- There is no association between type of family and level of diastolic blood pressure.

TABLE - 10
ASSOCIATION OF LEVEL OF STRESS IN EXPERIMENTAL
AND CONTROL GROUP WITH SELECTED DEMOGRAPHIC
VARIABLES

n = 20

S. No.	Demographic Variables	Experimental Group			Control Group			Tabulated value of χ^2 at 5% level of significance
		Level of Stress		Calculated Value of χ^2	Level of Stress		Calculated Value of χ^2	
		Below Median	Above Median		Below Median	Above Median		
1.	Age in years							
	a. Below 60	6	5	<1	9	2	<1	3.84
	b. Above 60	5	4	NS	6	3	NS	
2.	Education							
	a. Illiterate	4	2	<1	6	3	<1	3.84
	b. Literate	6	8	NS	9	2	NS	
3.	Occupation							
	a. Employed	1	2	<1	3	1	<1	3.84
	b. Unemployed	8	9	NS	13	3	NS	
4.	Type of family							
	a. Nuclear	9	6	<1	12	2	1.27	3.84
	b. Joint	2	3	NS	3	3	NS	

NS- Not Significant

The calculated value of χ^2 is lesser than the tabulated value of χ^2 at 5% level of significance. So the null hypothesis is rejected. It shows that,

- There is no association between age and level of stress.
- There is no association between education and level of stress.
- There is no association between occupation and level of stress.
- There is no association between type of family and level of stress.

CHAPTER V

RESULTS AND DISCUSSION

The study intends to assess the effectiveness of Jacobson's progressive muscle relaxation technique in reducing blood pressure and stress among hypertensive clients. The findings of the study have been discussed with reference to the objectives stated in chapter I.

1. To assess the level of blood pressure and stress in both experimental and control group

The level of blood pressure and stress in both experimental and control group were assessed by using sphygmomanometer and modified Sheldon Cohen's perceived stress scale.

Table (2) shows the pretest level of systolic blood pressure in experimental and control group. In experimental group, 17(85%) clients had mild hypertension, 2(10%) clients had moderate hypertension and 1(5%) client had severe hypertension. Where as in control group, 17(85%) clients had mild hypertension, 2(10%) clients had moderate hypertension and 1(5%) client had severe hypertension.

Table (2) shows the pretest level of diastolic blood pressure in experimental and control group. In experimental group, 14(70%) clients had mild hypertension, 3(15%) clients had moderate hypertension and 3(15%) clients had severe hypertension. Where as in control group, 13(65%) clients had mild hypertension and 7(35%) clients had moderate hypertension.

Table (3) shows the pretest level of stress in experimental and control group. In experimental group, 6(30%) clients had mild stress, 11(55%) clients had moderate stress and 3(15%) clients had severe hypertension. Where as in control group, 6(30%) clients had mild stress, 12(60%) clients had moderate stress and 2(10%) clients had severe stress.

A prospective cohort study was estimated in the residual risk for hypertension among 1298 older US adults from the Framingham Study who were aged 55 to 65 years shows, the residual lifetime risks for developing stage 1 high blood pressure ($\geq 140/90$ mm Hg) were 90% in 55 to 65year old participants. The risk for developing hypertension was approximately 60% higher for men than women. In contrast, the residual lifetime risk for stage 2 high blood pressure ($\geq 160/100$ mm Hg) was considerably lower in both sexes, likely due to a marked increase in management of individuals with substantially elevated blood pressure (**Ramachandran S. Vasan, 2002**).

2. To reassess the level of blood pressure and stress in both experimental and control group

The level of blood pressure and stress in both experimental and control group were reassessed by using sphygmomanometer and modified Sheldon Cohen's perceived stress scale.

Table (2) shows post test level of systolic blood pressure in experimental and control group. In experimental group, 3(15%) clients had normal level of systolic blood pressure, 5(25%) clients had high normal level of systolic blood pressure and 10(50%) clients had mild hypertension, 1(5%) client had moderate hypertension and 1(5%) client had severe hypertension. Where as in control group, 1(5%) client had

high normal level of systolic blood pressure, 15(75%) clients had mild hypertension and 4(20%) clients had moderate hypertension.

