

**EFFECTIVENESS OF FOOT MASSAGE UPON THE LEVEL OF BLOOD  
PRESSURE AMONG ELDERLY HYPERTENSIVE CLIENTS**

**BY  
G.KAVITHA**

**A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R.MEDICAL  
UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF  
MASTER OF SCIENCE IN NURSING**

**APRIL 2013**

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PRESSURE AMONG ELDERLY HYPERTENSIVE CLIENTS**

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## **DECLARATION**

I hereby declare that the present dissertation entitled “**Effectiveness of Foot Massage upon the Level of Blood Pressure among Elderly Hypertensive Clients**” is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. Latha Venkatesan**, M.Sc(N)., M.Phil(N)., Ph.D(N)., Principal, Apollo College of Nursing, **Mrs. Kanchana**, M.Sc(N)., M.Sc(Psy)., Reader Medical Surgical Nursing Department , Apollo College of Nursing, Chennai. I also declare that the material of this has not been found in any way, the basis for the award of any degree or diploma in this university or any other university.

**M.Sc(N) II Year**

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## **SYNOPSIS**

A Quasi Experimental Study to Assess the Effectiveness of Foot Massage upon the Level of Blood Pressure among Elderly Hypertensive Clients at Selected Old Age Homes, Chennai.

### **The Objectives of the Study were,**

1. To assess the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
2. To evaluate the effectiveness of foot massage by comparing the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
3. To determine the level of satisfaction among experimental group of elderly hypertensive clients regarding administration of foot massage.
4. To find out the association between selected demographic variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.
5. To find out the association between selected clinical variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

The conceptual frame work for this study is based on Modified King's goal attainment model. An extensive review literature and guidance by the experts formed foundations to the development of the tool

The investigator used the Demographic variable proforma, Clinical variable proforma, observational check list to assess the blood pressure, and rating scale for the level of satisfaction of foot massage to collect the data. The data collection tools were validated and reliability was established. After the pilot study, the data for the main study was collected. The collected data was tabulated and analyzed using descriptive and inferential statistics.

An experimental approach with pre-test, post test quasi experimental design was used. This study was carried out at Little drops home for the aged at Paraniputhur (Experimental group), and St. Thomas Home for senior citizens at Vyasarpathi, Chennai (Control group) upon 60 elderly with hypertension who were collected randomly assigned to control (30) and experimental (30) groups. The data were collected by using the study instruments such as demographic variable proforma, Clinical variable proforma, observational check list to assess the blood pressure, and rating scale for the level of satisfaction of foot massage. The data collection tools were validated and reliability was established. After the pilot study, the data for the main study was collected. The data was tabulated and analyzed by using descriptive and inferential statistics.

### **Major Findings of the Study**

- The study finding reveals that significant percentage of the elderly hypertensive clients were in the age group of >75 years (50%, 20%), the duration of stay in old age home were <1 year (20%, 40%) and number of children were two (33.3%, 30%). Most of them females (53.3%, 56.7%), were illiterate (63.4%,

40%), belongs to Hindu religion (60%, 73.3%) and were in joint family (70%, 43.3%). Majority of the hypertensive clients were widowers (90%, 60%), with nil monthly income (100%, 100%), with spouse not alive (93.3%, 70%) and no spouse resides in same home (100%, 96.7%) in control and experimental group respectively.

- Most of the elderly hypertensive clients had height 151-160cm (36.7%,70%), had weight 46-60kg (60%, 46.7%), had BMI of <25 (56.7%, 56.6%), were consuming non vegetarian diet once in a week (44.4%, 64%), duration of chewing tobacco for more than 10 years (57%, 25%), duration of consuming alcohol (88.9%, 62.5%) and moderate workers (60%, 46.7%). Majority of the elderly hypertensive clients had no habit of chewing tobacco (76.7%, 86.7%), were smokers (70%, 70%), no habit of consuming alcohol (70%, 73.3%), were non vegetarians (90%, 83.3%), were taking drugs (100%,66.7%) and were not on any other complementary therapy (100%, 100%). Significant client has been suffering from hypertension for 1-5 years (36%, 66.7%) and had no family history of hypertension (33.4%, 53.3%) in control and experimental group respectively.
- Significant number of elderly hypertensive clients had mild to moderate systolic blood pressure (40%, 50% & 46.7%, 43.3%) and diastolic blood pressure were mild (60%, 56.4%) before foot massage in control and experimental group respectively. Whereas in experimental group majority of client had normal systolic blood pressure (73.4%) and normal diastolic blood pressure (96.7%) after foot massage.



- The mean and standard deviation of systolic blood pressure were (160.4, 157.7 & 14.64, 11.369) and diastolic blood pressure were (92.2, 92.2 & 5.66, 6.033) before foot massage in control and experimental group respectively. Where as in experimental group after foot massage there was a great reduction in mean and standard deviation, systolic blood pressure were (132.6, 11.10), ( $p < 0.001$ ) and diastolic blood pressure were (81.2, 2.60),  $p < 0.001$ .
- The study results indicates that most of the elderly hypertensive clients were highly satisfied with foot massage (83.3%) and (16.6%) of them were satisfied.
- Chi square test was used to find out the association between selected variables and the level of blood pressure. There was no significant association between the selected demographic variables such as age, gender, education, type of family, marital status, no of children, spouse alive, duration of stay in old age home and pre-test and post test level of blood pressure in the control and experimental group in both systolic and diastolic blood pressure. Null hypothesis  $H_{02}$  was accepted.
- The study results indicates that there is association between selected clinical variable such as history of hypertension ( $\chi^2 = 6.428$ ,  $df = 1$ ), ( $p < 0.05$ ) in pre-test level of diastolic blood pressure in the control group. Hence the null hypothesis  $H_{03}$  is partially rejected with history of hypertension.
- The present study reveals that there is significant association between the selected clinical variable such as history of consuming alcohol ( $\chi^2 = 5.116$ ,  $df = 1$ ), ( $\chi^2 = 4.223$ ,  $df = 1$ ), ( $p < 0.05$ ) in pre-test level of systolic blood pressure and diastolic blood pressure in experimental group. Hence the null hypothesis  $H_{03}$  is partially rejected with regard to history of consuming alcohol.

- The study results indicates that there is significant association between selected clinical variable such as history of other associated disease ( $\chi^2= 6.315$ ,  $df=1$ ), ( $p<0.05$ ) in post test level of systolic blood pressure in experimental group. Hence the null hypothesis  $H_{03}$  is partially rejected with regard to other associated diseases.

### **Recommendations**

The researcher recommends the following studies in the field of nursing research,

- The same study could be conducted on larger samples for better generalization.
- The study could be replicated in different settings.
- A comparative study can be conducted to evaluate the effectiveness of foot massage with other non pharmacological agents and alternative therapies.
- Structured teaching programme can be conducted for the elderly to improve their knowledge.
- A study can be conducted to assess the effectiveness of foot massage in different age group.
- A study can be conducted on the quality of life among hypertensive clients.
- A similar study can be conducted for one month to assess the effectiveness of foot massage.
- A study can be conducted to evaluate the effectiveness of foot massage in the management of cancer pain and post operative pain.

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*Chapter I*  
*Introduction*

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## CHAPTER - I

### INTRODUCTION

#### Background of the Study

*“ You do not heal old age, you protect it, you promote it and you extend it”*

*-Sir James Sterling Ross*

Aging is the natural process of time-related change, which begins with birth and continues throughout life. Old age should be regarded as a normal, inevitable, biological phenomenon. Discoveries in medical science and improved social conditions during the past few decades have increased the life span of man, since many chronic conditions commonly found among the elderly can be managed, limited and even prevented.

Every month, the world's population of persons age 65 and older grows by 800,000 individuals according to a report by the U.S. Census Bureau and the National Institute on Aging (2011). More than one-third of the world's oldest people (80 and above) lived in three countries: China (11.5 million), the United States (9.2 million) and India (6.2 million).

In the last three decades the older adult population has grown twice as fast as the rest of the population. The growth in the older population is expected to continue during the century, and by 2030 there will be 71.5 million older adults representing 20% of the population (Lewis et al, 2007).

Today there are 77 million old people in India. This number is likely to rise to 177 million by 2025. 90% of the older people are from unorganized sector with no social security. 40% of the old people live below poverty line.

Since the older population grows, the burden of the disease in the old age also grows along with them. As per the report of Administration on Aging (2005), the most frequently occurring chronic conditions in the elderly during 2002-2003 were hypertension (51%), diagnosed arthritis (48%), all types of heart disease (31%), any cancer (21%) and diabetes (16%).

Hypertension is the silent killer disease of today and is the commonest reason by an adult to visit the physicians office. Hypertension is defined as an average systolic blood pressure above 140 mm Hg, a diastolic blood pressure above 90 mm Hg, or both. The first recording of human blood pressure came in 1847 when Carl Ludwig inserted a catheter in patient's artery and hooked the catheters to an intervention called kymograph.

Blood pressure is the force of the blood pushing against the walls of the arteries, time the heart beats, it pumps blood into the arteries. Hypertension is the increased pressure in the arterial system.

Del Giudice. (2010) in his research found that the prevalence of hypertension is currently 60%-80%, but it is estimated that it will increase with the projected population growth of older people aged more than 65 years. In the elderly, systolic blood pressure increases because of arterial stiffness occurring with aging. He found out that isolated systolic hypertension and high pulse pressure are more prevalent, and are important risk factors for stroke, coronary heart disease and thus all cause mortality in the elderly.

Frost and Sullivan Statistics. (2005) stated that, approximately 1 billion people worldwide have high blood pressure, and this number is expected to increase to 1.56

billion people by the year 2025. That translates to about 1 out of every 4 adults being affected with hypertension.

Hypertension is one common ailment in adults WHO estimates the high blood pressure leads to over 7 million death each year, about 13% of the total death world wide. According to world Health report 2002, cardiovascular diseases will be the largest cause of death and disability by 2020 in India.

Nursing has a prominent role in helping older adults practice health promotion. Thus it is important for the health professionals to plan for the strategies to reduce blood pressure among elderly clients who are suffering from hypertension. Thus the study is undertaken to assess the effectiveness of foot massage upon blood pressure in elderly hypertensive clients and help them to cope up in their life and keep themselves physically and mentally active.

Massage has been centuries in nearly every culture around the world. It helps to relieve muscle tension, reduce stress and evoke feeling of calmness and it particularly influences the activity of musculoskeletal, circulatory, nervous and lymphatic system. Massage therapy will likely increase the circulation with in the blood vessels, relaxing strokes will concurrently dilate those vessels. The net result of massages simultaneous circulation enhancement and vessel dilation is a reduction in body tension and blood pressure.

As early as 1999, researchers from the Touch Research Institute, the University of Miami School of Medicine and Nova Southeastern University in Florida conducted

the study “High blood pressure and associated symptoms were reduced by massage therapy”.

### **Need for the Study**

Old age is unavoidable in anyone’s life. Nowadays the elderly are left uncared by the family members and relatives and thrown in the old age home. As life expectancy has increased, hundreds of old age homes have sprung up in India. Neglect of parents has become a big issue, so that the Indian government has passed "The maintenance and welfare of parents and senior citizens bill 2006", which makes it imperative for adult children to look after their parents.

In India the estimated percentage of old age above 65 years is 3.8%, when compared to 12% in England. Older adults are more likely to suffer from multiple chronic and disabling illnesses than younger adults.

Hypertension is one common ailment in adults. WHO estimates that high blood pressure leads to 7 million death each year, about 13% of the total death world wide. If people lower their blood pressure they are less likely to die or to have heart attacks and strokes.

The prevalence, awareness, treatment and control of hypertension in the elderly population of Singapore was studied by Rahul Malhotra et al. in the year 2010 and found out that nearly three-fourths (73.9%) of participants were found to have hypertension. Among them 30.8% were unaware that they had hypertension, 32.0% were not being treated for the disease and 75.9% had suboptimal control of their blood

pressure. Thus he concluded that there is a need to improve awareness, treatment and especially control of hypertension among elderly Singaporeans.

According to World Health Organization (WHO) 2002 report, cardiovascular disease will be the largest cause of death and disability by 2010 in India.

Hazarika et al. 2004 revealed about hypertension in the native rural population of Assam, that the prevalence of hypertension was 33.3% and is high.

The Tamilnadu government public health and preventive medicine were conducted 385 camps in rural areas of Tamilnadu between 2002-2003 and 7.98 lakhs people were screened, among them 5.02% was affected with hypertension (public health and preventive medicine 2003).

Complementary medicine use for hypertension is widespread, although patterns of use vary. A series of systematic reviews provide a summary of the current evidence for acupuncture, aromatherapy and massage, homeopathy, meditation, reflexology, herbal medicine, yoga, and several dietary supplements and relaxation techniques. The quantity and quality of individual studies vary widely, but research interest in complementary therapies is increasing, particularly in herbal and nutritional products. Major questions are still to be answered with respect to the effectiveness and appropriate role of these therapies in the management of hypertension.

Massage is the manipulation of superficial layers of muscle and connective tissue to enhance the function and promote relaxation and well-being. The word comes from the French massage “Friction of Kneading”, or from Arabic massage meaning “to

touch, feel or handle” or from Latin massage meaning “massage, dough”. Massage can be applied with the hands, fingers, elbows, knees, forearm, and feet.

Thus the elderly population is constantly increasing in India and they are the target group severely affected by hypertension. Complementary therapy has a major role to play in controlling hypertension. Hence the researcher concentrated on foot massage to control the blood pressure. Therefore by doing foot massage it will help to reduce the physical, social and financial burden at the later stage.

### **Statement of the Problem**

A Quasi Experimental Study to Assess the Effectiveness of Foot Massage upon the Level of Blood Pressure among Elderly Hypertensive Clients at Selected Old Age Homes, Chennai.

### **Objectives of the Study**

1. To assess the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
2. To evaluate the effectiveness of foot massage by comparing the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
3. To determine the level of satisfaction among experimental group of elderly hypertensive clients regarding administration of foot massage.

4. To find out the association between selected demographic variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.
5. To find out the association between selected clinical variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

### **Operational Definitions**

#### **Effectiveness**

In this study effectiveness refers to the significant reduction in the level of blood pressure after administration of foot massage in experimental group as measured in terms of difference between pre test and post test scores.

#### **Foot massage**

It is a technique by which both the feet of the elderly hypertensive clients are held at various positions, stroked gently and rhythmically for 20 min for 5 days to attain a relaxation response.

#### **Blood pressure**

It refers to the force exerted by the blood on the walls of arteries which is measured by an instrument (BP apparatus) called sphygmomanometer.

#### **Hypertension**

It refers to the systolic blood pressure level of 140mmHg and above, diastolic blood pressure level of 90mmHg and above as measured by sphygmomanometer.



### **Elderly clients**

It refers to the elderly people both males and females aged 60 years and above residing at selected old age homes.

### **Old age home**

It is the place where the elderly reside, being away from their home along with the other elderly, run by charitable trusts.

### **Null Hypothesis**

**H<sub>01</sub>** There will be no significant difference in level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage

**H<sub>02</sub>** There will be no significant association between selected demographical variables and level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

**H<sub>03</sub>** There will be no significant association between selected clinical variables and level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

### **Assumptions**

- Elderly are at risk for developing hypertension
- Hypertension is a modifiable major risk factor of stroke, heart attack, heart failure and is a leading cause of chronic renal failure.
- Hypertension can be reduced by exercise, medication and alternative therapies

- Nutritional therapy plays a major role in the reduction of hypertension
- Complication of hypertension are preventable.

### **Delimitations**

- The study will be limited to 4 weeks.
- The study will be limited to elderly hypertensive clients who are residing in selected old age homes, Chennai.
- The study will be limited to elderly hypertensive clients aged 60 years and above.

### **Conceptual Framework**

Interrelated concepts of abstractions assembled together in a rational scheme by virtue of their relevance to a common theme are called as conceptual framework (Polit and Beck, 2008). According to Burns and Grove (2001), conceptual model is a set of highly abstract, related constructs that broadly explains phenomena of interest, expresses assumptions and reflects a philosophical stance. Conceptual framework is a process of ideas, which are formed and utilized for the development of research design. It helps the researcher to know what the data needs to be collected and gives direction to the entire research process.

The conceptual framework of the present study is based on Modified King's Goal Attainment Model. According to Imogene King, nursing is defined as a process of action, reaction and interaction where by nurses and clients share information about their perception in nursing education. Through perceptions and communications they

identify the problems, through which they set goals and take necessary actions. Modified King's goal attainment model is based on the concepts of personal, interpersonal and social systems including Perception, Judgement, Action, Reaction, Interaction and Transaction.

### **Perception**

A person imparts energy from the environment and transforms processes and stores it. The study assumes that there is interpersonal relationship between the nurse researcher and the participants. In this study perception, with reference to the nurse researcher is that there is prevalence of hypertension among the elderly and there is a need for reduction in the level of blood pressure by foot massage. Participants perception is that it imposes a demand among the elderly with hypertension, to do foot massage thereby to reduce their level of blood pressure.

### **Judgement**

Analyzing the areas of action to be carried out. In this study, judgement of the nurse researcher refers to the decision that foot massage may reduce the level of blood pressure among the elderly with hypertension. On the other hand, the participants will agree to do foot massage to control hypertension.

### **Action**

The individual experts perceived energy as demonstrated by observable behaviour, by taking mental or physical action. In this present study, action of the nurse researcher is to perform foot massage. Similar the participants action is the cooperate for foot massage.

**Reaction**

Reaction means developing action and action on perceived choices for goal attainment. In this study, reaction refers to the action of both the nurse researcher and participants i.e. expression of willingness in the foot massage respectively.