Table (2) shows post test level of diastolic blood pressure in experimental and control group. In experimental group, 4 (20%) clients had normal level of diastolic blood pressure, 3(15%) clients had high normal level of diastolic blood pressure and 10(50%) clients had mild hypertension and 3(15%) clients had moderate hypertension. Where as in control group, 1(5%) client had normal level of diastolic blood pressure, 9(45%) clients had mild hypertension and 6(30%) clients had moderate hypertension and 4(20%) clients had severe hypertension.

Table (3) shows post test level of stress in experimental and control group. In experimental group, 3(15%) clients had no stress, 14(70%) clients had mild stress and 3(15%) clients had moderate stress. Where as in control group, 6(30%) clients had mild stress, 12(60%) clients had moderate stress and 2(10%) clients had severe stress.

3. To compare the level of blood pressure and stress in both experimental and control group

Table (4) reveals that the calculated value of 'Z' (2.1 and 2.0) is greater than the tabulated value of 'Z' (1.96) at 5% level of significance. It is concluded that there is a significant difference in the level of blood pressure between experimental and control group.

Table (5) reveals that the calculated value of 'Z' (3.8) is greater than the tabulated value of 'Z' (1.96) at 5% level of significance. It is concluded that there is a significant difference in the level of stress between experimental and control group.

A study examined the effects of progressive muscle relaxation on blood pressure of hypertensive clients. After collection of baseline data, 22 clients received group relaxation training followed by individual monitoring sessions over a 6-week period. The 22 persons in the control group did not receive relaxation training. The group instructed in relaxation had a lower mean systolic blood pressure than the nontrained group at 4- month follow-up. While the relaxation-trained group showed a significant decrease in diastolic pressure from baseline to follow-up, the difference between trained and non-trained groups at follow-up was significant. Relaxation taught initially in group with individual follow-up visits, resulted in continued practice of relaxation and subsequent lowering of blood pressure in subjects with essential, uncomplicated hypertension (Nola J. Pender, 2007).

4. To assess the effectiveness of Jacobson's progressive muscle relaxation technique in experimental group

The effectiveness of Jacobson's progressive muscle relaxation technique in experimental group was assessed by using paired 't' test.

Table (6) implies that the calculated value of 't' (3.1 and 4.24) is greater than the tabulated value of 't' (2.093) at 5% level of significance. There is a significant difference between pretest and post test level of blood pressure in experimental group. It is concluded that Jacobson's progressive muscle relaxation technique is effective in reducing blood pressure among hypertensive clients.

Table (7) implies that the calculated value of 't' (8.28) is greater than the tabulated value of 't' (2.093) at 5% level of significance. There is a significant difference between pretest and post test level of stress in

experimental group. It is concluded that Jacobson's progressive muscle relaxation technique is effective in reducing stress among hypertensive clients.

A quasi experimental study examined the effects of progressive muscle relaxation on blood pressure and psychological status in clients with essential hypertension. The researcher recruited a convenience sample 40 subjects from a hypertension outpatient clinic, in that 20 subjects received progressive muscle relaxation training once a week and practiced at home daily for 4 weeks. Progressive muscle relaxation (PMR) training had an immediate effect, reducing systolic blood pressure 5.44mmHg, diastolic blood pressure 3.48mmHg. After 4 weeks of PMR training, further decreases in systolic blood pressure 5.1mmHg, diastolic blood pressure 3.1mmHg occurred. PMR significantly lowered patients' perception of stress and it enhanced their perception of health. PMR is beneficial for patients with essential hypertension (**Sheila Sheu, 2003**).

5. To associate the findings with selected demographic variables

Chi- square test was used to identify the influence of selected demographic variables on clients with hypertension.

Table (8) shows the association of level of systolic blood pressure in both groups with selected demographic variables. The calculated value of χ^2 is lesser than the tabulated value of χ^2 at 5% level of significance. It is concluded that, there is no association between age, education and occupation, type of family and level of systolic blood pressure.

Table (9) shows the association of level of diastolic blood pressure in both groups with selected demographic variables. The calculated value of χ^2 is lesser than the tabulated value of χ^2 at 5% level of significance. It

is concluded that, there is no association between age, education and occupation, type of family and level of diastolic blood pressure.

Table (10) shows the association of level of stress in both groups with selected demographic variables. The calculated value of χ^2 is lesser than the tabulated value of χ^2 at 5% level of significance. It is concluded that, there is no association between age, education and occupation, type of family and level of stress.

A cross sectional study was estimated the prevalence of hypertension and examined its association with some socio economic factors in Bavi district, Vietnam. A representative sample consist of 2000 adults aged 25-64 years were selected randomly and surveyed in 2002. Socio economic status of the study samples was estimated by assessing their educational, occupational and economic conditions. The prevalence of hypertension was 14.1%. Only 17.4% of them were aware of their hypertensive status. Men were hypertensive more often than women and age was positively associated with hypertension. Among men those with lower educational, occupational status and richer socio economic status were more likely to be hypertensive. More women with lower socio economic status were hypertensive (**Minch. V, 2005**).

CHAPTER VI

SUMMARY, RECOMMENDATIONS AND NURSING IMPLICATIONS

SUMMARY

Hypertension means high pressure in the arteries. An elevation of blood pressure increases the risk of developing heart disease, renal disease, eye damage and stroke. Chronic stress has been implicated in the cause of hypertension. Therefore, stress reduction is useful for treating hypertension. Progressive muscle relaxation is a widely used physical-based approach. It has also been used for reducing blood pressure and stress.

The investigator in this study assessed the effectiveness of Jacobson's progressive muscle relaxation technique in reducing blood pressure and stress among hypertensive clients. The samples were selected by convenience sampling technique. The sample size was 40, each experimental and control group had 20 samples.

Extensive review of literature, professional experience and expert guidance from the field of community health nursing led the investigator to design methodology. The conceptual frame work was developed for this study based on modified Betty Neumen's health care system model.

The tools used for the study are demographic data, to get general information, sphygmomanometer to measure the level of blood pressure and modified Sheldon Cohen's perceived stress scale to assess the level of stress.

After obtaining the content validity from the experts, the pilot study was conducted along with the reliability of tools were tested. The findings from the pilot study established the practicability and feasibility hence; the investigator proceeded for the main study. Descriptive statistics was used to analyze the frequency, mean and standard deviation of blood pressure and stress. Inferential statistics were used to determine the relationship, association and comparison. In inferential statistics ‘Z’ test, paired ‘t’ test and chi- square test were used.

Jacobson’s progressive muscle relaxation technique was given to the experimental group for one month period, whereas in control group there is no administration of Jacobson’s progressive muscle relaxation technique. The findings revealed that there was a reduction in the level of blood pressure and stress among experimental group clients.

The overall experience of conducting this study was satisfying as there was good co- operation from the participants. The participants were satisfied and happy with the intervention they received. The study was a new experience for the investigator.

The present study shows that Jacobson’s progressive muscle relaxation technique is effective in reducing blood pressure and stress among hypertensive clients.

RECOMMENDATIONS

The study recommends the following for further research:

- A similar study can be undertaken on a larger sample.
- A comparative study can be done between the effectiveness of various non pharmacological measures for hypertension.

- A longitudinal study can be undertaken to see the long term effectiveness of Jacobson's progressive muscle relaxation technique on blood pressure and stress among hypertensive clients.
- A similar study can be conducted among different population in different settings.
- A descriptive study can be conducted on prevalence of hypertension in selected areas.

NURSING IMPLICATIONS

Many would like to avoid pharmacological or surgical method to treat hypertension and this study may contribute towards the popularity of non pharmacological methods to better reduction of blood pressure and stress among hypertensive clients.

The investigator has drawn the following implications from the study, which is of vital concern for nursing practice, nursing education, nursing administration and nursing research.

COMMUNITY HEALTH NURSING PRACTICE

- Nurses can provide holistic care with non pharmacological method to treat hypertension like Jacobson's progressive muscle relaxation technique which is genuinely holistic, with no side effects.
- Nurses can prepare the risk group like old age people, obese person and alcoholic people to do Jacobson's progressive muscle relaxation technique in the preventive aspect.
- Nurses can develop evidenced based practice patterns, Jacobson's progressive muscle relaxation technique become an integral nursing intervention based on identified principles.

- Nurses can play an important role in primary health care by early detection and prevention of hypertension. Jacobson's progressive muscle relaxation technique can be used as a means of health promotion on the hypertensive clients.
- Nurses can encourage the practice of Jacobson's progressive muscle relaxation technique in reducing blood pressure and stress among hypertensive clients and can minimize the requirement of surgical or medical intervention.