**Interaction**

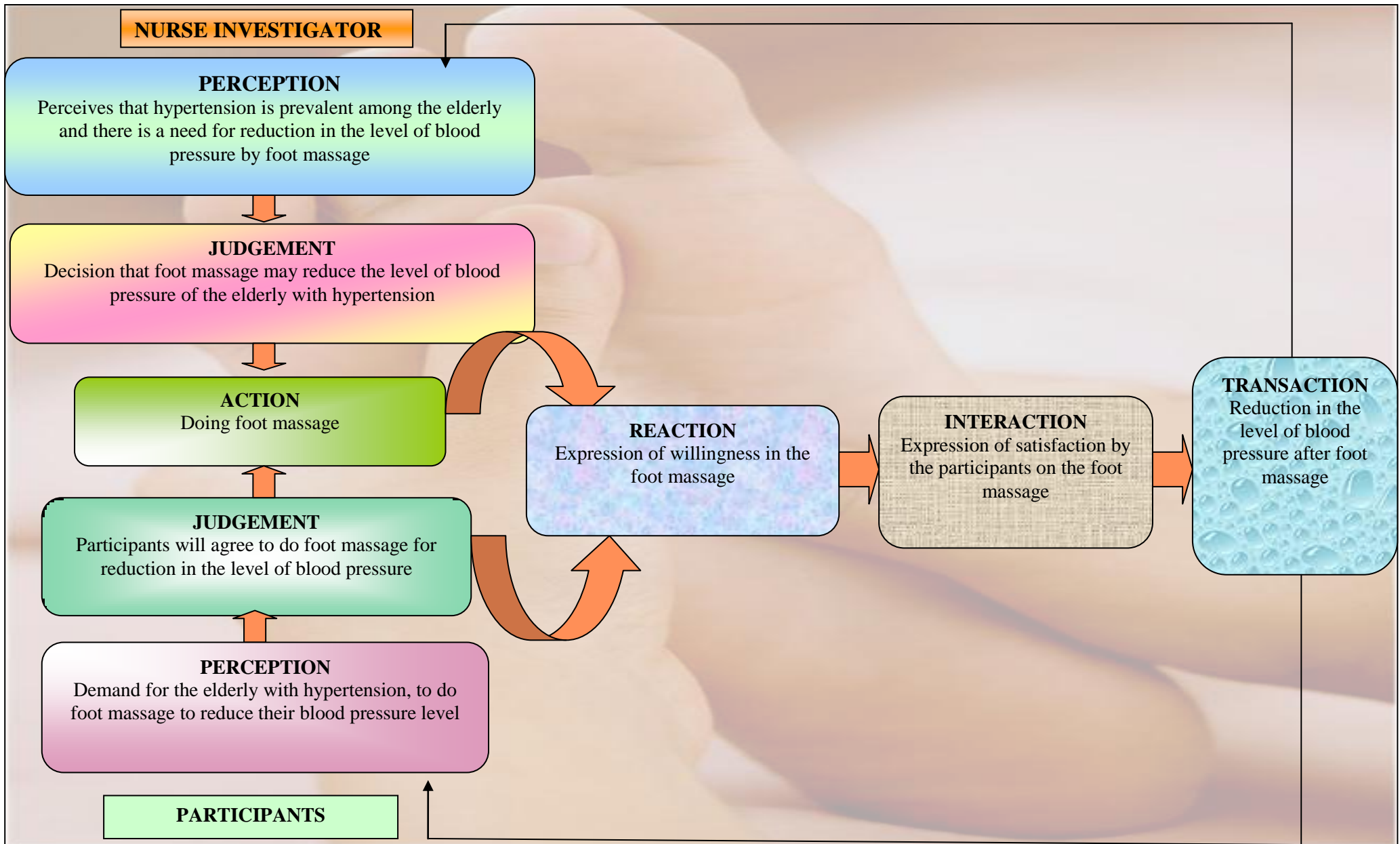
Interaction refers to verbal and non-verbal behaviours between an individual and the environment or among two or more individuals. In this study, interaction means it involves goal directed perception and communication. Here interaction refers to the expression of satisfaction by the participants on the foot massage.

**Transaction**

Imogene king said that transaction is the process where the two individuals naturally identify goals and means to achieve them. They reach an agreement about how to attain these goals and then set about to realize them. In this present study, transaction is the reduction in the level of blood pressure after foot massage.

**Feedback**

The outcome may either be satisfactory or unsatisfactory reduction in the level of hypertension after the foot massage. Satisfactory reduction indicates the foot massage is effective and unsatisfactory reduction in blood pressure level leads to rearrangement of prior situation by the nurse investigator where the total process is recycled.



**Fig.1 Conceptual Framework based on Modified King's Goal Attainment Model**

## **Projected Outcome**

The projected outcome of the study is to reduce the level of blood pressure among the elderly with hypertension after foot massage.

## **Summary**

This chapter dealt with the introduction which included background of the study, need for the study, statement of the problem, objectives of the study, operational definition, assumptions, null hypothesis, delimitations and conceptual framework and projected outcome of the study.

## **Organization of the Report**

Further aspects of the study are presented in the following five chapters.

**Chapter - II:** Review of literature

**Chapter - III:** Research methodology which include research approach, research design, research setting, population, sample, sampling technique, sampling criteria, selection and development of the study instruments, validity and reliability of the study instruments, pilot study, intervention protocol, data collection procedure and plan for data analysis.

**Chapter - IV:** Analysis and interpretation of the data and presented in terms of descriptive and inferential statistics.

**Chapter - V:** Discussion

**Chapter – VI:** Summary, Conclusion, Nursing implication and Recommendations

*Chapter II*  
*Review of literature*

---

## **CHAPTER - II**

### **REVIEW OF LITERATURE**

A literature review involves the systematic identification, location, scrutiny, and summary of written materials that contain information on the research problem (Polit and Hungler 2007).

“Conducting a literature review is a little bit like doing a full-fledged study”. The review of literature has two major goals: (1) To provide readers with an overview of existing evidence on the problem being addressed and (2) To develop an argument that demonstrates the need for the new study. According to nursing research (2008), ‘Review of literature is a written summary of the state of evidence on a research problem’.

The review of literature is presented under the following headings.

- Literature related to hypertension
- Literature related to old age
- Literature related to foot massage
- Literature related to foot massage upon hypertension

#### **Literature Related to Hypertension**

Woolf et al. (2011) reported that the nondrug interventions for treatment of hypertension. For many patients, maximal medical therapy is insufficient to adequately treat refractory hypertension. New technology and interventions have been developed that allow for treatments that do not rely on medications. In addition, dietary supplements and modification, as well as herbal supplements, may be useful under the



right circumstances. Lifestyle modification remains a necessary part of treatment for all patients with hypertension.

A prospective study conducted at Finland with a median follow-up of 20 years including 22,836 men and 24,774 women aged 25-64 years to investigate whether there are differences in stroke risk among hypertensive men and women by awareness, treatment and blood pressure control status at baseline. Hypertensive and treated men and women had a statistically significantly higher risk of total stroke than normotensive people despite baseline blood pressure control. Whereas the hazard ratio for incident ischemic stroke was 1.85, for the hypertensive treated and controlled women and men with their hypertension treated and controlled did not have a statistically significant increased risk of ischemic stroke compared with the reference group. This stresses the importance of effective early management of hypertension (Barengo 2009).

In a study conducted by Lorenzo (2009) the mortality risk among 3,632 (97.0%) participants in the San Antonio heart study evaluated the impact of pulse pressure on relationship between pre hypertension and mortality risk who are free of diabetes and cardiovascular disease. The results were pre hypertension prevalence was 31.6% at baseline. There were 218 deaths during the follow-up period. Conclusion says that pre hypertension increase mortality risk in individual who are free of diabetes and cardiovascular disease.

In the year 2009, a study was conducted in the slums of Surat city to see the prevalence of hypertension among elderly by Pawar et al. The total prevalence of hypertension was found to be 73.3% and the new case detection rates were found to be

38%. Further, it is surprising to observe that merely 3 out of 95 hypertensive women had family history of hypertension, and 22 of these respondents did not know about any history of hypertension.

A study to see the prevalence, awareness treatment, and control of hypertension in the rural areas of Davanagere was conducted in the year 2007 by Yuvaraj. The results shows that prevalence rate of hypertension in the study population were 3%, Prevalence of hypertension was more in males 19.1% than in females 17.5%; 11.6%, 5.6%, and 1.2% of the total subjects had Grade I, Grade II, and Grade III hypertension status respectively. Only 33.8% of them were aware of their hypertensive status. Hypertensive of 33.1% were on treatment, and 12.5% adequately controlled their blood pressure.

Balu (2006) conducted a retrospective analysis to identify the prevalence of hypertension in the United States. Incremental expenditure for inappropriate management as per Joint National Committee (JNC) 7 guidelines was estimated through least squares regression adjusting for age, sex, race and education and for comorbidities using the D'Hoore adaptation of Charlson comorbidity index. Extrapolated estimation indicated that 19.7% of those aged more or equal 18 years in the US population had hypertension in 2006; 64% were treated appropriately and 36% were treated inappropriately. The \$234.60, and the total national cost was approximately \$ 13 billion.

In an urban community of India a prevalence study was conducted by Das in 2005, using the JNC VII criteria with the aim of identifying the risk factors and suggesting intervention strategies, among 1609 respondents. Age and sex specific prevalence of hypertension showed progressive rise of systolic and diastolic

hypertension in women when compared to men. Men showed progressive rise in systolic hypertension beyond fifth decade of life. Bivariate analysis showed significant relationship of hypertension with age, sedentary occupation, body mass index (BMI), diet, ischemic heart disease, and smoking.

Shanthirani et al. (2003) conducted a study in two residential areas of Chennai to assess the prevalence of hypertension (HTN). The age standardized prevalence is 17.0%. Body Mass Index (BMI) and waist-hip ratio (WHR) were significantly higher ( $p < 0.01$ ) in the hypertension group compared to the non-hypertensive individuals. The prevalence of diabetes ( $p < 0.001$ ), obesity ( $p < 0.001$ ), CAD ( $p = 0.001$ ) and PVD ( $p = 0.0055$ ) was higher among the hypertensive compared to non-hypertensive group. The prevalence of hypertension appears to be high in this urban south Indian population and this call for urgent steps for its prevention and control.

The study suggested that there is a net reduction of 2.8 mm Hg and 2.3 mm Hg in systolic and diastolic pressure, an average reduction of 77 mmol/day in dietary sodium intake resulted in 1.9mm Hg reduction in systolic blood pressure. A meta-analysis of randomized controlled trails was conducted by Sandhu et al. (2002) to assess the effects of weight reduction, by physical activity, dietary modification, yoga and meditation.

In all 20 hypertensive patients underwent relaxation therapy programme for a period of 4 weeks, 15 males and 5 females included in the study by Desai and Vyas (2001) to see the effectiveness of relaxation therapy in reducing blood pressure among hypertensive patients. The average of the scores for all patients during the 1<sup>st</sup> visit and

last i.e.12<sup>th</sup> visit was found and compared. It indicates a significant decrease of about 15mm Hg in systolic blood pressure and significant decrease of diastolic blood pressure of about 10mm Hg following relaxation therapy.

### **Literature Related to Old Age**

Lahti (2011) conducted a study in the city of Helsinki to examine changes in leisure-time physical activity of moderate and vigorous intensity among ageing employees facing transition to retirement over a follow-up of 5-7 years. Old-age retirees (50 – 65 years) increased significantly their time spent in moderate-intensity physical activity. Leisure-time physical inactivity at follow-up was lower among old-age retirees compared with employees of nearly the same age. Transition to old-age retirement was associated with an increase in moderate-intensity leisure-time physical activity. Encouraging people to leisure-time physical activity after retirement is worthwhile as the increase in free time brings new possibilities.

In the year 2009 Fasey conducted study on grief, which is reviewed with particular reference to old age. The characteristics of normal and abnormal grief were noted and possible comparison between older and younger adults is made. The results are inconclusive but suggest that grief is a similar process in all adults but may be less malign in the over 65 years. The differences, elaborates that grief is a serious problem with a definite associated morbidity and mortality particularly in old age.

The study conducted by Pluijm et al. (2006) to examine the association between unhealthy lifestyle in young age, midlife and old age and physical decline in old age. Among 1297 respondents of the Longitudinal Aging study in Amsterdam. It was found

that being physically inactive in old age was not significantly associated with an increased risk of physical decline, however, being physically inactive both in midlife and in old age increased the odds of physical decline in old age to 1.6 (95%) as compared to respondents who were physically inactive in midlife and physically active in old age. Being overweight in both age periods was associated with 1.5 (95%). These data suggest that overweight in old age, and chronic exposure to physical inactivity or overweight throughout life increases the risk of physical decline in old age. Therefore, physical activity and prevention of overweight at all ages should be stimulated to prevent physical decline in old age.

A Study was conducted by Grimby 2005 among 567 participants who were 76-Year-Old Swedish Urban Citizens. Health-related quality of life was measured in terms of energy, pain, emotions, sleep, social isolation and mobility with the Nottingham Health Profile (NHP). The majority of the subjects lived independently and felt healthy, despite the fact that many had some diagnosed disease or disorder. Impaired quality of life was correlated to observed and perceived illness, institutionalization, widowhood, loneliness and financial discontent. Women reported more pain, emotional, sleep and mobility problems than men.

A cross sectional and longitudinal study was conducted by Hedden & Gabrieli (2004) among 200 sample by random sampling technique. The study compared the effects of aging on episodic memory, semantic memory, short-term memory and priming find that episodic memory is especially impaired in normal aging. These deficits may be related to impairments seen in the ability to refresh recently processed information. Older adults tend to be worse at remembering the source of their

information, a deficit that may be related to declines in the ability to bind information together in memory.

### **Literature Related to Foot Massage**

Moyle et al. (2011) conducted a study among 22 participants to explore the effects of foot massage on agitated behaviours in older people with dementia living in long-term care. Samples were selected by randomised controlled trial and received a 10-minutes foot massage each day for 14 days. Cohen-Mansfield Agitation Inventory (CMAI-SF) and the Revised Memory and Behavior Problems Checklist (RMBPC) scores were significantly reduced at post-test and remained significantly lower than baseline at follow up. Results of the study shown that short-duration of foot massage reduces agitation and related behavioural problems in people with dementia.

At Alphonsa pain and palliative centre, idukki, a quasi experimental study conducted by Joseph 2010 to assess the effectiveness of foot massage on pain among 36 cancer patients by quota sampling method. Data were collected by interview method and using numerical rating scale on pain and intervention through foot massage was given for 20 minutes for seven consecutive days. Results shown that there was a significant difference between mean pain before 7.55 (SD=1.39), after 3.15 (SD=1.69) and  $t=12.81$  ( $p<0.05$ )

Vaillant et al. (2009) conducted a study to evaluate the effects of a plantar massage and joint mobilization of the feet and ankles on clinical balance performance in 28 elderly people were selected by randomized, placebo-controlled, cross over trial at community nursing homes. Results of the study shown that significant improvement

after massage and mobilization compared with placebo for the One Leg Balance (OLB) test (1.1+/-1.7s versus 0.4+/-1.2s,  $p<0.01$ ) and the Timed Up and Go (TUG) test (0.9+/-2.6s versus 0.2+/-1.2s,  $p<0.05$ ).

In the year 2006 Quattrin studied foot massage reduce anxiety in hospitalized 30 cancer patients in chemotherapy treatment at a Scientific Research Hospital in Italy. There was an average decrease of 7.9 points on the state-anxiety scale in the treatment group and of 0.8 points in the control group ( $p<0.0001$ ). Foot massage can be considered a supportive treatment used in combination with traditional medical treatments.

A quasi experimental study conducted by Song et al. (2006) to examine the effects of foot massage on sleep disturbance, depression disorder, and the physiological index of the elderly in nursing homes. A total of 50 elderly people were selected and assigned to experimental (25) and control group (25) and foot massage was provided for 12 sessions, 30 minutes per session. Results of the study shown that necessary to give foot massage as a successful nursing intervention to elderly who undergo a change in sleep, an suffer from a depression disorder due to a deterioration in sleep.

It was stated by Wang in 2004, that foot and hand massage as an intervention for postoperative pain. Foot and hand massage has the potential to assist in pain relief. Massaging the feet and hands stimulates the mechanoreceptors that activate the “nonpainful” nerve fibers, preventing pain transmission from reaching consciousness. 20 minutes of foot and hand massage (5 minutes to each extremity), which was provided 1 to 4 hours after a dose of pain medication. A convenience sample of 18 patients rated

pain intensity and pain distress using a 0 to 10 numeric rating scale. They reported decreases in pain intensity from 4.65 to 2.35 ( $t=8.154$ ,  $p<0.001$ ) and in pain distress from 4.00 to 1.88 ( $t=5.683$ ,  $p<0.001$ ).

A randomized controlled trial study conducted by Hattan et al. (2002) examined the impact of foot massage and guided relaxation on the wellbeing of 25 patients who had undergone CABG surgery. There was a significant effect of the intervention on the calm scores (ANOVA,  $p=0.014$ ). Dunnett's multiple comparison showed that this was attributable to increased calm among the massage group. These interventions appear to be effective, noninvasive techniques for promoting psychological wellbeing.

In a study by Grealish et al. (2000), investigated foot massage as a nursing intervention to modify the distressing symptoms of pain and nausea in patients hospitalized with cancer. In a sample of 87 subjects, a 10 minutes foot massage (5 minutes per foot) was found to have a significant immediate effect on the perception of pain, nausea, and relaxation when measured with a visual analog scale.

A randomized-controlled study conducted by Hulme et al. (1999) examined the effect of foot massage on patients perception of care following laparoscopic sterilization among 59 women who were randomly selected into two groups. The experimental group received a foot massage and analgesia post-operatively, the control group received only analgesia. The mean pain scores recorded following surgery showed that the experimental group consistently reported less pain following a foot massage than the control group.



## **Literature Related to Foot Massage upon Hypertension**

A study conducted by Koshy (2011) in Ebenezer hospital, puthuppally, kerala to determine the effect foot massage among 26 hypertensive patients by purposive sampling technique. Pre test measurement on BP was taken on 1<sup>st</sup>, 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup> day. The intervention, foot massage was given for 20 minutes for 5 days every evening. Post test measurement on BP was taken 9<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>, 15<sup>th</sup> day. There was a significant reduction in the mean systolic blood pressure after foot massage among hypertensive patients in experimental group  $t=4.685$  ( $p<0.05$ ). there was a significant reduction in mean diastolic blood pressure after foot massage among hypertensive patients in experimental group  $t=8.96$ .