NURSING EDUCATION

- The nursing curriculum should be updated with inclusion of topics on non pharmacological management of hypertension.
- Emphasize education for nurses in non pharmacological measures to treat hypertension like Jacobson's progressive muscle relaxation technique as a part of holistic care.
- Periodic conference, seminar, workshop, and symposium can be arranged regarding non pharmacological measures to make nursing professional competent enough to meet the ever changing needs of the society.
- Make available literature related to Jacobson's progressive muscle relaxation technique in reducing blood pressure and stress among hypertensive clients in the library for students.

NURSING ADMINISTRATION

- Nurse administrator should take more responsibility to inculcate notions of health care in the clients.
- Nurse administrator should motivate the staff nurses to encourage their clients regarding the use of non pharmacological and complementary therapies to the hypertension.

- Nurse administrator should organize in- service education programme for nurses about non pharmacological measures to reduce blood pressure and stress among hypertensive clients.
- Nurse administrator should make arrangement to see that sufficient manpower, money and materials are available to provide uninterrupted quality care.

NURSING RESEARCH

- Nurse researcher should be aware about the new trends and existing health care system.
- Emphasis should be laid on research in the area of non pharmacological measures to reduce blood pressure and stress among hypertensive clients.
- The study can be issued for further reference; it may form a base for further study in the field.

BIBLIOGRAPHY

BOOKS

1. Basavanthappa, B.T. (2003). *Medical Surgical Nursing*. 1st edition. New Delhi: Jaypee Brothers.
2. Black, M. Joyce et al., (2005). *Medical Surgical Nursing*. 7th edition. Philadelphia: W.B. Saunders Company.
3. Burnner and Suddardh. (2008). *Medical Surgical Nursing*. 11th edition. Philadelphia: Lippincot Williams & Wilkins.
4. Cheryl Jones. (2009). *Principles and Practice of Psychiatric Nursing*. 1st edition. New Delhi: Harcerert Publications.
5. Craven Ruth, F. (2000). *Fundamentals of Nursing*. 3rd edition. Philadelphia: Lippincott Williams & Wilkins.
6. Eliopoulos Charlotte. (2005). *Gerontological Nursing*. 6th edition. Philadelphia: Lippincott Williams & Wilkins.
7. Kozier Barbara. (2006). *Fundamentals of Nursing*. 7th edition. New Delhi: Dorling Kindersley publications.
8. Mahajan, B.K. (2003). *Methods in Biostatistics*. 5th edition. New Delhi: Jaypee Brothers.
9. Pillai. (1997). *Statistics*. 1st edition. New Delhi: Chand and company.
10. Polit and Beck. (2004). *Nursing Research Principles and Methods*. 7th edition. Philadelphia: Lippincott Williams & Wilkins.
11. Park, K. (2005). *Text Book of Preventive and Social Medicine*. 18th edition. Jabalpur: M/s Banarsidas Bhanot Publishers.
12. Potter and Perry. (2007). *Basic Nursing* .6th edition. Missouri: Mosby publications.
13. Prabhakar, G.N. (2001). *Biostatistics*. 1st edition. New Delhi: Jaypee Brothers.

14. Rogers Poppeu. (2000). *Behaviour Relaxation Training and Assessment*. 2nd edition. SAGE Publishers.
15. Schener, C. Jeanne. (1995). *Introductory Medical Surgical Nursing*. 6th edition. Philadelphia: J.B Lippincott Company.
16. Smeltzer, S.C., Bare, B.G. (2001). *Text Book of Medical Surgical Nursing*. 9th edition. Philadelphia: Lippincott Williams and Wilkins.
17. Sr. Nancy. (1997). *Principles and practice of Nursing*. 5th edition. Indore: N.R publications.
18. Sunder Rao, P.S.S. (2004). *An Introduction to Biostatistics*. 3rd edition. New Delhi: Practice Hall Publications.
19. Townsend, M.C. (2005). *Psychiatric Mental Health Nursing*. 5th edition. Philadelphia: Davis Publishers.
20. Wesley. (1992). *Nursing Theories and Models*. 2nd edition. Pennsylvania: Spring house publications.

JOURNALS

21. Bell, J.A. (2000). Relaxation Technique: Is it Effective? *Physiotherapy*, 86(9), 473-478.
22. Borkovec, T.D. (2002). Critical Procedural Variables Related to the Physiological Effects of Progressive Relaxation. *Behaviour Research and Therapy*, 17 (2), 119-125.
23. Charlotte Nath. (2007). Effects of Individual and Group Relaxation Therapy on Blood Pressure in Essential Hypertensives. *Research in Nursing and Health*, 2 (3), 119- 123.
24. Collins, J.A., Rice, V.H. (1997). Effects of Relaxation Intervention in Phase II Cardiac Rehabilitation: Replication and Extension. *Heart lung*, 26(1), 31-44.
25. Dayalal Patidar. (2009). Stress Management. *Nightingale Nursing Times*, 5 (8), 45- 47.

26. Deewakar Sharma. (2006). Study of Prevalence, Awareness, and Control of Hypertension. *Indian Heart Journal*, 58 (1), 34-37.
27. Dellinger, A. (2005). Validity and the Review of Literature. *Research in the Schools*, 12(2), 41-54.
28. Diana, S. Lau. (2005). Characterization of Systemic Hypertension. *The American Journal of Cardiology*, 96 (4), 570-573.
29. Douglas Carroll. (2001). Blood Pressure Reactions to Acute Psychological Stress and Future Blood Pressure Status. *Journal of Biobehavioural Medicine*, 63,737-743.
30. Goldstein. (2004). Home Relaxation Techniques for Essential Hypertension. *Psychosomatic Medicine*, 46 (5), 398-414.
31. Gupta, R. (2004). Trends in Hypertension Epidemiology in India. *Journal of Hum Hypertens*, 18, 73-78.
32. Jacob David, M. (2001). Relaxation Therapy for Hypertension. *Annals of Behavioral Medicine*, 13 (1), 5-17.
33. Janice, L. Hastrup. (2007). Parental Hypertension and Cardiovascular Response to Stress in Healthy Young Adults. *Psychophysiology*, 19 (6), 615- 622.
34. Jay, W. Markes. (2010). Prevalence, Awareness, Control, and Associations of Arterial Hypertension. *American Journal of Hypertension*, 23 (4), 347-350.
35. Mac Mohan S. (2000). Blood pressure, stroke, and coronary heart disease. *The Lancet- Elsevier*, 335 (8692), 765-774.
36. Mathar Mohideen. (2009). Stress Management. *Nightingale Nursing Times*, 5(7), 36-41.
37. Nola, J. Pender. (2007). Physiologic Responses of Clients with Essential Hypertension to Progressive Muscle Relaxation Training. *Research in Nursing and Health*, 7 (3), 197–203.

38. Paul Yung. (2001). Relaxation Training as Complementary Therapy for Mild Hypertension Control. *Complementary Therapies in Nursing and Midwifery*, 7 (2), 59-65.
39. Ramachandran, S. Vasan. (2002). Residual Lifetime Risk for Developing Hypertension in Middle-aged Women and Men. *The Journal of the American Medical Association*, 287 (8), 1003-1010.
40. Rowa, K., Antony, M.M. (2005). Psychological Treatments for School Phobia. *Canadian Journal of Psychiatry*, 50(6), 308-316.
41. Sadhukhan. (2005). Multifactorial Analysis of Blood Pressure Variation in Rural Community of West Bengal. *Indian Journal of Community Medicine*, 30(2), 57-59.
42. Salt, V.L et al., (2007). Simple Physiological Relaxation and Jacobson's Progressive Relaxation Technique Comparison. *Physiotherapy*, 83(4), 200- 207.
43. Shashank Joshi., Rakesh Parikh. (2007). Prevalence of hypertension. *Times of India*, 69(18), 15- 16.
44. Sheila Sheu. (2003). Effects of Progressive Muscle Relaxation on Blood Pressure and Psychosocial Status for Clients with Essential Hypertension. *Holistic Nursing Practice*, 17 (1), 41-47.
45. Subburam, R. (2009). Prevalence of Hypertension and Correlates among Adults of 45-60 Years in a Rural Area of Tamil Nadu. *Indian Journal of Public health*, 53(1), 37-40.
46. Whelton, P.K. (1999). Global burden of hypertension: analysis of worldwide data. *The Lancet- Elsevier*, 365 (9455), 217-223.
47. Wilkind, I., Halling, K. (2000). Does Lowering the Blood Pressure Improve the Mood? Quality of Life Results from the Hypertension Optimal Treatment. *Blood Pressure*, 6, 357-364.