Kaye et.al. (2008) conducted a study to describe the effects of deep tissue massage on systolic, diastolic, and mean arterial blood pressure. A total of 263 volunteers, (12% male & 88% females) with an average age group of 48.5 were participated in the study for 45 and 60 minutes. Blood pressure and heart rate were measured with an automatic blood pressure cuff. Results shown that there was a significant reduction of systolic pressure by 10.4mmHg ( $p<0.06$ ), diastolic pressure by 5.3mmHg ( $p<0.04$ ) and mean arterial pressure by 10.8 beats per minutes, ( $p<0.08$ ).

In the year 2007 Ejindu et al. conducted a study to compare the effects of facial massage with that of foot massage on sleep induction and vital signs of healthy adults Six healthy female volunteers were given 20minutes foot and 20minutes facial massage using peach-kernal base oil *prunus persica*. The results of the study shown a reduction

in systolic blood pressure of 8.5mm of Hg after facial massage compared to that of 1mm Hg after foot massage. It concluded that both massage were equally effective.

At university of health sciences massage therapy clinic, Lombard, Cambron et al. (2006) conducted a study to determine effect of therapeutic foot massage on changes in blood pressure among 150 normotensive patients and pre hypertensive adults. Experimental group were received therapeutic massage and not in control group. The results shown a significant reduction in systolic pressure by 1.8 mm of Hg. It concluded that sweetish massage had significant effect in reduction of blood pressure.

A study conducted by Park et al. (2004) to evaluate the effect of foot reflexology on blood pressure, serum lipid level and life satisfaction among 34 randomly selected hypertensive patients. The study was conducted in department of nursing, Korea. Data collected through interview/observational schedule and intervention on foot reflexology was administered twice a week for 6 weeks and self foot reflexology twice a week for 6 weeks. Results of the study shown that there was a significant decrease in systolic blood pressure and triglyceride but not the blood cholesterol and life satisfaction.

According to Hayes. (1999) a five-minutes of foot massage showing immediate effects on patients in critical care. 25 patients were selected for the study. Physiological data (heart rate, mean arterial blood pressure, respirations and peripheral oxygen saturation) were obtained from the patient bedside monitoring system. Results indicated foot massage had the potential effect of increasing relaxation as evidenced by physiological changes such as decrease in heart rate, blood pressure and respiration during foot massage to critically ill patients in intensive care.

## **Summary**

This chapter dealt with review of literature related to the problem stated. The literature presented here was extracted from 24 primary and 6 secondary sources it has helped the researcher to understand the impacts of the problem understudy. It had helped the investigator to design the study, develop the instruments and to analyze the data.

*Chapter III*  
*Research Methodology*

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## **CHAPTER – III**

### **RESEARCH METHODOLOGY**

The methodology in the research study is defined as the way the information is gathered in order to answer the research questions or to analyze the research problem. The research methodology involves a systematic procedure by which the researcher starts from initial identification of the problem to its conclusion.

The present study was conducted to assess the effectiveness of foot massage in decreasing the level of blood pressure in elderly hypertensive clients. The chapter deals with a brief description of research approach, the setting ,population, sample and sampling technique, selection of the tool, validity, reliability, pilot study, data collection procedure and plan for the data analysis.

#### **Research Approach**

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of the research study for which it is under taken.

According to Polit and Beck (2008) experimental research is an extremely applied form of research and involves finding out how well a programme, product, practice or policy are working. Its goal is to assess or evaluate the success of the same. In this study, the researcher assess the effectiveness of foot massage upon blood pressure in elderly hypertensive clients. The researcher has chosen experimental research approach for conducting the present study.

An experimental research is generally applied where primary objective is to determine the extent to which a given procedure meets the desired result. In this study the investigator wanted to assess the blood pressure among elderly hypertensive clients before and after administration of “Foot massage”. The experimental approach seemed to be the most appropriate approach.

### **Research Design**

The research design is the plan, structure and strategy of investigation of answering the research question. It is the overall plan or blue print to the researches to select and to carry out the study. According to Polit and Hungler (1999), quasi experimental research is an experimental design with a goal to assess the effectiveness of a program, where randomization procedure is not used to control the extraneous variables. An experimental research is generally applied where the primary objective is to determine the extent to which a given treatment meets the desired results. Quasi experimental research design was used in this study.

**O 1 - O 2**

**O 1 X O 2**

**O 1** - Pre-test level of blood pressure among elderly hypertensive clients

**O 2** - Post test level of blood pressure among elderly hypertensive clients

**X** - Intervention of Foot massage for elderly hypertensive clients

## **Variables**

### **Dependent variable**

It is the variable hypothesized to depend on or to be caused by another variable.

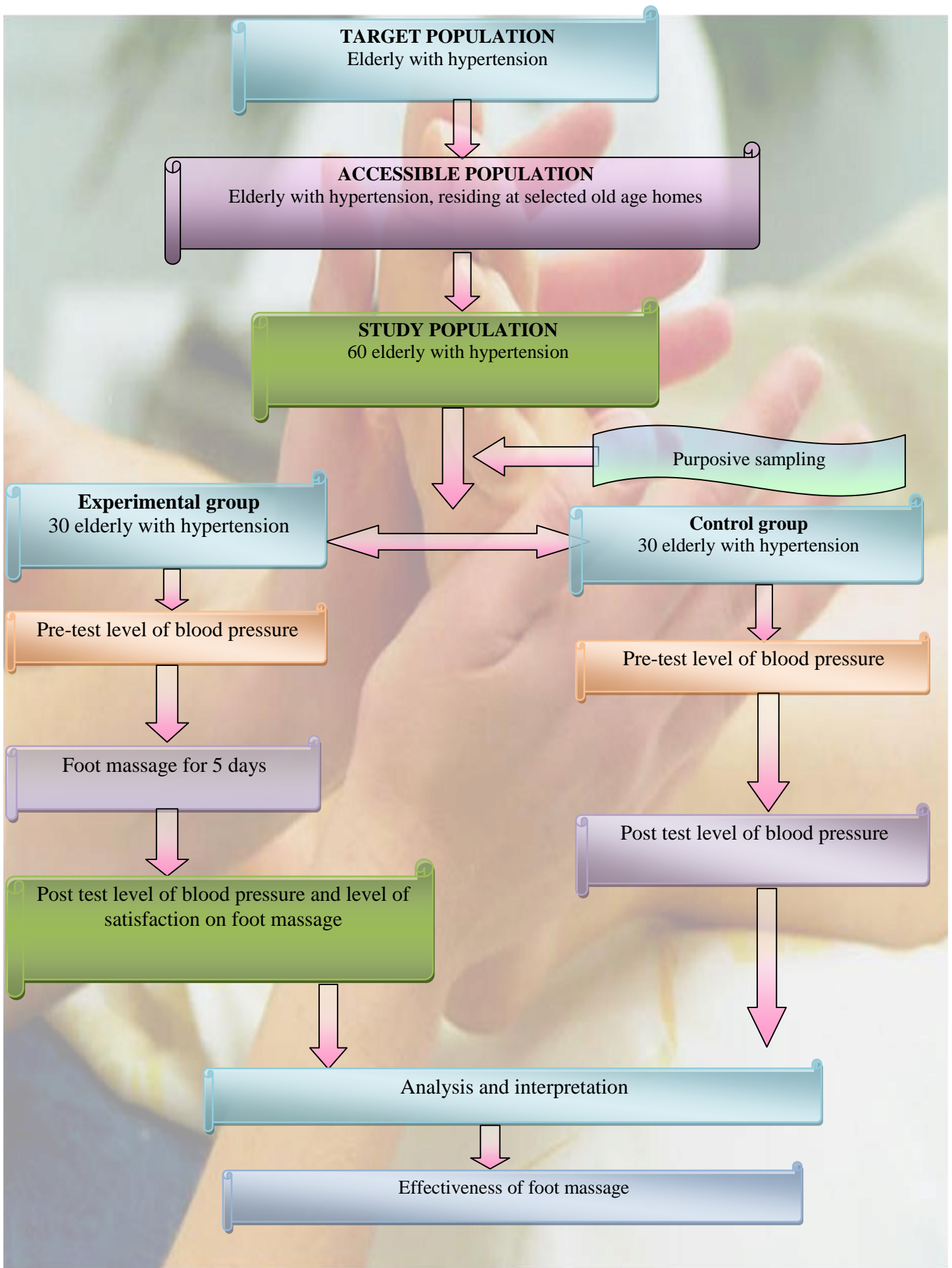
In this study dependent variable is Blood pressure.

### **Independent variable**

It is the variable hypothesized to the outcome variable of interest. In this study independent variable is foot massage.

### **Attribute variable**

It is some variable which has influence but has not manipulated by researchers. Demographic variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation and family income, number of children, religion, type of family, duration of stay in old age home and hypertension.



**Fig. 2 Schematic Representation of Research Design**



## **Research Setting**

According to Polit and Beck (2008) setting is the physical location and condition in which data collection takes place in the study. The study was conducted in two old age homes, Little drops home for the aged at paraniputhur, Chennai (experimental group) and St.Thomas Home for senior citizens at Vyasarpathi, Chennai (control group) Little drops home for the aged at paraniputhur, Chennai is located about 20km from Koyambedu bus stand, 15 kms from Apollo College of Nursing. The old age home has 190 inmates and has good infrastructure. Each occupant room has got a table, chair and a cot with attached bathroom and toilet facility. The home is managed by a trust through donations from well wishers. Here the old age people are admitted based on their request and need and the services are provided free of cost. The settings were chosen because of feasibility in terms of availability of adequate participants and co operation of the management trust of the old age homes.

## **Population**

Population is the entire set of individuals or objects having some common characteristics (Polit & Beck 2010).

## **Target Population**

Target population is the group of population the researcher aims to study and to whom the study findings will be generalized. In this study target population comprises of elderly clients with hypertension.

### **Accessible Population**

Accessible population is the portion of target population that the researcher finds in study area. In this study accessible population was elderly hypertensive clients residing at old age homes.

### **Sample**

A sample is a subset of a population, selected to participate in a study (Polit and Beck,2008). A sample of 60 elderly hypertensive clients were selected for the study from Little drops home for the aged, Paraniyathur, St.Thomas Home for senior citizens Vyasapathi, out of which 30 elderly from Little drops home for the aged were randomly assigned to the experimental group and 30 elderly from St.Thomas Home for senior citizens to the control group.

### **Sample Size**

A sample size of 60 elderly hypertensive clients who meet the inclusion criteria was chosen for this study, in that 30 in control and 30 in experimental group.

### **Sampling Technique**

Sampling is the process of selecting a portion of population to represent the entire population (Polit & Beck 2006). Purposive sampling technique was used for this study .

## **Sampling Criteria**

### **Inclusion criteria**

The study included the elderly who are

- 60 years and above.
- willing to participate.
- present during the study.
- having their systolic blood pressure of 140mmHg and above.
- either on or not on antihypertensive medications.
- residing at selected old age homes, Chennai.
- Able to understand Tamil or English.

### **Exclusion criteria**

The study excluded the elderly who are

- not willing to foot massage.
- having foot ulcer and arthritis.
- on other complimentary therapy or herbal medicine.
- having cognitive and sensory impairments.

## **Selection and Development of Study Instruments**

As the study is aimed at evaluating the effectiveness of foot massage upon blood pressure in elderly hypertensive population, the following instrument used for data collection.

The tool consist of,

- Demographic variable proforma
- Clinical variable proforma .

- Observational checklist
- Rating scale on level of satisfaction of foot massage.

### **Demographic variable proforma**

The demographic variable proforma consisted of age , gender, religion, marital status, type of family, education, and family income, family income ,number of children and duration of stay in old age home.

### **Clinical variable proforma**

This is to assess the clinical variables such as height, weight, BMI, habit of taking non vegetarian diet, habit of chewing tobacco, habit of smoking, habit of consuming alcohol, nature of physical activity, history of hypertension, family history of hypertension, history of taking antihypertensive drugs and history of any other associated disease.

### **Observational checklist**

This checklist is used to record the blood pressure values of the elderly before, during and after foot massage. The blood pressure values were classified based on British Hypertension Society as follows:

<b>Category</b>	<b>Systolic blood pressure (mm Hg)</b>	<b>Diastolic blood pressure (mm Hg)</b>
Normal	120- 139	80- 89
Mild	140-159	90-99
Moderate	160-179	100-109
Severe	≥180	≥110

### **Rating scale to assess the level of satisfaction on Foot massage**

This is developed by the investigator to assess the satisfaction of foot massage among elderly hypertensive clients. This scale consisted of 12 items on satisfaction of the study participants regarding the various aspects of Foot massage, rated on a three point scale with the score – Highly Satisfied – 3, Satisfied – 2, Dissatisfied – 1. The scale was used to assess various aspects of foot massage such as explanation given about the foot massage, the researcher’s approach to the clients, time, duration, frequency, cost effectiveness and usefulness, involvement of the participants and arrangements made during the programme. Thus the total obtainable score is 12 - 36. The obtained score is converted into percentage and is interpreted as follows:

Highly Satisfied	67- 100%
Satisfied	28- 66%
Dissatisfied	<28%

### **Psychometric Properties of the Instruments**

#### **Validity**

Content validity is the degree to which an instrument measures what it is supposed to measure. Content validity is the sampling adequacy of the content being measured. (Polit and Beck, 2008).

The content validity of the tool was obtained by getting opinion from experts in the field of Medicine and Nursing. The validation has suggested some specific

modifications in the objectives and rating scale. The modifications and suggestions of experts were incorporated in the final preparation of the tool.

### **Reliability**

Reliability is the degree of consistency with which an instrument measures the attribute it intended to measure (Polit and Beck, 2008).

### **Observational checklist to monitor blood pressure**

The reliability of the instrument (sphygmomanometer) was determined by using inter rater reliability. The instrument was administered to 5 individuals simultaneously by to nursing personnel and the 'r' value was found to be 0.8 which shows positive correlation indicates that instrument is highly reliable.

### **Rating scale for assessment of level of satisfaction on foot massage by elderly hypertensive clients**

The reliability of the instrument was determined by using split half technique. The 'r' value was found to be 0.8 which shows positive correlation indicates that instrument is highly reliable.

### **Pilot Study**

According to Polit and Beck. (2009), a pilot study is a miniature or some part of the actual study, in which the instruments are administered to the subjects drawn from the population. It is a small scale version or trial run, done in preparation for the major study. The purpose is to find out the feasibility and practicability of the study design.

Pilot study was conducted in Little drops home for the aged at Paraniputhur, Chennai (Experimental group) and St.Thomas Home for senior citizens at Vyasarpathi, Chennai (Control group) from 12<sup>th</sup> June to 23<sup>rd</sup> June 2012. 12 hypertensive clients were selected using purposive sampling technique. They were assigned 6 each in experimental and control group. The baseline data of demographic variable and clinical variable was collected before the intervention in both control and experimental group. The blood pressure level was assessed on 1<sup>st</sup> and 4<sup>th</sup> day of the intervention for both control and experimental group of elderly hypertensive clients based on British Hypertensive Society classification.

Foot massage was given for elderly hypertensive clients for 20 min for 2 days to experimental group. Posttest was conducted at 4<sup>th</sup> day of intervention. Then the level of satisfaction regarding foot massage was assessed using the satisfaction scale for experimental group.

### **Protection of Human Rights**

- The study was conducted after obtaining clearance from Ethical committee, managing director of selected old age homes, Chennai and permission from the Research and Medical guide.
- The study was conducted after obtaining approval from Principal, Apollo College of Nursing.
- Consent was obtained from all the participants/bystander before the data collection.
- Confidentiality was maintained throughout the study

### **Data Collection Procedure**

Data collection is the precise, systematic gathering of information relevant to the research purpose. The researcher presented the proposal to the ethical committee of Apollo Hospitals and got ethical clearance to precede the study.

The investigator collected the data from Little Drops home for the aged and ST. Thomas Home for senior citizens after obtaining proper administrative permission from concerned authorities. The observation time schedule was from 7a.m-12 noon and 12.30 p.m-5.30 p.m and the data collection period was from June 25<sup>th</sup> to July 16<sup>th</sup> 2012.

60 hypertensive clients were selected using purposive sampling technique. They were assigned 30 each in experimental and control group. The baseline data of demographic variable and clinical variable was collected before the intervention in both control and experimental group. The blood pressure level was assessed before the intervention as a pre-test and blood pressure level was assessed on 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> and 8<sup>th</sup> day of the intervention for both control and experimental group of elderly hypertensive clients based on British Hypertensive Society classification.

Foot massage was given for elderly hypertensive clients for 20 min for 5 days to experimental group. Post test was conducted at 8<sup>th</sup> day of intervention. Then the level of satisfaction regarding foot massage was assessed using the satisfaction scale for experimental group.



## **Problems Faced during Data Collection**

- Few clients were not interested to provide information.

## **Plan for Data Analysis**

Data analysis is the systematic organization, synthesis of research data and testing of null hypothesis by using the obtained data (Polit and Beck, 2004). Analysis and interpretation of the data were carried out by using descriptive and inferential statistics.

Descriptive statistics such as mean, frequency and percentage were used to describe the demographic variables, clinical variables and the level of blood pressure. Inferential statistics such as independent 't' test were used to assess the effectiveness of Foot massage on the level of blood pressure by comparing the pre test and post test mean score of blood pressure. Chi-square test were used to find out the association between selected variables and level of blood pressure among pre test and post test of control and experimental group of Elderly Hypertensive clients.

## **Summary**

This chapter has dealt with the selection of research approach, research design, setting, population, sample, sampling technique, sampling criteria, selection and development of study instruments, validity, and reliability of study instrument, pilot study, data collection procedure and plan for data analysis. The following chapter deals with analysis and interpretation of data using descriptive and inferential statistics.