NET REFERENCE

48. Arun, K. Sharma. (2006). Predictors of Hypertension. *Indian Heart Journal*. Retrieved on 3 April, 2010 from <http://www.jhsph.edu.org/>
49. Bruno Zampaglione. (1996). Hypertensive Urgencies and Emergencies. *Prevalence and Clinical Presentation*. Retrieved on 30 May, 2010 from <http://www.ash-us.org/>
50. Charles, R. Carlson. (2000). Muscle stretching as an alternative relaxation training procedure. *Journal of Behavior Therapy and Experimental Psychiatry*. Retrieved on 4 Oct, 2010 from <http://www.sciencedirect.com>
51. Hyman Ruth, B. (1999). The Effects of Relaxation Training on Clinical Symptoms. *The Official Journal of Eastern Nursing Research*. Retrieved on 11 Sep, 2010 from <http://www.ishib.org>
52. Myeong Soo. (2007). Relaxation Therapy and High Blood Pressure. *Journal of Hypertension*. Retrieved on 30 Aug, 2010 from <http://www.jhypertension.com>
53. Minch, V. (2005). Gender Difference in Prevalence and Socioeconomic Determinants of Hypertension. *Journal of Human Hypertension*. Retrieved on 3 June, 2010 from <http://www.nhlbi.nih.gov/hbp.htm>
54. Robert, H. Schneider. (2005). A Randomized Controlled Trial of Stress Reduction for Hypertension in Older African Americans. *Hypertension*. Retrieved on 22 June, 2010 from <http://www.hypertensionfoundation.org/>
55. Tanja, G.M., Vrijkotte. (2000). Effects of Work Stress on Ambulatory Blood Pressure, Heart Rate, and Heart Rate Variability. *Hypertension*. Retrieved on 30 July, 2010 from <http://www.hypertensionfoundation.org/>

56. Thomas, G. Pickering. (2009). Mental Stress as a Causal Factor in the Development of Hypertension and Cardiovascular Disease. *Current Hypertension Reports*. Retrieved on 5 June, 2010 from <http://www.cdc.gov/nchs>
57. Wadden. (2004). Relaxation Therapy for Hypertension. *Journal of Psychosomatic Research*. Retrieved on 9 Sep, 2010 from <http://www.psycnet.apa.org>
58. World Health Organization. (2002). Reducing Risks, Promoting Healthy Life. *The World Health Report*. Retrieved on 12 April, 2010 from <http://www.who.int/trs862.html>

APPENDIX – D

FORMAT FOR CONTENT VALIDITY

Name of the Expert :

Address :

Total content for the tool : Adequate / Not Adequate

Kindly validate each tool and (✓) if it is applicable.

Sr. No	No. of Tool / Section	Strongly Agree	Agree	Need Modification	Remarks

Signature of the expert with date

APPENDIX – E
LIST OF EXPERTS FOR CONTENT VALIDITY

- 1. Prof. (Sr.) Carmel, M. Sc (N).,**
Vice Principal,
ST.Joseph School of Nursing
JMMC, Thrissur District.

- 2. Prof. (Mrs.) Christ Megala, M. Sc (N).,**
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- 3. Prof. (Mrs.) S.Girija Kumari, M. Sc (N).,**
Professor,
SRIPMS College of Nursing,
Coimbatore.

- 4. Prof. (Mrs.) Margret Renjitham, M. Sc (N), Ph.D.,**
Principal,
Nehru college of Nursing,
Tirunelveli.

- 5. Prof. (Mrs.). Saramma Samuel, M. Sc (N).,**
Principal,
RVS College of Nursing
Sulur, Coimbatore.

APPENDIX - F
CERTIFICATE FOR JACOBSON’S PROGRESSIVE
MUSCLE RELAXATION TECHNIQUE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the Jacobson’s progressive muscle relaxation technique selected by **K. M. KASTHURI**, IInd year M.Sc Nursing Student of K.G. College of Nursing for dissertation “**A STUDY TO ASSESS THE EFFECTIVENESS OF JACOBSON’S PROGRESSIVE MUSCLE RELAXATION TECHNIQUE ON BLOOD PRESSURE AND STRESS AMONG HYPERTENSIVE CLIENTS AT VILANKURICHI, COIMBATORE**” is validated for its appropriateness by **Mr. S. RAJESH KANNAN, B.A, M.P.Ed, M. Phil, C.F.C, PGDY.**, Qualified Fitness Consultant.

Signature

APPENDIX - G
CERTIFICATE FOR ENGLISH EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the tool developed by **K. M. KASTHURI**, IInd year M.Sc Nursing Student of K.G. College of Nursing for dissertation “**A STUDY TO ASSESS THE EFFECTIVENESS OF JACOBSON’S PROGRESSIVE MUSCLE RELAXATION TECHNIQUE ON BLOOD PRESSURE AND STRESS AMONG HYPERTENSIVE CLIENTS AT VILANKURICHI, COIMBATORE**” is edited for English language appropriateness by **Mrs. JOSEPHINE PRINCY M.A, M. Phil.,**

Signature

APPENDIX - H
CERTIFICATE FOR TAMIL EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the tool developed by **K. M. KASTHURI**, IInd year M.Sc Nursing Student of K.G. College of Nursing for dissertation “**A STUDY TO ASSESS THE EFFECTIVENESS OF JACOBSON’S PROGRESSIVE MUSCLE RELAXATION TECHNIQUE ON BLOOD PRESSURE AND STRESS AMONG HYPERTENSIVE CLIENTS AT VILANKURICHI, COIMBATORE**” is edited for Tamil language appropriateness by **Mr. PRABU, M.A, Phil.**,

Signature

APPENDIX- I

TOOL

SECTION- A

DEMOGRAPHIC VARIABLES

Instruction:-

The investigator place a tick mark in the corresponding boxes according to the response of the subjects.

Sample No. : _____

1. Age

- a. 40- 49 years
- b. 50- 59 years
- c. 60- 65 years

2. Sex

- a. Male
- b. Female

3. Education

- a. Illiterate
- b. Primary school
- c. Secondary school
- d. Higher secondary school
- e. Degree

4. Occupation

- a. Employed
- b. Unemployed

5. Income

- a. < 2000
- b. 2001- 4000
- c. 4001- 6000
- d. > 6001

6. Marital status

- a. Single
- b. Married
- c. Divorced
- d. Widow

7. Type of family

- a. Nuclear
- b. Joint

SECTION - B
BLOOD PRESSURE MEASUREMENT

Level of Blood Pressure:

Reading 1 - _____ mmHg

Reading 2 - _____ mmHg

SECTION - C

MODIFIED SHELDON COHEN'S PERCEIVED STRESS SCALE

The perceived stress scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful.

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by tick mark how often you felt or thought a certain way.

Perceived stress scale scores are obtained by reversing responses (e.g., 0= 4, 1= 3, 2= 2, 3= 1, &4= 0) to the four positively stated items (4, 5, 7&8) and summing across all scale items.

S.No.	CONTENT	0	1	2	3	4
1.	How often have you been upset because of something that happened unexpectedly?					
2.	How often have you felt that you were unable to control the important things in your life?					
3.	How often have you felt nervous and "stressed"?					
4.	How often have you felt confident about your ability to handle your personal problems?					
5.	How often have you felt that things were going your way?					

6.	How often have you found that you could not cope with all the things that you had to do?					
7.	How often have you been able to control irritations in your life?					
8.	How often have you felt that you were on top of things?					
9.	How often have you been angered because of things that were outside of your control?					
10.	How often have you felt difficulties were piling up so high that you could not overcome them?					

KEY

- 0 = Never
- 1 = Almost Never
- 2 = Sometimes
- 3 = Fairly Often
- 4 = Very Often

SCORE

- 0-10 = No stress
- 11- 20 = Mild stress
- 21- 30 = Moderate stress
- 31- 40 = Severe stress

APPENDIX- J

கருவி
பிரிவு- அ

சுய விபரம்

குறிப்பு:-

ஆய்வாளர் மக்களின் கருத்துக்கேற்ப உரிய கட்டத்தில் (✓) குறியிட வேண்டும்.

மாதிரி எண் : _____

1. வயது

- அ. 40- 49 வயது வரை
- ஆ. 50- 59 வயது வரை
- இ. 60- 65 வயது வரை

2. பாலினம்

- அ. ஆண்
- ஆ. பெண்

3. கல்வி

- அ. கல்வியறிவின்மை
- ஆ. ஆரம்பநிலைக் கல்வி
- இ. உயர் நிலைக் கல்வி
- ஈ. மேனிலைக் கல்வி
- உ. பட்டப்படிப்பு

4. தொழில்

- அ. பணியில் உள்ளவர்
- ஆ. வேலை இல்லாதவர்

5. வருமானம்

- அ. 2000 க்கு கீழ்
- ஆ. 2001 லிருந்து 4000 வரை
- இ. 4001 லிருந்து 6000 வரை
- ஈ. 6001 க்கு மேல்