*Chapter IV*  
*Analysis and Interpretation*

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## **CHAPTER - IV**

### **ANALYSIS AND INTERPRETATION**

This chapter includes both descriptive and inferential statistics. Statistics is a field of study concerned with techniques or methods of collection of data, classification, summarizing, interpretation, drawing inferences, testing of hypothesis, making recommendation. (Mahajan 2004)

The data was collected from 60 elderly hypertensive clients in Little Drops home for aged and St. Thomas home for senior citizens, Chennai to determine the effectiveness of foot massage upon blood pressure among elderly hypertensive clients. The data were analyzed according to the objectives and hypothesis of the study. Analysis of study was completed after all the data was transferred to the master coding sheet. The investigator used descriptive and inferential statistics for analysis.

#### **Organization of the Findings**

The findings of the study were organized and presented under the following headings,

- Frequency and percentage distribution of demographic variables in control and experimental group of elderly hypertensive clients.
- Frequency and percentage distribution of clinical variables in control and experimental group of elderly hypertensive clients.
- Frequency and percentage distribution of blood pressure levels of elderly hypertensive clients in control and experimental group before and after foot massage.

- Comparison of mean and standard deviation of systolic blood pressure and diastolic blood pressure, before and after foot massage between control and experimental group of elderly hypertensive clients.
- Frequency and percentage distribution of level of the satisfaction on foot massage in the experimental group of the elderly hypertensive clients.
- Association between selected demographic variable and level of systolic blood pressure and diastolic blood pressure, before and after foot massage in control group of elderly hypertensive clients.
- Association between selected demographic variable and level of systolic blood pressure and diastolic blood pressure, before and after foot massage in experimental group of elderly hypertensive clients.
- Association between selected clinical variable and level of systolic blood pressure and diastolic blood pressure, before and after foot massage in control group of elderly hypertensive clients.
- Association between selected clinical variable and level of systolic blood pressure and diastolic blood pressure, before and after foot massage in experimental group of elderly hypertensive clients.

**Table. 1**

**Frequency and Percentage Distribution of Demographic Variables in Control and Experimental Group of Elderly Hypertensive Clients.**

Demographic variables	Control Group (n=30)		Experimental Group (n=30)	
	n	p	n	p
<b>Gender</b>				
Male	14	46.7	13	43.3
Female	16	53.3	17	56.7
<b>Religion</b>				
Hindu	18	60	22	73.3
Muslim	1	3.3	3	10
Christian	11	36.7	5	16.7
Others	-	-	-	-
<b>Types of family</b>				
Nuclear	9	30	17	56.7
Joint	21	70	13	43.3
Extended family	-	-		
<b>Marital Status</b>				
Unmarried	1	3.3	2	6.7
Married	-	-	1	3.3
Seperated/Divorced	2	6.7	9	30
Widow/ Widower	27	90	18	60
<b>Income per month</b>				
Nil	30	100	30	100
< 2000	-	-	-	-
2001 to 6000	-	-	-	-
6001 to 10000	-	-	-	-
>10000	-	-	-	-

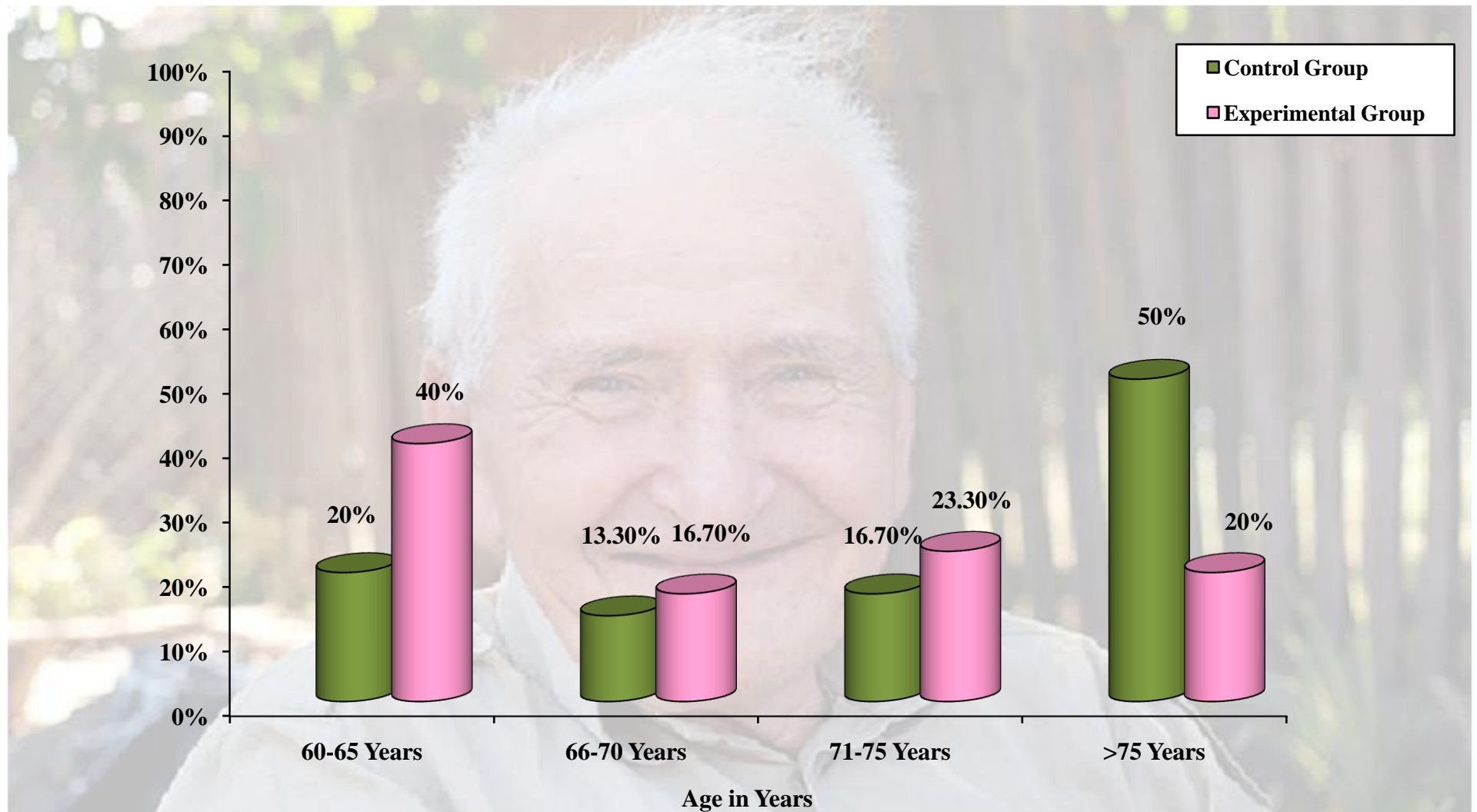
<b>Source of income</b>				
Pensioners	-	-	-	-
Govt aid	-	-	-	-
Property	-	-	-	-
Savings	-	-	-	-
Nil	30	100	30	100
Others	-	-	-	-
<b>No of children</b>				
No	5	16.7	9	30
One	9	30	9	30
Two	10	33.3	9	30
More than two	6	20	3	10
<b>Spouse is alive</b>				
Yes	2	6.7	9	30
No	28	93.3	21	70
<b>Spouse residing in same home</b>				
Yes	-	-	1	3.3
No	30	100	29	96.7

The data in table 1 revealed that most number of elderly hypertensive clients were females (53.3%, 56.7%), the duration of stay in old age home were <1 year (20%, 40%) and number of children were two (33.3%, 30%). Most of them were belongs to hindu religion (60%, 73.3%) and were in joint family (70%, 43.3%). Majority of the hypertensive clients were widowers (90%, 60%), with nil monthly income (100%, 100%), with spouse not alive (93.3%, 70%) and spouse not resides in same home (100%, 96.7%) in control and experimental group respectively.

Fig. 3 shows the frequency and percentage distribution of the age in control and experimental group of elderly hypertensive clients which shows that, significant number of clients belongs to the age group of >75 years.

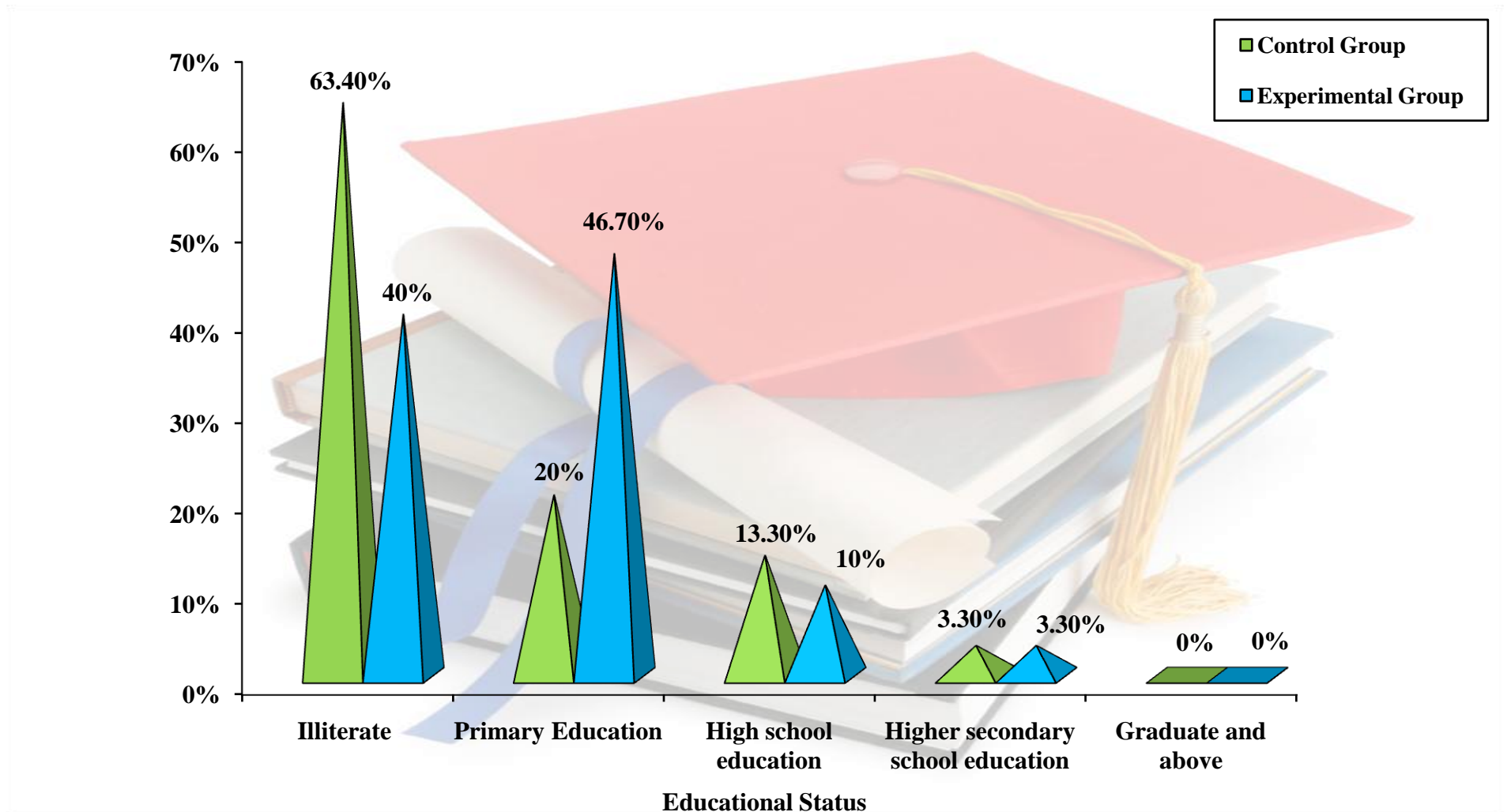
Fig. 4 shows the percentage distribution of the educational status in control and experimental group of elderly hypertensive clients, which reveals that 63.40% of elderly clients in control group and 40% in experimental group belong to illiterate.

Fig. 5 shows the percentage distribution of duration of stay in control and experimental group of elderly hypertensive clients, which reveals that significant number of clients were in old age home <1 year.

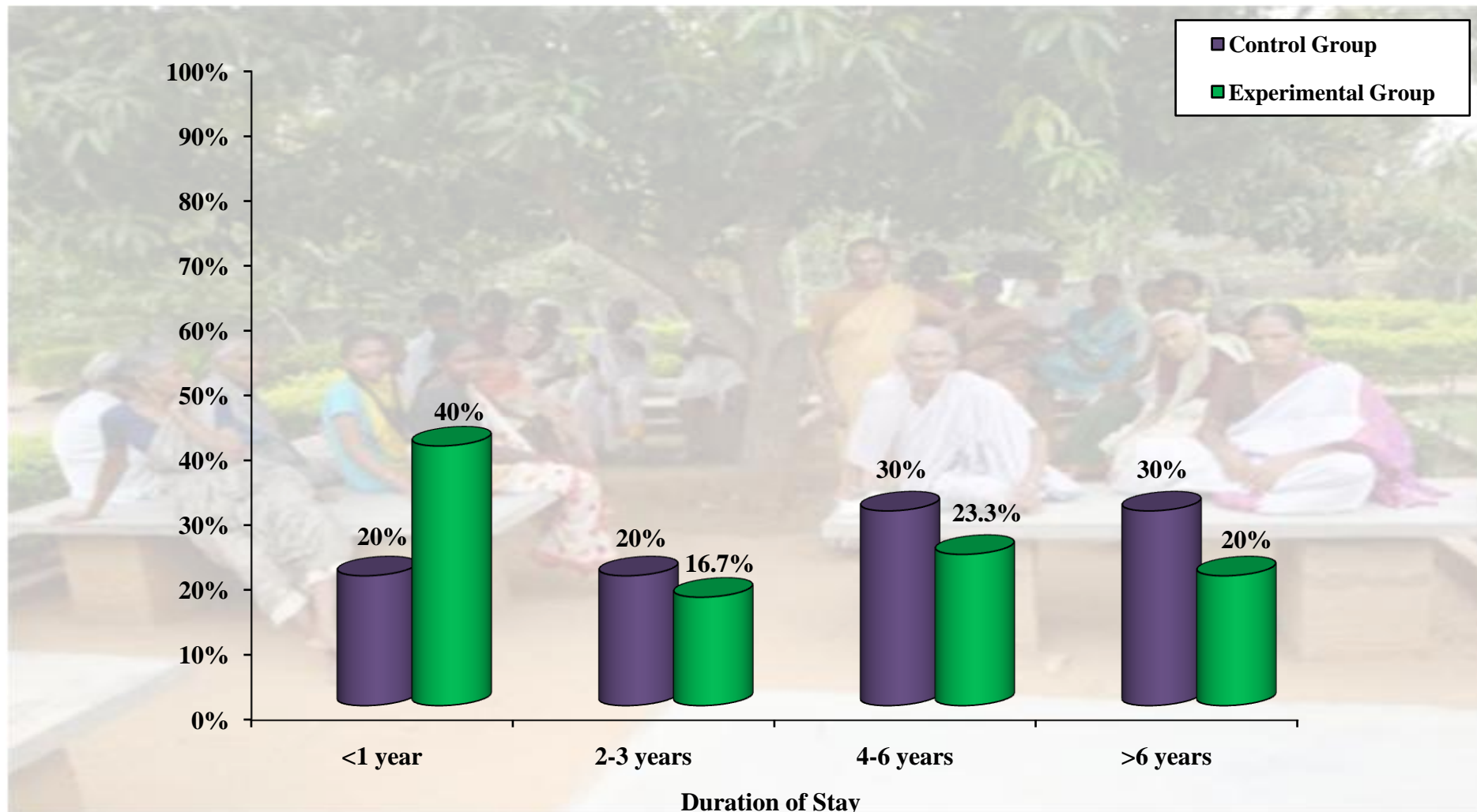


**Fig.3 Percentage Distribution of Age of Elderly Hypertensive Clients**





**Fig.4 Percentage Distribution of Educational Status of Elderly Hypertensive Clients**



**Fig.5 Percentage Distribution of Duration of Stay of Elderly Hypertensive Clients**

**Table. 2**

**Frequency and Percentage Distribution of Clinical Variables in Control and Experimental Group of Elderly Hypertensive Clients.**

Clinical variables	Control Group (n=30)		Experimental Group (n=30)	
	n	p	n	p
<b>Height in cms</b>				
140-150	10	33.33	6	20
151-160	11	36.7	21	70
161-170	9	30	3	10
171-180	-	-	-	-
<b>Weight in kgs</b>				
30-45	4	13.3	3	10
46-60	18	60	14	46.7
61-75	8	26.7	13	43.3
<b>BMI</b>				
<25	17	56.7	17	56.6
25-29	12	40	11	36.6
30-34	1	3.33	2	6.6
35-39	-	-	-	-
<b>Non vegetarian diet</b>				
Yes	27	90	25	83.3
No	3	10	5	16.7
<b>If yes, how many times do you take non vegetarian diet</b>				
Once in a week	12	44.4	16	64
Twice in a week	-	-	-	-
Thrice in a week	-	-	-	-
Occasionally	15	55.6	9	36
<b>Habit of chewing Tobacco</b>				
Yes	7	23.3	4	13.3
No	23	76.7	26	86.7
<b>If yes , duration of chewing tobacco</b>				
<1 year	-	-	-	-
1-5 years	1	14.3	2	50
6-10 years	2	28.6	1	25
>10 years	4	57.1	1	25

<b>Habit of smoking</b>				
Yes	9	30	9	30
No	21	70	21	70
<b>If yes , duration of smoking</b>				
<1 year	-	-	-	-
1-5 years	-	-	4	44.4
6-10 years	7	77.8	-	-
>10 years	2	23.2	5	55.6
<b>Habit of consuming alcohol</b>				
Yes	9	30	8	26.7
No	21	70	22	73.3
<b>Nature of physical activity</b>				
Sedentary	11	36.7	15	50
Moderate	18	60	14	46.7
Heavy	1	3.3	1	3.3
<b>Drugs</b>				
No	-	-	5	16.7
Regularly	30	100	20	66.7
Occasionally	-	-	5	16.6
Only during discomfort	-	-	-	-
<b>Whether on any other alternative / complementary therapy</b>				
Yes	-	-	-	-
No	30	100	30	100

From table 2 it is inferred that most of the elderly hypertensive clients had height 151-160cm (36.7%, 70%), had weight 46-60kg (60%, 46.7%), had BMI of <25 (56.7%, 56.6%), were consuming non vegetarian diet once in a week (44.4%, 64%), duration of chewing tobacco for more than 10 years (57%, 25%), and moderate workers (60%, 46.7%). Majority of the elderly hypertensive clients had no habit of chewing tobacco (76.7%, 86.7%), were smokers (70%, 70%), no habit of consuming alcohol (70%, 73.3%), were non vegetarians (90%, 83.3%), were taking drugs (100%, 66.7%) and were not on any other complementary therapy (100%, 100%). Significant clients had no

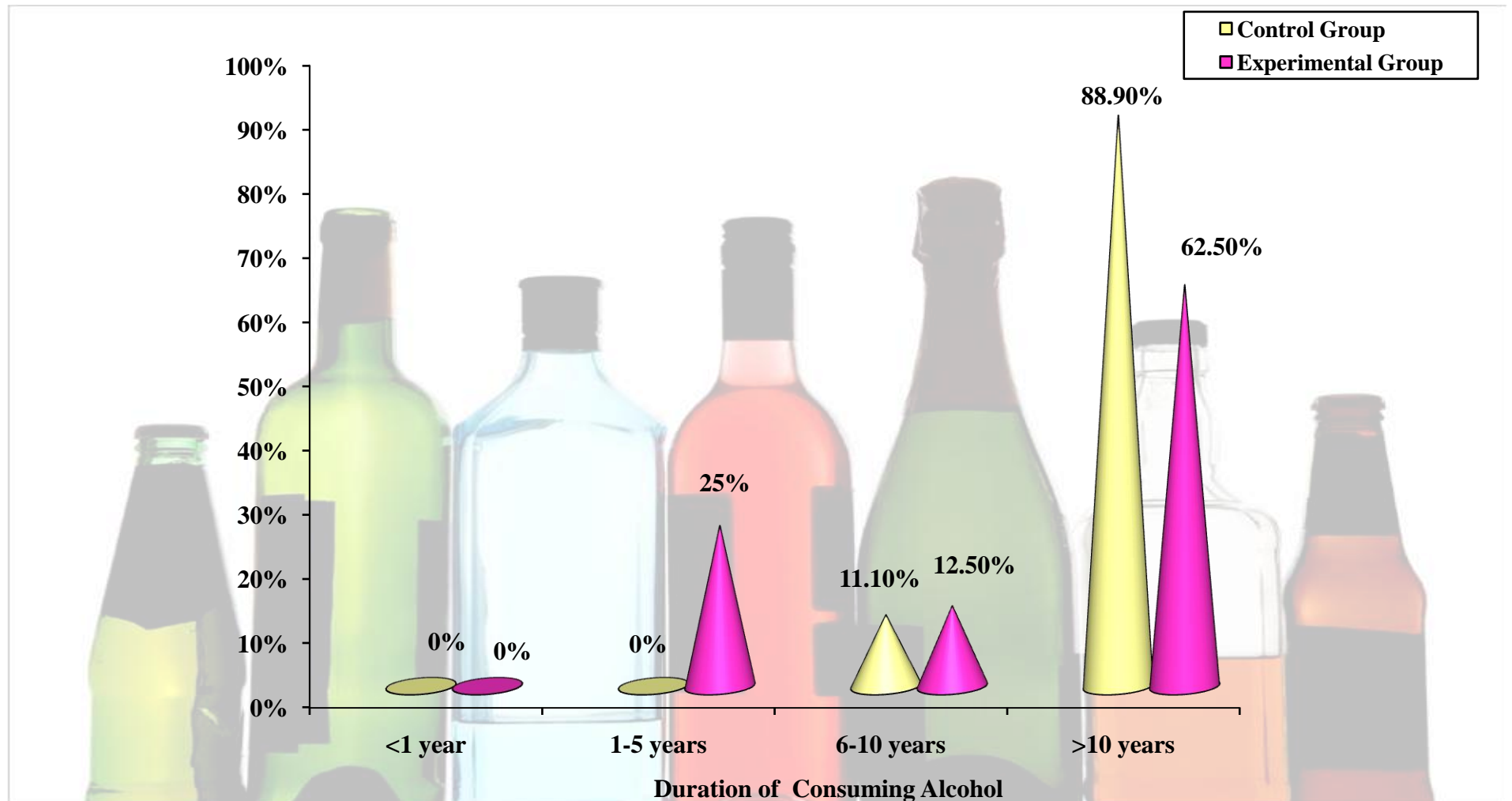
family history of hypertension (33.4%, 53.3%) in control and experimental group respectively.

Fig. 6 shows that majority of elderly hypertensive clients were more than 10 years duration of consuming alcohol (88.9%, 62.5%) in control and experimental group respectively.

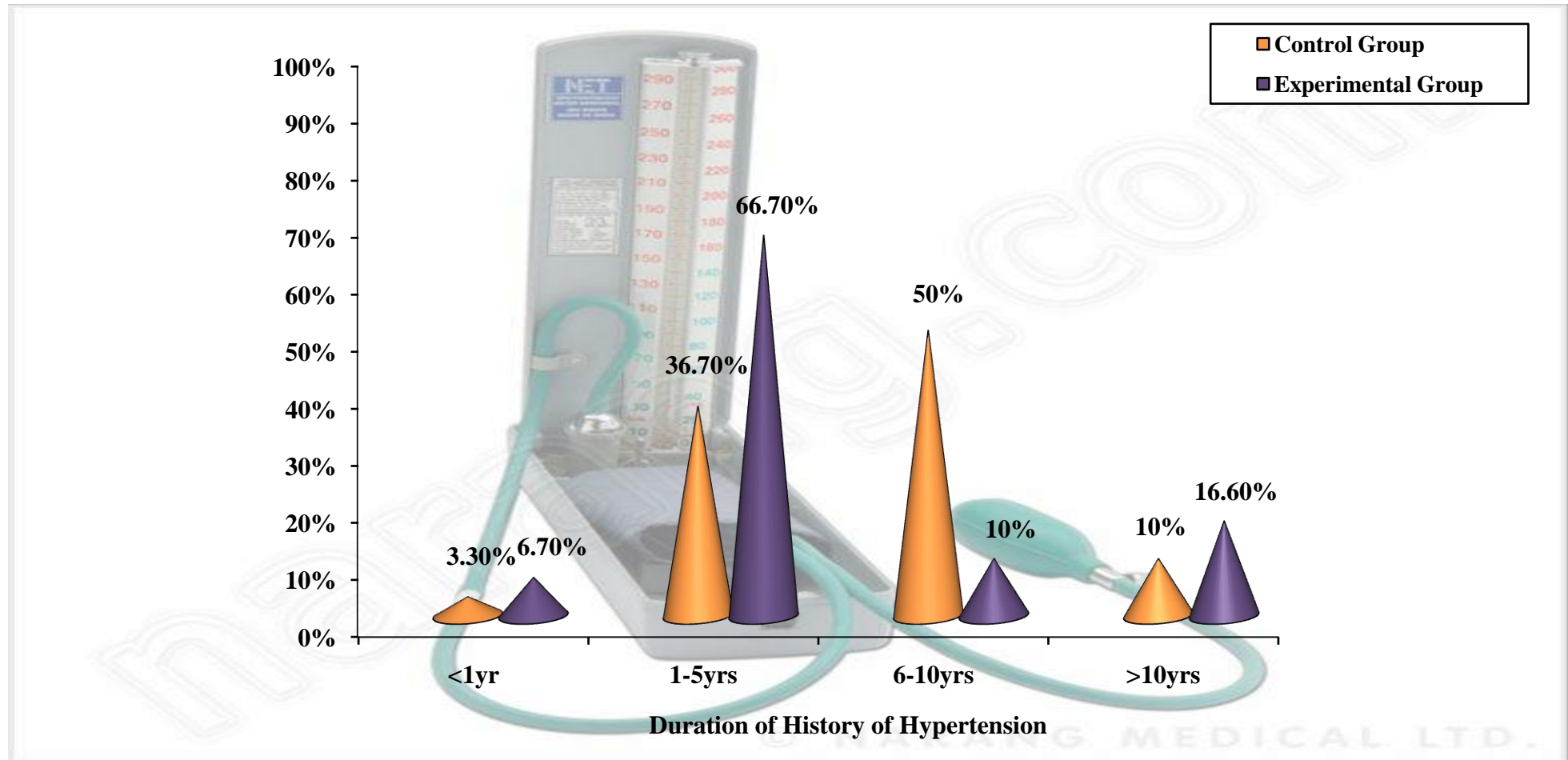
Fig.7 shows that majority of elderly hypertensive clients has been suffering from hypertension for 1-5 years (36%, 66.7%) in control and experimental group respectively.

Fig.8 shows that most of them had no family history of hypertension (33.4%, 53.3%) control and experimental group of elderly hypertensive clients respectively.

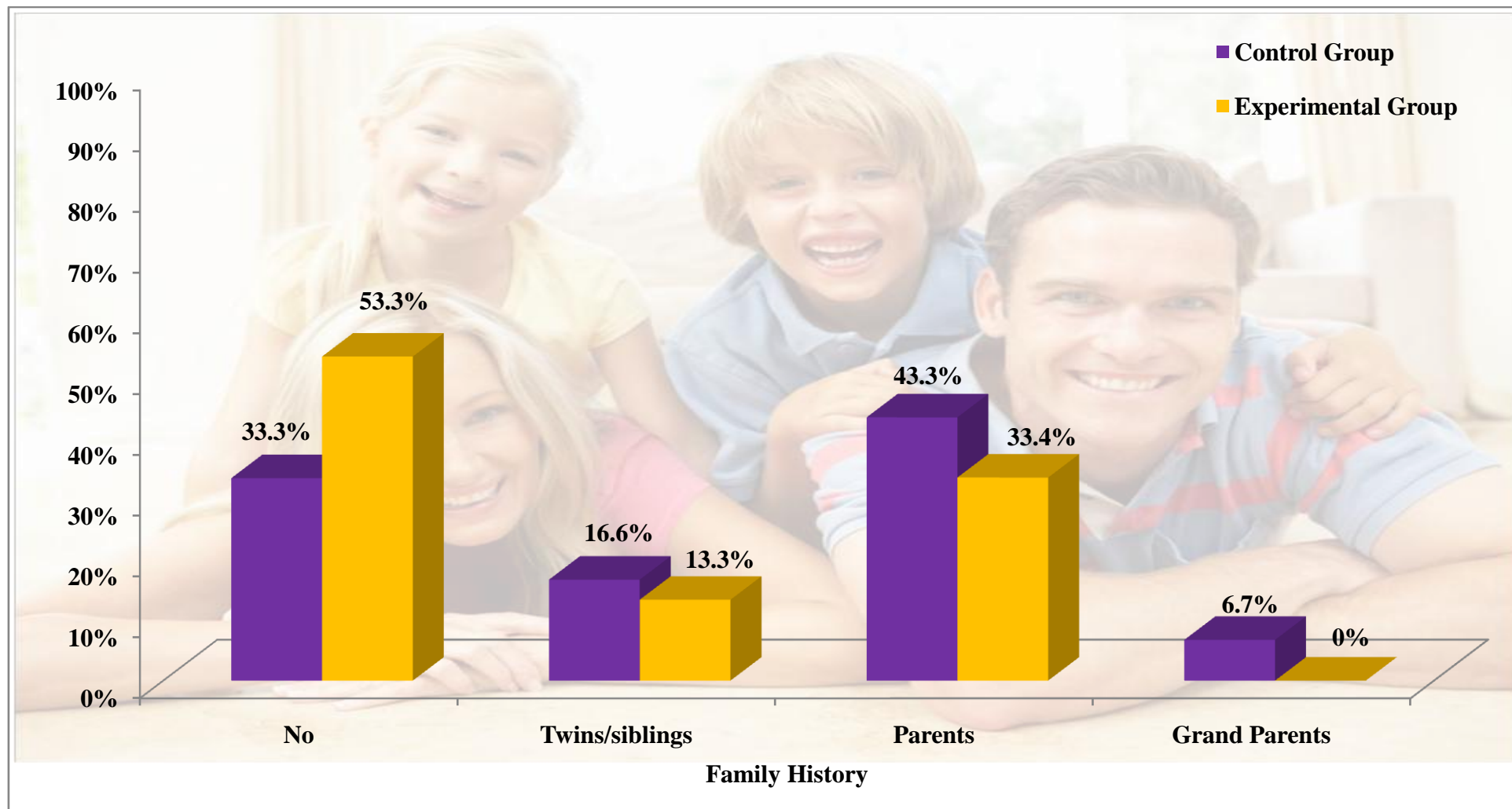
Fig. 9 shows that significant of them in control and experimental group had diabetes mellitus (50%, 66.7%) in control and experimental group respectively.



**Fig.6. Percentage Distribution of Duration of Consuming Alcohol among Elderly Hypertensive Clients**

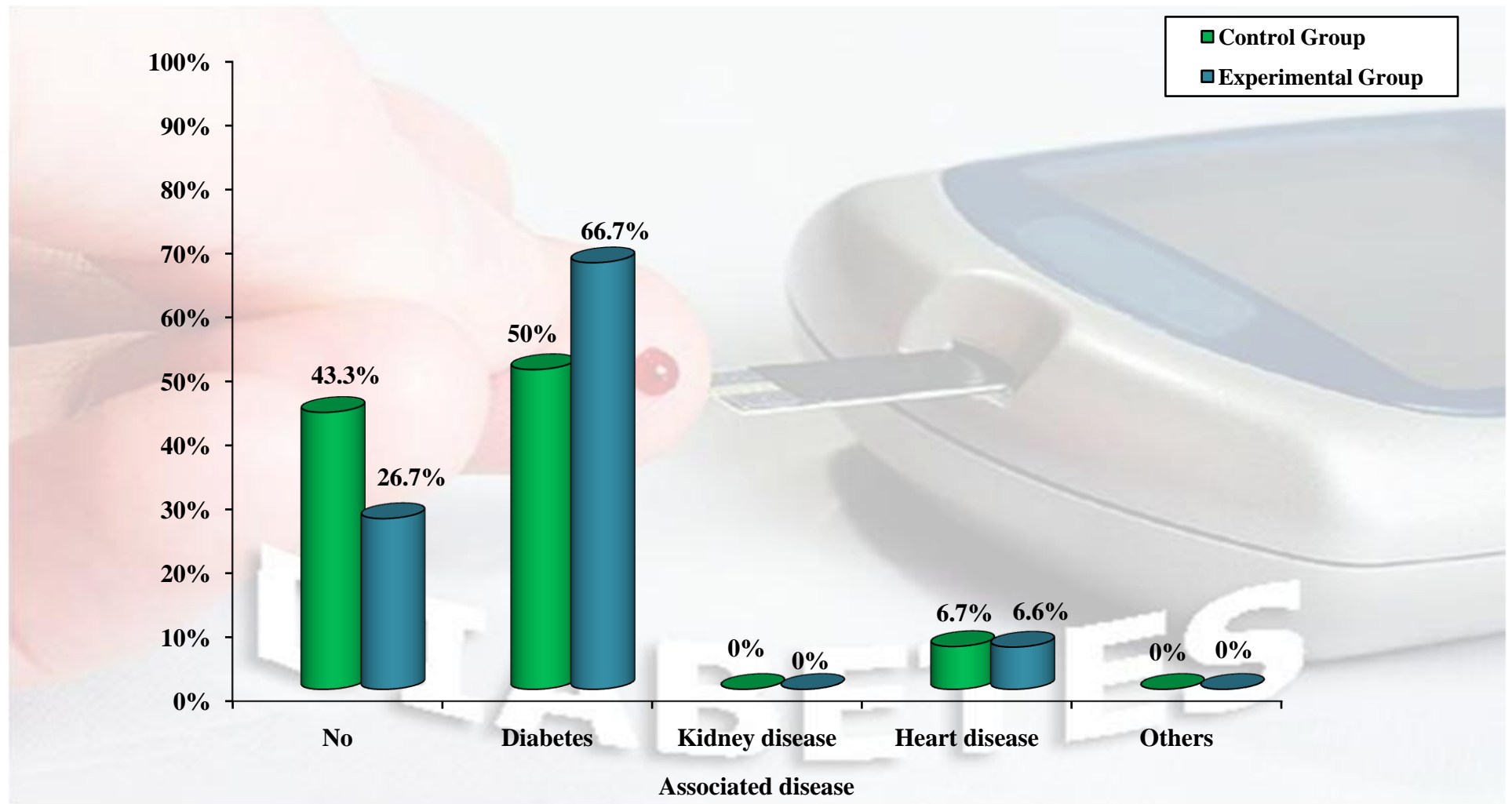


**Fig.7. Percentage Distribution of Duration of History of Hypertension among Elderly Hypertensive Clients**



**Fig.8. Percentage Distribution of Family History of Hypertension among Elderly Hypertensive Clients**





**Fig.9. Percentage Distribution of Associated Disease among Elderly Hypertensive Clients**

**Table. 3**

**Frequency and Percentage Distribution of Blood pressure Levels of Elderly Hypertensive Clients in Control and Experimental Group Before and After Foot massage**

Level of Blood pressure	Control Group (n=30)				Experimental Group (n=30)			
	Before Foot massage		After Foot massage		Before Foot massage		After Foot massage	
	n	p	n	p	n	p	n	p
<b>Systolic blood pressure</b>								
Normal	-	-	-	-	-	-	22	73.4
Mild	12	40	14	46.7	15	50	7	23.3
Moderate	14	46.7	12	40	13	43.3	1	3.3
Severe	4	13.3	4	13.3	2	6.7	-	-
<b>Diastolic blood pressure</b>								
Normal	4	13.3	4	13.3	-	-	29	96.7
Mild	18	60	14	46.7	17	56.7	1	3.3
Moderate	8	26.7	11	36.7	10	33.3	-	-
Severe	-	-	1	3.3	3	10	-	-

It could be inferred that significant number of elderly hypertensive clients had mild to moderate systolic blood pressure (40%, 50% & 46.7%, 43.3%) and diastolic blood pressure were mild (60%, 56.4%) before foot massage in control and

experimental group respectively. Whereas in experimental group majority of client had normal systolic blood pressure (73.4%) and normal diastolic blood pressure (96.7%) after foot massage therapy.