6. திருமண விபரம்

- அ. திருமணமாகாதவர்
- ஆ. திருமணமானவர்
- இ. விவாகரத்தானவர்
- ஈ. விதவை

7. குடும்பத்தின் வகை

- அ. தனிக் குடும்பம்
- ஆ. கூட்டுக் குடும்பம்

பிரிவு - ஆ
இரத்த அழுத்தத்தை அளத்தல்

இரத்த அழுத்தத்தின் அளவு:

அளவு 1- _____ mmHg

அளவு 2- _____ mmHg

பிரிவு இ

மாறுப்படுத்தப்பட்ட ஷெல்டன் கொகனின் உணரப்பட்ட அழுத்த அளவுகோல்

உணரப்பட்ட அழுத்த அளவுகோலானது பொதுவாக பயன்படுத்தப்படும் உணரப்படும் அழுத்தத்தினை அளக்க உதவும் உளவியல் கருவியாகும். இது ஒருவருடைய வாழ்க்கை எந்த சூழ்நிலையில் அழுத்தமானது என்பதை அளக்க உதவுகிறது.

இந்த அளவுகோலானது உங்களுடைய கடந்த மாத உணர்வுகள் மற்றும் எண்ணங்கள் பற்றிய கேள்விகளை உள்ளடங்கியது. ஒவ்வொரு கேள்விக்கும் நீங்கள் எத்தனை முறை பல்வேறு வழிகளில் உணர்ந்தீர்கள் மற்றும் எண்ணினீர்கள் என்பதை குறிப்பிட வேண்டும்.

உணரப்பட்ட அழுத்த அளவுகோலின் எண்ணிக்கையானது நான்கு (4,5,7 மற்றும் 8) நிச்சயமான கேள்விகளுக்கு பின்னிருந்து முன்னாக கணக்கிடப்பட்டு (எ.கா. 0= 4, 1=3, 2=2, 3=1, 4=0) பின்பு கூட்டப்படுகிறது.

வ.எண்	பொருளடக்கம்	0	1	2	3	4
1.	எத்தனை முறை நீங்கள் எதிர்பார்க்காதது நடந்த போது கவலையடைந்தீர்கள் ?					
2.	எத்தனை முறை நீங்கள் உங்கள் வாழ்க்கையில் சில முக்கியமான நிகழ்வுகளை கட்டுப்படுத்த முடியவில்லை என்று உணர்ந்தீர்கள் ?					
3.	எத்தனை முறை நீங்கள் பதற்றமாக அல்லது அழுத்தமாக இருந்ததாக உணர்ந்தீர்கள் ?					
4.	எத்தனை முறை நீங்கள் உங்களுடைய சொந்த பிரச்சினைகளை நம்பிக்கையாக கையாள முடியும் என்று உணர்ந்தீர்கள் ?					

5.	எத்தனை முறை நீங்கள் சில நிகழ்வுகள் உங்களின் வழியில் செல்வதாக உணர்ந்தீர்கள் ?					
6.	எத்தனை முறை உங்களால் செய்யக் கூடியவற்றை நீங்கள் சமாளிக்க முடியவில்லை என்று கண்டீர்கள் ?					
7.	எத்தனை முறை நீங்கள் உங்களால் உங்கள் வாழ்க்கையில் ஏற்பட்ட எரிச்சலை கட்டுப்படுத்த முடிந்தது ?					
8.	எத்தனை முறை நீங்கள் வாழ்க்கையின் உச்சக்கட்டத்தில் இருந்ததாக உணர்ந்தீர்கள் ?					
9.	எத்தனை முறை நீங்கள் சில நிகழ்வுகள் உங்கள் கட்டுப்பாட்டை மீறி நடந்த போது கோபப்பட்டீர்கள் ?					
10.	எத்தனை முறை நீங்கள் துன்பங்கள் வந்து சேரும் போது உங்களால் மீளமுடியவில்லை என்று உணர்ந்தீர்கள் ?					

குறிப்பு

- 0 - ஒரு போதும் இல்லை
- 1 - பெரும்பாலும் இல்லை
- 2 - சிலசமயங்களில்
- 3 - பொதுவாக அடிக்கடி

எண்ணிக்கை

- 0 - 10 அழுத்தம் இல்லை
- 11 - 20 லேசான அழுத்தம்
- 21 - 30 மிதமான அழுத்தம்
- 31 - 40 அதிகமான அழுத்தம்