**Table. 4**

**Comparison of Mean and Standard Deviation of Systolic Blood Pressure and Diastolic Blood Pressure, Before and After Foot massage Between Control and Experimental Group of Elderly Hypertensive clients**

Level of Blood Pressure	Control Group (n=30)		Experimental Group (n=30)		t value
	Mean	SD	Mean	SD	
<b>Systolic Blood Pressure</b>					
Before Foot massage	160.4	14.64	157.7	11.369	0.804
After Foot massage					
Second day	161	14.00	151.1	10.23	<b>3.154**</b>
Fourth day	161.2	13.03	145.3	11.30	<b>5.094***</b>
Sixth day	163	13	139	12.02	<b>7.4940***</b>
Eighth day	160.6	14.43	132.6	11.10	<b>8.497***</b>
<b>Diastolic blood pressure</b>					
Before Foot massage	92.2	5.66	92.2	6.033	-3.006
After Foot massage					
Second day	93.1	4.944	91.9	4.578	0.984
Fourth day	93	6.016	87.5	5.523	<b>3.721***</b>
Sixth day	94.2	4.552	83.9	4.574	<b>8.826***</b>
Eighth day	93.6	7.346	81.2	2.60	<b>8.794***</b>

**\*\*p < 0.01, \*\*\*p < 0.001**

Data from table 4 shows that, before foot massage the mean and standard deviation of systolic blood pressure were (160.4, 157.7 & 14.64, 11.369) and diastolic blood pressure were (92.2, 92.2 & 5.66, 6.033) in control and experimental group respectively. Where as in experimental group after foot massage there was a great reduction in mean and standard deviation, systolic blood pressure were (132.6, 11.10) and diastolic blood pressure were (81.2, 2.60).

**Table.5**

**Frequency and Percentage Distribution of Level of the Satisfaction on Foot massage in the Experimental Group of the Elderly Hypertensive clients**

**N=30**

<b>Experimental group</b>		
<b>Level of satisfaction</b>	<b>n</b>	<b>p</b>
Dissatisfied	-	-
Satisfied	5	16.6
Highly Satisfied	25	83.3

It can be inferred from the table 5 that majority of the elderly hypertensive clients were highly satisfied (83.3%) on foot massage.

**Table.6**

**Association Between Selected Demographic Variable and Level of Systolic Blood Pressure and Diastolic Blood Pressure, Before and After Foot massage in Control Group of Elderly Hypertensive Clients**

Demographic variables	Systolic Blood Pressure (n=30)						Diastolic Blood Pressure (n=30)					
	Pretest			Post test			Pretest			Post test		
	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$
<b>Age(in years)</b>												
60-65	3	3	0.312	2	4	2.222	4	2	0	2	4	0.833
>65	15	9	(df=1)	16	8	(df=1)	16	8	(df=1)	13	11	(df=1)
<b>Gender</b>												
Male	9	5	0.200	7	7	1.093	7	7	2.019	5	9	2.142
Female	9	7	(df=1)	11	5	(df=1)	13	3	(df=1)	10	6	(df=1)
<b>Education</b>												
Illiterate	10	9	1.172	12	7	0.215	14	5	1.148	10	9	0.143
Literate	8	3	(df=1)	6	5	(df=1)	6	5	(df=1)	5	6	(df=1)
<b>Type of family</b>												
Nuclear	5	4	0.105	5	4	0.135	4	5	2.857	4	5	0.158
Joint& extended	13	8	(df=1)	13	8	(df=1)	16	5	(df=1)	11	10	(df=1)
<b>Marital Status</b>												
Widow	15	12	2.222	15	12	0.135	17	10	1.666	12	15	0.535
Others	3	0	(df=1)	2	1	(df=1)	3	0	(df=1)	2	1	(df=1)
<b>No of children</b>												
No	2	4	2.222	2	3	0	4	1	0.48	2	3	0.24
One & above	16	8	(df=1)	16	9	(df=1)	16	9	(df=1)	13	12	(df=1)
<b>Spouse alive</b>												
Yes	1	1	0.089	1	1	0.089	2	0	1.071	1	1	0
No	17	11	(df=1)	17	11	(df=1)	18	10	(df=1)	14	14	(df=1)

<b>Duration of stay</b>												
Upto 3 years	8	5	0.022	7	4	0.095	8	4	0	7	5	0.555
>3 years	10	7	(df=1)	11	8	(df=1)	12	6	(df=1)	8	10	(df=1)

**\*p < 0.05**

Note: Categories under the variables were clubbed for the sake of chi-square analysis.

From the table 6, it could be inferred that there was no significant association between the selected demographic variables and the level of systolic blood pressure and the level of diastolic blood pressure in control group.

**Table.7**

**Association Between Selected Demographic Variable and Level of Systolic Blood Pressure and Diastolic Blood Pressure, Before and After Foot massage in Experimental Group of Elderly Hypertensive Clients**

Demographic variables	Systolic Blood Pressure (n=30)						Diastolic Blood Pressure (n=30)					
	Pre test			Post test			Pre test			Post test		
	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$
<b>Age(in years)</b>												
60-65	7	5	0.20	7	5	2.248	6	5	0.031	7	5	3.757
>65	9	9	(df=1)	12	6	(df=1)	11	8	(df=1)	16	2	(df=1)
<b>Gender</b>												
Male	8	5	0.620	6	7	0.135	7	6	0.361	9	4	2.142
Female	8	9	(df=1)	9	8	(df=1)	11	6	(df=1)	14	3	(df=1)
<b>Education</b>												
Illiterate	7	5	0.200	9	3	1.172	8	3	1.172	11	1	2.515
Literate	9	9	(df=1)	10	8	(df=1)	10	9	(df=1)	12	6	(df=1)
<b>Type of family</b>												
Nuclear	9	8	0.002	12	5	0.889	9	9	1.875	13	4	0.008
Joint& extended	7	6	(df=1)			(df=1)	9	3	(df=1)	10	3	(df=1)
<b>Marital Status</b>												
Widow	8	10	1.428	11	7	0.095	11	7	0.361	13	5	0.496
Others	8	4	(df=1)	8	4	(df=1)	6	6	(df=1)	10	2	(df=1)
<b>No of children</b>												
No	5	3	0.368	6	3	0.061	5	4	0.006	9	1	1.490
One & above	11	11	(df=1)	13	8	(df=1)	12	9	(df=1)	14	6	(df=1)



<b>Spouse alive</b>												
Yes	7	2	3.086	7	2	1.155	5	4	0.006	8	1	1.073
No	9	12	(df=1)	12	9	(df=1)	12	9	(df=1)	15	6	(df=1)
<b>Duration of stay</b>												
Upto 3 years	7	9	1.265	12	5	0.889	7	10	3.800	11	6	3.137
>3 years	9	5	(df=1)	7	6	(df=1)	10	3	(df=1)	12	1	(df=1)

**\*p<0.05**

Note: Categories under the variables were clubbed for the sake of chi-square analysis.

The data from table 7, it could be inferred that there was no significant association between the selected demographic variables and the level of systolic blood pressure and the level of diastolic blood pressure in experimental group.

**Table.8**

**Association Between Selected Clinical Variable and Level of Systolic Blood Pressure and Diastolic Blood Pressure, Before and After Foot massage in Control Group of Elderly Hypertensive Clients**

Clinical variables	Systolic Blood Pressure (n=30)						Diastolic Blood Pressure (n=30)					
	Pre test			Post test			Pre test			Post test		
	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$
<b>Height in cms</b>												
140-160	17	10	0.987	13	8	0.105	19	8	1.666	11	10	0.158
161-180	1	2	(df=1)	5	4	(df=1)	1	2	(df=1)	4	5	(df=1)
<b>Weight in kgs</b>												
30-60	9	8	0.814	13	9	0.028	13	4	1.696	12	10	0.681
61-75	9	4	(df=1)	5	3	(df=1)	7	6	(df=1)	3	5	(df=1)
<b>BMI</b>												
<25	11	6	0.361	9	8	0.814	11	6	0.523	8	9	0.135
25-39	7	6	(df=1)	9	4	(df=1)	10	3	(df=1)	7	6	(df=1)
<b>Non vegetarian Diet</b>												
Yes	14	11	0	15	12	2.222	18	7	3.2	14	13	0.370
No	4	1	(df=1)	3	0	(df=1)	2	3	(df=1)	1	2	(df=1)
<b>Habit of chewing Tobacco</b>												
Yes	2	2	0.192	5	2	0.496	3	1	0.144	5	2	1.677
No	16	10	(df=1)	13	10	(df=1)	17	9	(df=1)	10	13	(df=1)
<b>Habit of smoking</b>												
Yes	4	5	1.296	3	6	3.809	9	1	3.675	3	6	1.428
No	14	7	(df=1)	15	6	(df=1)	11	9	(df=1)	12	9	(df=1)

<b>Habit of consuming alcohol</b>												
Yes	3	5	2.301	3	6	3.809	6	2	0.340	3	6	1.428
No	15	7	(df=1)	15	6	(df=1)	14	8	(df=1)	12	9	(df=1)
<b>Physical activity</b>												
Sedentary	9	6	0	7	4	0.095	9	6	0.6	5	6	0.143
Moderate & Heavy	9	6	(df=1)	11	8	(df=1)	11	4	(df=1)	10	9	(df=1)
<b>History of Hypertension</b>												
Upto 5 years	15	7	2.301	10	3	2.737	11	10	6.428*	7	5	0.555
>5 years	3	5	(df=1)	8	9	(df=1)	9	0	(df=1)	8	10	(df=1)
<b>Family history of Hypertension</b>												
Yes	10	4	1.428	11	9	0.625	10	4	0.267	9	11	0.6
No	8	8	(df=1)	7	3	(df=1)	10	6	(df=1)	6	4	(df=1)
<b>History of taking anti-hypertensive drugs</b>												
Yes	15	10	0	18	12	0	17	8	0.12	18	12	0
No	3	2	(df=1)	0	0	(df=1)	3	2	(df=1)	0	0	(df=1)
<b>History of any other associated disease</b>												
Yes	11	11	3.437	9	8	0.814	14	8	0.340	10	7	1.221
No	7	1	(df=1)	9	4	(df=1)	6	2	(df=1)	5	8	(df=1)

\*p < 0.05

Note: Categories under the variables were clubbed for the sake of chi-square analysis.

From the table 8, it could be inferred that there was no significant association between the selected clinical variables and the level of systolic blood pressure. There is

significant association between selected clinical variable like history of hypertension and diastolic blood pressure level in pretest. So the null hypothesis is rejected in history of hypertension in control group.

**Table.9**

**Association Between Selected Clinical Variable and Level of Systolic Blood Pressure and Diastolic Blood Pressure, Before and After Foot massage in Experimental Group of Elderly Hypertensive Clients**

Clinical variables	Systolic Blood Pressure (n=30)						Diastolic Blood Pressure (n=30)					
	Pre test			Post test			Pre test			Post test		
	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$	Upto mean	Above mean	$\chi^2$
<b>Height in cms</b>												
140-160	14	13	0.238	17	10	0.015	15	12	0.135	21	6	0.186
161-180	2	1	(df=1)	2	1	(df=1)	2	1	(df=1)	2	1	(df=1)
<b>Weight in kgs</b>												
30-60	8	9	0.620	10	7	0.343	9	8	0.221	12	5	0.810
61-75	8	5	(df=1)	9	4	(df=1)	8	5	(df=1)	11	2	(df=1)
<b>BMI</b>												
<25	9	8	0.002	11	6	0.031	10	7	0.074	13	4	0.008
25-39	7	6	(df=1)	8	5	(df=1)	7	6	(df=1)	10	3	(df=1)
<b>Non vegetarian Diet</b>												
Yes	13	12	0.178	15	10	0.717	14	11	0.021	20	5	0.931
No	3	2	(df=1)	4	1	(df=1)	3	2	(df=1)	3	2	(df=1)
<b>Habit of chewing Tobacco</b>												
Yes	3	1	0.870	3	1	0.353	14	11	0.027	4	0	1.404
No	13	13	(df=1)	16	10	(df=1)	3	2	(df=1)	19	7	(df=1)

<b>Habit of smoking</b>												
Yes	6	3	0.918	5	4	0.334	6	3	0.523	7	2	0.008
No	10	11	(df=1)	14	7	(df=1)	11	10	(df=1)	16	5	(df=1)
<b>Habit of consuming alcohol</b>												
Yes	7	1	<b>5.116*</b>	5	3	0.003	7	1	<b>4.223*</b>	7	1	0.715
No	9	13	(df=1)	14	8	(df=1)	10	12	(df=1)	16	6	(df=1)
<b>Physical activity</b>												
Sedentary	6	9	2.142	8	7	1.291	8	7	0.135	11	4	0.186
Moderate & Heavy	10	5	(df=1)	11	4	(df=1)	9	6	(df=1)	12	3	(df=1)
<b>History of Hypertension</b>												
Upto 5 years	9	12	3.086	15	7	0.835	12	10	0.151	17	5	0.016
>5 years	7	2	(df=1)	4	4	(df=1)	5	3	(df=1)	6	2	(df=1)
<b>Family history of Hypertension</b>												
Yes	9	5	1.265	11	3	2.624	8	6	0.002	11	3	0.053
No	7	9	(df=1)	8	8	(df=1)	9	7	(df=1)	12	4	(df=1)
<b>History of taking anti-hypertensive drugs</b>												
Yes	14	11	0.428	16	9	0.028	16	9	3.285	19	6	0.037
No	2	3	(df=1)	3	2	(df=1)	1	4	(df=1)	4	1	(df=1)
<b>History of any other associated disease</b>												
Yes	11	11	0.368	11	11	<b>6.315*</b>	13	9	0.197	16	5	0.008
No	5	3	(df=1)	8	0	(df=1)	4	4	(df=1)	7	2	(df=1)

**\*p < 0.05**

Note: Categories under the variables were clubbed for the sake of chi-square analysis.

Data from table 9 shows that there is significant association between selected clinical variable like habit of consuming alcohol and systolic blood pressure level and diastolic blood pressure level in pre test and there is significant association between history of other associated disease and systolic blood pressure level in post test. So the null hypothesis is rejected in history of consuming alcohol and history of other associated disease in experimental group.

## **Summary**

This chapter dealt with the analysis and interpretation of the data regarding the demographic variables, clinical variables and the level of blood pressure obtained by the researcher. The analysis showed that foot massage has decreased the level of blood pressure in elderly hypertensive clients.



*Chapter V*  
*Discussion*

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## **CHAPTER-V**

### **DISCUSSION**

A Quasi Experimental Study to Assess the Effectiveness of Foot Massage upon the Level of Blood Pressure among Elderly Hypertensive Clients at Selected Old Age Homes, Chennai.

#### **Objectives of the Study**

1. To assess the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
2. To evaluate the effectiveness of foot massage by comparing the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
3. To determine the level of satisfaction among experimental group of elderly hypertensive clients regarding administration of foot massage.
4. To find out the association between selected demographic variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.
5. To find out the association between selected clinical variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

This study was carried out upon the 60 elderly hypertensive clients at selected old age homes, Chennai. Pre-test level of blood pressure was checked in both control and experimental group, followed by foot massage was given for

the experimental group for 5 days continuously and post test level of blood pressure was checked on 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup>, 8<sup>th</sup> day of the therapy in both the control and experimental groups. Then the level of satisfaction on foot massage among the elderly hypertensive clients in the experimental group was assessed by using rating scale.

**The discussion was presented under the following headings**

- Frequency and percentage distribution of demographic variables of control and experimental group of the elderly hypertensive clients.
- Frequency and percentage distribution of clinical variables of control and experimental group of the elderly hypertensive clients.
- Frequency and percentage distribution of level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients.
- Comparison of mean and standard deviation of level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients.
- Frequency and percentage distribution of level of satisfaction on foot massage in experimental group of the elderly hypertensive clients.
- Association between the selected demographic variables and level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients.

- Association between the selected clinical variables and level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients.

### **Frequency and percentage distribution of demographic variables of control and experimental group of the elderly hypertensive clients**

The findings of the study revealed that significant of the elderly hypertensive clients were in the age group of >75 years (50%, 20%), the duration of stay in old age home were <1 year (20%, 40%) and number of children were two (33.3%, 30%). Most of them were females (53.3%, 56.7%), were illiterate (63.4%, 40%), belongs to Hindu religion (60%, 73.3%) and were in joint family (70%, 43.3%). Majority of the hypertensive clients were widowers (90%, 60%), with nil monthly income (100%, 100%), with spouse not alive (93.3%, 70%) and spouse not resides in same home (100%, 96.7%) in control and experimental group respectively.

Hypertension of the elderly was influenced by some of the variables. The study findings revealed that a significant percentage of the elderly with hypertension were more than 75 years of age (50%, 40%) both in control and experimental group. This findings was supported with the research conducted by Wenyue Pang et al. (2010) which revealed that the prevalence rates of hypertension are 57%, 64.4% and 64.9% for the age groups 60-69, 70-79 and  $\geq 80$  years, respectively. Thus we can infer that as the age rises, the blood pressure also increases. It could be assumed that more than 75 years of age majority of the elderly have hypertension. It helps the nurses to concentrate more

on this age group to reduce the morbidity and mortality related to blood pressure changes.

The study findings found that most of them were females (53.3%, 56.7%) both in control and experimental group. This was in par with a study conducted by Feng Hwa Lu et al. (2000) which identified that the prevalence of hypertension was higher in women (61.9%) than in men (59.1%). This throws light to the fact that hypertension was more prevalent in females than the males in the elderly people. Hypertension is more prevalent in the females of elderly people which could be due to the hormonal and biochemical changes after menopause that might have an effect on blood pressure and leads to increased prevalence of hypertension among the females.

Most of the study participants both in the control and experimental group were widow/widower (90%, 60%). This was supported by a study done by Caroline et al. (2000) which revealed that the prevalence of hypertension in the elderly was highest in widows and widowers and lowest in unmarried people. Thus it is believed that among the widow/widower there is loneliness, loss of loved ones and social isolation, which could be the risk factors among them to develop hypertension. Hence it can be considered that marital status of the elderly also has a great impact on the level of blood pressure in them.

### **Frequency and percentage distribution of clinical variables of control and experimental group of the elderly hypertensive clients**

It could be inferred that most of the elderly hypertensive clients had height 151-160cm (36.7%, 70%), had weight 46-60kg (60%, 46.7%), had BMI of <25 (56.7%,

56.6%), were consuming non vegetarian diet once in a week (44.4%, 64%), duration of chewing tobacco for more than 10 years (57%, 25%), duration of consuming alcohol (88.9%, 62.5%) and moderate workers (60%, 46.7%). Majority of the elderly hypertensive clients had no habit of chewing tobacco (76.7%, 86.7%), were smokers (70%, 70%), no habit of consuming alcohol (70%, 73.3%), were non vegetarians (90%, 83.3%), were taking drugs (100%, 66.7%) and were not on any other complementary therapy (100%, 100%). Significant client has been suffering from hypertension for 1-5 years (36%, 66.7%) and had no family history of hypertension (33.4%, 53.3%) in control and experimental group respectively.

Alcoholism, smoking, increased body mass index are considered to be the risk factors for hypertension, but in this study most of the hypertensive clients were non smokers, non alcoholic and with BMI < 25. Hence the habit of smoking may not be present in the study population. Since it was in old age home, people are suppose to follow the rules of the organization which does not permit them to smoke and drink alcohol. Lack of physical activity, stress may be the reasons to develop hypertension. It is the responsibility of the health care provider to encourage physical activities and educate about stress reducing techniques like yoga, relaxation techniques to reduce stress. Most of the hypertensive clients were aged, they can't able to do heavy work. Here foot massage will help them to reduce their blood pressure.

Most of them both in control and experimental group were not having the habit of chewing tobacco (76.7%, 86.7%). This was consistent with a study done by Mendez Chacon et al. (2008) which found out the factors associated with hypertension in the elderly and concluded that 68% of the elderly who had hypertension did not have the

habit of tobacco. Thus it can be believed that irrespective of having the habit of tobacco chewing the elderly developed hypertension.

The significant findings among the clinical variables showed that 56.5% of them in the control group and 56.5% of them in the experimental group were identified to have body mass index of less than 25. The study findings were supported by the research conducted by Kamal Masaki et al. (1997) which concluded that the prevalence of hypertension continued to increase with age despite a general decrease in body mass index. Thus the researcher assumed that irrespective of their body mass index the elderly can develop hypertension.

Majority of the study participants were without previous family history of hypertension (50%) in control group. This was relevant with a study conducted by Cihangir Erem et al. (2009) which concluded that there is no relationship between hypertension and family history. Thus it throws light to the fact that there is prevalent hypertension in the elderly hypertensive of their family history.

Majority of them were having history of other associated diseases (50%, 66.7%) both in control and experimental group respectively. This was supported by a study done by Posner (2002) which concluded that 58.1% had history of hypertension associated with diabetes, stroke, and heart disease. Thus it helps the nurses to care for all the elderly with hypertension and their associated disease.

In the present study, majority of them were taking anti hypertensive medications regularly. This could be the non compliance of the drug regimen. This may be due to forgetful nature, feeling laziness to regular consumption of drugs, no response with drug

were the reasons for non compliance. Significant percentage of them had habit of taking non vegetarian diet once in a week. It is due to high cholesterol content in non vegetarian diet plays significant role in increasing the level of blood pressure. It is the responsibility of the nurses educate the importance of dietary management for hypertensive clients.

**Frequency and percentage distribution of level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients**

The study could be inferred that significant number of elderly hypertensive clients had mild to moderate systolic blood pressure (40%, 50% & 46.7%, 43.3%) and diastolic blood pressure were mild (60%, 56.4%) before foot massage in control and experimental group respectively. Whereas in experimental group majority of client had normal systolic blood pressure (73.4%) and normal diastolic blood pressure (96.7%) after foot massage.

Studies found that foot massage has a significant effect on lowering blood pressure. Thus the researcher concluded that the mild level of hypertension can be brought to normal if appropriate measures are taken. Hence all the nurses must be trained regarding alternative therapies, so that they can disseminate the knowledge to the public.



### **Comparison of mean and standard deviation of level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients**

The findings of the study revealed that, before foot massage the mean and standard deviation of systolic blood pressure were (160.4, 157.7 & 14.64, 11.369) and diastolic blood pressure were (92.2, 92.2 & 5.66, 6.033) in control and experimental group respectively. Where as in experimental group after foot massage there was a great reduction in mean and standard deviation, systolic blood pressure were (132.6, 11.10), ( $p < 0.001$ ) and diastolic blood pressure were (81.2, 2.60),  $p < 0.001$ .

The above results showed that foot massage helps to reduce the blood pressure of the elderly with hypertension. It reduces stress, promotes relaxation and enhances comfort. Thus the researcher concluded that the findings must be disseminated so that evidence based knowledge can be utilized in the clinical setting to reduce hypertension through foot massage and it also aids the nursing personnel to concentrate more on alternative and complementary therapy along with anti-hypertensive therapy, by which we can prevent complications.

### **Frequency and percentage distribution of level of satisfaction on foot massage in experimental group of the elderly hypertensive clients**

Significant percentage of them in the experimental group were satisfied with the foot massage (16.6%), majority of them were highly satisfied (83.3%) and none of them expressed dissatisfaction. This interprets that foot massage highly effective in reducing

stress and lowering blood pressure. Though there are various methods to reduce blood pressure, it is simple and effective method.

**Association between the selected demographic variables and level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients**

There was no significant association between the selected demographic variables such as age, gender, education, type of family, marital status, no of children, spouse alive, duration of stay in old age home and pre-test and post test level of blood pressure in the control and experimental group in both systolic and diastolic blood pressure. Null hypothesis  $H_{02}$  was accepted.

**Association between the selected clinical variables and level of blood pressure before and after foot massage in control and experimental group of the elderly hypertensive clients**

There was a association between selected clinical variable such as family history of hypertension ( $\chi^2= 6.428$ ,  $df=1$ ), ( $p<0.05$ ) in pre-test level of diastolic blood pressure in the control group. Hence the null hypothesis  $H_{03}$  is partially rejected with family history of hypertension.

This findings was supported by a study done by Mendez Chacon et al. (2008) regarding the factors associated with hypertension in the elderly and found that there is significant association between age and family history of hypertension.

There was a significant association between the selected clinical variable such as history of consuming alcohol ( $\chi^2= 5.116$ ,  $df=1$ ), ( $\chi^2= 4.223$ ,  $df=1$ ), ( $p<0.05$ ) in pre-test level of systolic blood pressure and diastolic blood pressure in experimental group. Hence the null hypothesis  $H_{03}$  is partially rejected with regard to history of consuming alcohol in.

There was a significant association between selected clinical variable such as history of other associated disease ( $\chi^2= 6.315$ ,  $df=1$ ), ( $p<0.05$ ) in post test level of systolic blood pressure in experimental group. Hence the null hypothesis  $H_{03}$  is partially rejected with regard to other associated diseases.

This findings was supported by a study done by Posner (2002), regarding the associated diseases with hypertension in the elderly and found that there is significant association between hypertension with diabetes, stroke, and heart disease.

### **Summary**

This chapter has dealt with the objectives of the study, major findings of the demographic and clinical variables of the elderly with hypertension, description of pre-test and post test level of blood pressure, comparison of mean and standard deviation of pre-test and post test level of blood pressure, assessment of the level of satisfaction on foot massage, association between the selected demographic and clinical variables and pre-test and post test level of blood pressure in the control and experimental group of elderly hypertensive clients.

*Chapter VI*  
*Summary, Conclusion, Implications*  
*and Recommendations*

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## **CHAPTER VI**

### **SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS**

#### **SUMMARY**

The heart of the research project lies in reporting the findings. This is the most creative and demonstrating part of the study. This chapter deals with the summary of the study findings, conclusion and implications and recommendations for the future researchers.

A Quasi Experimental Study was conducted to Assess the Effectiveness of the Foot Massage upon the Level of Blood Pressure among the Elderly Hypertensive Clients in Selected Old Age Homes Chennai.

#### **Objectives of the Study**

1. To assess the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
2. To evaluate the effectiveness of foot massage by comparing the level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage.
3. To determine the level of satisfaction among experimental group of elderly hypertensive clients regarding administration of foot massage.
4. To find out the association between selected demographic variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

5. To find out the association between selected clinical variables and the level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

The study utilized the Quasi Experimental research design and the study was conducted at St. Thomas Home for senior citizens at Vyasarpathi, Chennai (control group). Little drops home for aged, Paraniputhur, Chennai (experimental group). Sixty elderly hypertensive clients were selected through purposive random sampling technique. Out of which 30 clients were assigned to control group and 30 clients were assigned for experimental group. The level of blood pressure were assessed for both control and experimental group in both before and after foot massage. Foot massage was given in the experimental group for the period of five days, 20 minutes in a day.

### **Null Hypothesis**

- H<sub>01</sub>** There will be no significant difference in level of blood pressure in control and experimental group of elderly hypertensive clients before and after administration of foot massage
- H<sub>02</sub>** There will be no significant association between selected demographical variables and level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.
- H<sub>03</sub>** There will be no significant association between selected clinical variables and level of blood pressure in control group and experimental group of elderly hypertensive clients before and after administration of foot massage.

The conceptual frame work for this study is based on Modified King's goal attainment model. An extensive review literature and guidance by the experts formed foundations to the development of the tool. A quasi experimental research approach was used to achieve the objectives of the study.

The investigator used the Demographic variable proforma, Clinical variable proforma, observational check list to assess the blood pressure, and rating scale for the level of satisfaction of foot massage to collect the data. The data collection tools were validated and reliability was established. After the pilot study, the data for the main study was collected. The collected data was tabulated and analyzed using descriptive and inferential statistics.

### **Major Findings of the Study**

#### **Demographic variables of the elderly hypertensive clients**

The study finding reveals that significant percentage of the elderly hypertensive clients were in the age group of >75 years (50%, 20%), the duration of stay in old age home were <1 year (20%, 40%) and number of children were two (33.3%, 30%). Most of them were females (53.3%, 56.7%), were illiterate (63.4%, 40%), belongs to Hindu religion (60%, 73.3%) and were in joint family (70%, 43.3%). Majority of the hypertensive clients were widowers (90%, 60%), with nil monthly income (100%, 100%), with spouse not alive (93.3%, 70%) and spouse not resides in same home (100%, 96.7%) in control and experimental group respectively.

### **Clinical variables of elderly hypertensive clients**

Most of the elderly hypertensive clients had height 151-160cm (36.7%,70%), had weight 46-60kg (60%, 46.7%), had BMI of <25 (56.7%, 56.6%), were consuming non vegetarian diet once in a week (44.4%, 64%), duration of chewing tobacco for more than 10 years (57%, 25%), duration of consuming alcohol (88.9%, 62.5%) and moderate workers (60%, 46.7%). Majority of the elderly hypertensive clients had no habit of chewing tobacco (76.7%, 86.7%), were smokers (70%, 70%), no habit of consuming alcohol (70%, 73.3%), were non vegetarians (90%, 83.3%), were taking drugs (100%,66.7%) and were not on any other complementary therapy (100%, 100%).

Significant client has been suffering from hypertension for 1-5 years (36%, 66.7%) and had no family history of hypertension (33.4%, 53.3%) in control and experimental group respectively.

### **Level of blood pressure of elderly hypertensive clients before and after Foot massage**

Significant number of elderly hypertensive clients had mild to moderate systolic blood pressure (40%, 50% & 46.7%, 43.3%) and diastolic blood pressure were mild (60%, 56.4%) before foot massage in control and experimental group respectively. Whereas in experimental group majority of client had normal systolic blood pressure (73.4%) and normal diastolic blood pressure (96.7%) after foot massage.



### **Level of satisfaction of foot massage among elderly hypertensive clients**

Significant percentage of them in the experimental group were satisfied with the foot massage (16.6%), majority of them were highly satisfied (83.3%) and none of them expressed dissatisfaction. This interprets that foot massage highly effective in reducing stress and lowering blood pressure. Though there are various methods to reduce blood pressure, it is simple and effective method.

### **Comparison of mean and standard deviation of the level of systolic blood pressure and diastolic blood pressure of the elderly hypertensive clients before and after Foot massage**

The mean and standard deviation of systolic blood pressure were (160.4, 157.7 & 14.64, 11.369) and diastolic blood pressure were (92.2, 92.2 & 5.66, 6.033) before foot massage in control and experimental group respectively. Where as in experimental group after foot massage there was a great reduction in mean and standard deviation, systolic blood pressure were (132.6, 11.10), ( $p < 0.001$ ) and diastolic blood pressure were (81.2, 2.60), ( $p < 0.001$ ).

### **Association between selected demographic variables and the level of blood pressure in control and experimental group of the elderly hypertensive clients**

There was no significant association between the selected demographic variables such as age, gender, education, type of family, marital status, no of children, spouse alive, duration of stay in old age home and pre-test and post test level of blood pressure

in the control and experimental group in both systolic and diastolic blood pressure. Null hypothesis  $H_{02}$  was accepted.

### **Association between selected clinical variables and the level of blood pressure in control and experimental group of the elderly hypertensive clients**

Chi square test was used to find out the association between clinical variables and the level of blood pressure. There was a association between selected clinical variable such as family history of hypertension ( $\chi^2= 6.428$ ,  $df=1$ ), ( $p<0.05$ ) in pre-test level of diastolic blood pressure in the control group. Hence the null hypothesis  $H_{03}$  is partially rejected with family history of hypertension in.

There was a significant association between the selected clinical variable such as history of consuming alcohol ( $\chi^2= 5.116$ ,  $df=1$ ), ( $\chi^2= 4.223$ ,  $df=1$ ), ( $p<0.05$ ) in pre-test level of systolic blood pressure and diastolic blood pressure in experimental group. Hence the null hypothesis  $H_{03}$  is partially rejected with regard to history of consuming alcohol in.

There was a significant association between selected clinical variable such as history of other associated disease ( $\chi^2= 6.315$ ,  $df=1$ ), ( $p<0.05$ ) in post test level of systolic blood pressure in experimental group. Hence the null hypothesis  $H_{03}$  is partially rejected with regard to other associated diseases.

### **Conclusion**

Hypertension is an 'iceberg' disease. A non-pharmacological natural healing approach is needed to overcome that problem. Foot massage is simple, which is easy to

do, has no notable side effects and most acceptable one to reduce hypertension in the elderly. The findings of the study showed that the post level of blood pressure on foot massage was statistically significant at  $P < 0.05$  in the experimental group. Hence it could be concluded that there is an association between hypertension and the foot massage.

### **Implications**

Based on the findings the researcher recommended the implications on Nursing practice, Nursing administration, Nursing education, Nursing research.

#### **Nursing practice**

The findings of the study revealed that the elderly hypertensive clients living in the old age homes had hypertension and Foot massage is an effective treatment for hypertension. All health workers can use this foot massage in their settings to treat hypertension in the group. Especially nurses play a vital role in caring elderly hypertensive clients and early diagnosis of old age hypertension can prevent from harmful consequences. Strategies can be given for community workers in early detection of old age hypertension and its management. It can create the awareness about hypertension of the elderly hypertensive clients and its effective management

#### **Nursing education**

With the emerging health care demands and newer trends in field of nursing education must focus on the innovations to enhance the nursing care. The nursing students should be taught the importance of reducing blood pressure and enhance the quality of life of the elderly hypertensive clients. Therefore nursing students should be

introduced with the alternative methods of treating hypertension. Student nurses should incorporate the importance of early screening of old age hypertension and its management. Mass health education programme can be conducted regarding awareness of old age hypertension. Hypertension in old age must be included in the curriculum of A.N.M, G.N.M, B.Sc, P.B.B.Sc and M.Sc Nursing Programme.

### **Nursing administration**

With technological advances and ever growing challenges of health care, administrators have the responsibility to provide continuing nursing education opportunities to understand the complementary therapies including Foot massage.

This enables the nurses to update the knowledge and to render the cost effective care to the public. The nurse administrators can train the nurses to identify old age hypertensive symptoms, and to give teaching regarding management of old age hypertensive. Nurse administrators must periodically organize formal training programme to the nurses for the management of hypertension in elderly hypertensive clients. Awareness can be created among the nurses regarding the benefits of foot massage in order to promote its use in clinical set up.

### **Nursing research**

The professionals and the students can conduct further studies on hypertension through various other interventions to promote well being in the old age homes. There is in need of extensive research in this area. Nurse researcher should challenge to perform scientific work and take part in assessment, applications, evaluation for elderly

hypertensive clients with hypertension. Researchers must focus on old age physical health on various aspects and develop appropriate tools for screening and risk assessments of old age hypertension and preventive interventions. It opens the large avenue for research. Since foot massage can be implemented to patients in hypertension due to any other type of illness and its effectiveness can be tested through research.

### **Recommendations**

The researcher recommends the following studies in the field of nursing research,

- The same study could be conducted on larger samples for better generalization.
- The study could be replicated in different settings.
- A comparative study can be conducted to evaluate the effectiveness of foot massage with other non pharmacological agents and alternative therapies.
- Structured teaching programme can be conducted for the elderly to improve their knowledge.
- A study can be conducted to assess the effectiveness of foot massage in different age group.
- A study can be conducted on the quality of life among hypertensive clients.
- A similar study can be conducted for one month to assess the effectiveness of foot massage.
- A study can be conducted to evaluate the effectiveness of foot massage in the management of cancer pain and post operative pain.

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## *Appendices*

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## APPENDIX I

### LETTER SEEKING PERMISSION TO CONDUCT THE STUDY



**Apollo College of Nursing**

(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0389/12

14.06.12

To:

The Director  
Little Drops (REGD),  
No 1, Kalluri Salai,  
Koluthuvancheri,  
Paraniputhur (PO),  
Chennai- 602101.

Respected Sir / Madam,

**Sub.:** To request permission for research study – Reg.

**Greetings!** As part of the curriculum requirement our 2nd year M. Sc. (N) student

Ms. G.Kavitha has selected the following title for her research study.

**“A Quasi experimental study to assess the effectiveness of foot massage upon the level of blood pressure among Elderly Hypertensive clients at Selected Old age homes, Chennai.**

So I kindly request your good selves to permit her to conduct study in your esteemed institution.

Thanking You,

**DR. LATHA VENKATESAN**  
**PRINCIPAL**



IS/ISO 9001:2000

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.  
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

## APPENDIX II

### LETTER PERMITTING TO CONDUCT THE STUDY



## LITTLE DROPS (Regd.) PUBLIC CHARITABLE TRUST

☎ : 2476 7763  
Cell : 9884080864

Office : No. 1, Kalluri Salai, Koluthuvanchery, Paraniputhur (P.O.), Chennai - 600122.  
E-mail : littledropshome@yahoo.com Website : www.forlittledrops.org

Ref/LD - 288

Date:19/7/12

Dr. Latha Venkatatesan,  
Principal, Apollo College of Nursing,  
Chennai-600095.

Dear Madam,

Ref. your letter dated 11.6.12 requesting permission for Ms. G. Kavitha to undertake a project at our Home for senior citizens Little Drops regarding.

As desired by you Ms. G. Kavitha, 2<sup>nd</sup> year Msc Nursing of your institution was accorded facility in our Home for project work from 25.06.2012 to 16.7.2012.

We are happy to acknowledge that she conducted her project studies in the Home in an excellent manner with good dedication, punctual timings and in a pleasant way.

We offer our best wishes to Ms. G. Kavitha for a very successful and fruitful career.

With warm regards,

E.J. Paul  
Founder trustee.

Shelter : I : #8, Viswasa Nagar, Koluthuvancheri, Paraniputhur (P.O), Chennai - 600122. Ph : 24766530  
Shelter : II : #1, Melathur-Nalur, Erikarai Road, Somangalam, Chennai - 602 109. Ph : 27190565  
Family Rehabilitation Centre : No.1, Uthupallam, Agaraharam Village, Harur TK, Dharmapuri Dist., Ph. : 04346-204667, Cell : 9176623340

## APPENDIX III

### ETHICAL COMMITTEE CLEARANCE LETTER

## Ethics Committee



30<sup>th</sup> August 2012

To,

Ms. G.Kavitha  
2<sup>nd</sup> Year M.Sc (Nursing),  
Department of Medical Surgical Nursing,  
Apollo College of Nursing,  
Chennai.

Ref: A Quasi experimental study to assess the effectiveness of foot massage upon the level of blood pressure among elderly hypertensive clients at selected old age homes, Chennai.

Sub: Approval of the above referenced project and its related documents.

Dear Ms. G.Kavitha,

Ethics Committee-Apollo Hospitals has received the following document submitted by you related to the conduct of the above-referenced study.

- Project proposal.

The Ethics Committee-Apollo Hospitals reviewed and discussed the study proposal documents submitted by you related to the conduct of the above referenced study at its meeting held on 29<sup>th</sup> August 2012.

The following Ethics Committee Members were present at the meeting held on 29<sup>th</sup> August 2012.

Name	Profession	Position in the committee
Mr. S. S. Narayanan	Ethicist	Chairman
Dr. Rema Menon	Clinician	Member Secretary
Dr. Radha Rajagopalan	Clinician	EC-Member
Dr. Krishnakumar	Clinician	EC-Member
Dr. Vijaya Kumar	Clinician	EC-Member
Dr. Clive Fernandes	Consultant Clinical Pharmacologist	Basic Medical Scientist

Apollo Hospitals Enterprise Limited  
21, Greams Lane, Off Greams Road, Chennai - 600 006  
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449  
E - Mail : [ecapollochennai@gmail.com](mailto:ecapollochennai@gmail.com)

## Ethics Committee



Dr. Nalini Roa	Social Worker	EC-Member
Ms. N. Suseela	Retired English Teacher	Layperson
Ms. Maimoona Badsha	Lawyer	Lawyer
Dr. Paul Dilipkumar	Clinician	EC-Member
Dr. V. Balaji	Clinician	EC-Member
Dr. M. A. Raja	Consultant Medical Oncologist	EC-Member

After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you.

The EC review and approval of the report is only to meet their academic requirement and will not amount to any approval of their conclusions / recommendations as conclusive, deserving adoption and implementation, in any form, in any healthcare institution.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

With Regards,

Date:

Dr. Rema Menon,  
Ethics Committee-Member Secretary,  
Apollo Hospitals, Chennai,  
Tamil Nadu, India.

29/8/12

**Dr. REMA MENON**  
MEMBER SECRETARY  
ETHICS COMMITTEE, APOLLO HOSPITALS  
APOLLO HOSPITALS ENTERPRISE LIMITED  
CHENNAI-600 006, TAMILNADU

Apollo Hospitals Enterprise Limited  
21, Greams Lane, Off Greams Road, Chennai - 600 006  
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449  
E - Mail : [ecapollochennai@gmail.com](mailto:ecapollochennai@gmail.com)

## APPENDIX IV

### LETTER SEEKING PERMISSION FOR CONTENT VALIDITY

From

Ms. G. Kavitha  
M.Sc (Nursing) Second Year,  
Apollo College of Nursing,  
Chennai – 600 095.

To

Dr. Latha Venkatesan,  
Principal,  
Apollo College of Nursing.

**Sub: Requesting for opinions and suggestions of experts for establishing content validity for research tool.**

Respected Madam,

I am a postgraduate student of the Apollo College of Nursing. I have selected the below mentioned topic for research project to be submitted to The Tamil Nadu Dr. M.G.R Medical University, Chennai as a partial fulfillment of Masters of Nursing Degree

#### TITLE OF THE TOPIC

A Quasi Experimental Study to Assess the Effectiveness of foot massage upon the level of blood pressure among Elderly Hypertensive clients at Selected Old age homes, Chennai.

With regards may I kindly request you to validate my tool for its appropriateness and relevancy. I am enclosing the Background, Need for the study, Statement of the problem, Objectives of the study, Demographic Variable Proforma, Clinical Variable Proforma, observational checklist with hypertension, rating scale on level of satisfaction of foot massage. I would be highly obliged and remain thankful for your great help if you could validate and send it as soon as possible.

**Thanking you,**

**Date:**

**Yours sincerely,**

**Place:**

**(G. Kavitha)**



## APPENDIX V

### LIST OF EXPERTS

1. **Dr. Latha Venkatesan, M.Sc(N), M.Phil., Ph.D,**  
Principal and Professor in Maternity Nursing,  
Apollo College of Nursing,  
Chennai- 600 095
2. **Prof. Lizy Sonia. A, M.Sc (N), Ph.D,**  
Vice Principal and Professor in Medical Surgical Nursing,  
Apollo College of Nursing,  
Chennai-600 095
3. **Prof. K. Vijayalakshmi, M.Sc (N), Ph.D,**  
Professor in Psychiatric Nursing,  
Apollo College of Nursing,  
Chennai- 600 095
4. **Prof. Shobana, M.Sc (N),**  
Professor in Community Health Nursing,  
Apollo College of Nursing,  
Chennai- 600 095
5. **Mrs. Nesa Sathya Satchi, M.Sc (N),**  
Professor in Pediatric Nursing,  
Apollo College of Nursing,  
Chennai- 600 095

**6. Mrs. Jaslina Gnana Rani .J, M.Sc (N), Ph.D,**

Reader in Medical Surgical Nursing,

Apollo College of Nursing,

Chennai- 600 095.

**7. Mrs. Sasi Kala, M.Sc (N),**

Reader in Medical Surgical Nursing

Apollo College Of Nursing

Chennai-600 095

**8. Mrs. Kanchana, M.Sc (N), M.Sc (Psy),**

Reader in Medical Surgical Nursing,

Apollo College of Nursing,

Chennai-600 095

**9. Mrs. Kasthuri, M.Sc (N),**

Lecturer in Medical Surgical Nursing,

Apollo College of Nursing,

Chennai- 600 095

## **APPENDIX VI**

### **CERTIFICATE FOR CONTENT VALIDITY TO WHOMSOEVER IT MAY CONCERN**

This is to certify that tools and content for the research study developed by II year M.Sc. (Nursing) student of Apollo College of Nursing for her dissertation “A Quasi Experimental Study to Assess the Effectiveness of foot massage upon the level of blood pressure among Elderly Hypertensive clients at Selected Old age homes, Chennai.” was validated.

**Signature of the Expert**

## APPENDIX VII

### RESEARCH PARTICIPANT CONSENT FORM

Dear participant/ bystander,

I am G. Kavitha. a M.Sc Nursing student of Apollo College of Nursing, Chennai. As part of my study, a research on “**Effectiveness of foot massage upon the level of blood pressure**”. The findings of the study will be helpful in reducing the stress in elderly depressive clients.

I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your responses. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I .....Hereby consent to participate my relative in this study

Place:

Date:

Signature of the participant/ bystander.

## ஆராய்ச்சியில் பங்கு பெறுவோருக்கான ஒப்புதல் படிவம்

அன்பிற்குரிய பங்கு பெறுவோரே!

கு.கவிதா எனும் நான் ,அப்பொலோ செவிலியர் கல்லூரியின் இரண்டாம் படிப்பின் ஒரு பகுதியாக, முதியோர்களின் உயர் இரத்த அழுத்ததை குறைக்கும் பொருட்டு பாத மசாஜ் (தொக்கனம்) சிகிச்சை மேற்கொண்டு ஓர் ஆய்வு செய்ய உள்ளேன். இவ்வாய்வு முதியோர்களின் உயர் இரத்த அழுத்ததை குறைக்க பெரிதும் பயன்படும்.

இவ்வாய்வில் தாங்கள் கலந்து கொண்டு தங்களின் பதில்களை உண்மையாகவும், வெளிப்படையாகவும் கூறுமாறு தங்களை தாழ்மையுடன் கேட்டுக் கொள்கிறேன். தங்களின் பதில்கள் இரகசியமாக பாதுகாக்கப்படும் என உறுதியளிக்கிறேன்.

ஆய்வாளரின் கையொப்பம்

\_\_\_\_\_ எனும் நான் இவ்வாய்வில் கலந்துகொள்ள சம்மதிக்கிறேன்.

பங்கு பெறுவோரின் கையொப்பம்

## APPENDIX VIII

### CERTIFICATE FOR FOOT MASSAGE



**Institute Of Alternative And Complimentary Therapp**  
Affiliated to Dr. Vijay's Health Science and Research Foundation  
Chennai, India

Date: 06.06.2012

#### Whomsoever may be concern

This is to certify that **Ms.G.Kavitha** a student of M.Sc.Nursing from Apollo College of Nursing, Chennai-95, has done her training in **Foot Massage** for one week in our institute. The Project work entitled "*A Quasi Experimental Study to Assess the Effectiveness of Foot massage upon the level of blood pressure among Elderly Hypertensive clients at slected Old age homes, Chennai*". During that period, she had been trained in that topic, she acquitted herself well. She was prompt in her duty and her conduct has been good.



**Dr.E.VijayaKumar.,** MPT., MD( Acu)., MIAP, DYT., FIMT

Address: 42/3, G.N.G Street, Varadharajapuram, Amabttur, Chennai -53, Mobile: +91 99406 79698

## APPENDIX IX

### CERTIFICATE FOR ENGLISH EDITING

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation “A Quasi Experimental Study to Assess the Effectiveness of Foot Massage upon Blood Pressure in Elderly Hypertensive clients at selected old age homes, Chennai by Ms. G. Kavitha, II year M.Sc., (N) Student, Apollo College of Nursing was edited for English Language appropriateness.



Signature

V. USHA  
Asst. Prof. of English  
Guru Nanak College  
Velachery, Chennai - 600 042.

## APPENDIX X

### CERTIFICATE FOR TAMIL EDITING

#### TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation "A Quasi Experimental Study to Assess the Effectiveness of Foot Massage upon Blood Pressure in Elderly Hypertensive clients at selected old age homes, Chennai by Ms. G. Kavitha, II year M.Sc., (N) Student, Apollo College of Nursing was edited for Tamil Language appropriateness.

  
Signature


ச.ஸ்ரீபதிநாயுடு, M.A.B.Ed.  
பட்டதாசி ஆசிரியர்,  
அரசலயர்நிலைப்பள்ளி,  
சிவபாக்கம், சென்னை - 64




## APPENDIX XI

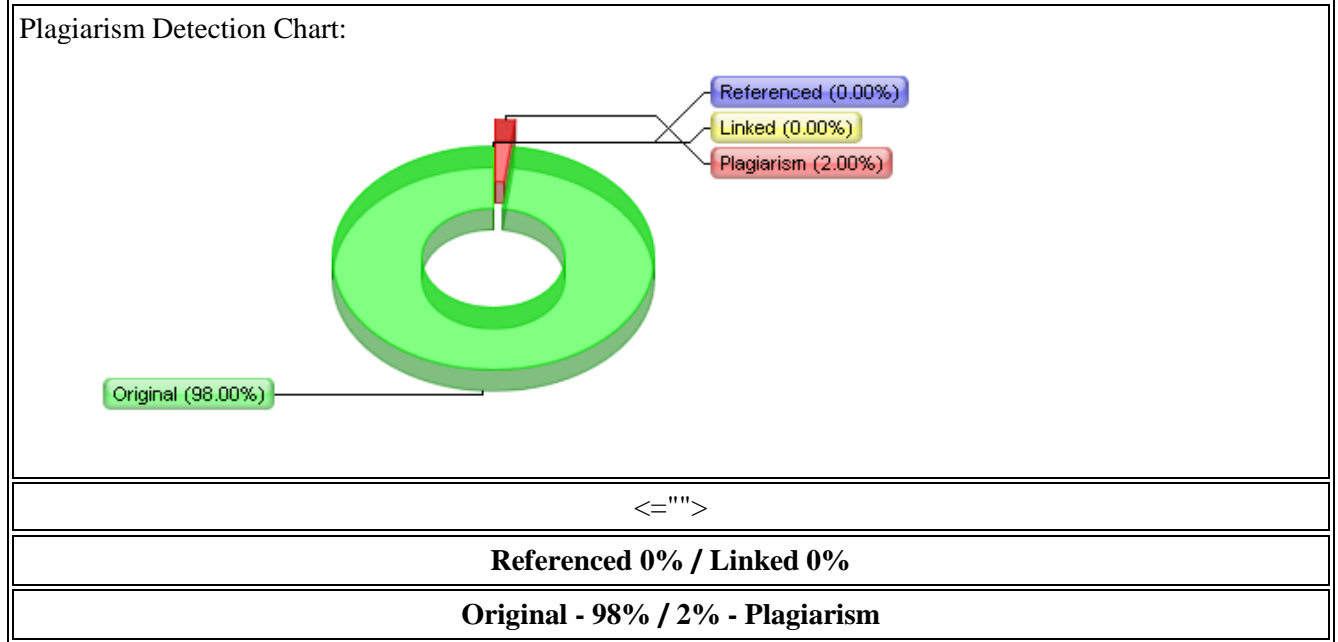
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<b>Originality report details:</b>		
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	Document Words Count:	14903

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## APPENDIX XII

### DEMOGRAPHIC VARIABLE PROFORMA FOR OLD AGE PEOPLE

#### Purpose

This Proforma is used to measure the demographic variables of the old age people such as age in years, gender, religion, educational status, type of the family, marital status, monthly income, source of income, number of children, if spouse is alive whether he/ she is residing in this home and duration of stay in old age home etc.

#### Instruction

The researcher collects the following information from the participants and records by asking questions in the interview form and observation. Please be frank and free in answering, it will be kept confidential and anonymity will be maintained.

Identification data:

Sample no:

#### 1. Age in years

1.1 60-65 years

1.2 66-70 years

1.3 71-75 years

1.4 >75 years

#### 2. Gender

2.1 Male

2.2 Female

**3. Religion**

3.1 Hindu

3.2 Muslim

3.3 Christian

3.4 Others (specify)

**4. Educational status**

4.1 Illiterate

4.2 Primary education

4.3 Secondary education

4.4 Higher Secondary

4.5 Graduate & above

**5. Type of the family**

5.1 Nuclear

5.2 Joint

5.3 Extended family

**6. Marital status**

6.1 Unmarried

6.2 Married

6.3 Separated/divorced.

6.4 Widow/Widower

**7. Monthly income**

7.1 Nil

7.2 < Rs.2000

7.3 Rs.2001-6000

7.4 Rs.6001-10000

7.5 > Rs.10000

**8. Source of income**

8.1 Pensioners

8.2 Govt aid.

8.3 Property

8.4 Savings.

8.5 Others [specify]

**9. Number of children**

9.1 No

9.2 One

9.3 Two

9.4 More than two

**10. Spouse is alive**

10.1 Yes

10.2 No

**11. If spouse is alive, whether he/she is residing in this home.**

11.1 Yes

11.2 No

**12. Duration of stay in the old age home**

12.1 Less than 1 year

12.2 2 - 3 years

12.3 4-6 years

12.4 > 6 years

## சமூக அறிவியல் பட்டியல்

### நோக்கம்

வயது, பாலினம், மதம், கல்வி நிலை, குடும்ப வகை, திருமணநிலை, மாதாந்திர வருமானம் வருமானத்திற்கான ஆதாரம், குழந்தைகளின் எண்ணிக்கை போன்ற மக்களியல் சார்ந்த மாற்றத்தக்கவைகளை அளவிடுவதற்கு இப்படிவம் பயன்படுத்தப்படுகிறது. இது மக்களின் சமூக மற்றும் குடும்ப தகவல்களை மதிப்பிடுவதற்காக வடிவமைக்கப்பட்டுள்ளது.

### அறிவுறுத்துதல்

கீழ்வரும் தகவல்களை ஆய்வாளரால் நேர்முக கலந்துரையாடல் மூலமும், மேற்காணல் மூலமும் சேகரிக்கப்படும். தயவுசெய்து உங்களது பதில்களை சுதந்திரமாகவும் மற்றும் வெளிப்படையாகவும் தெரிவிக்கவும். தகவல்கள் ரகசியமாக வைக்கப்படும் மற்றும் ஆராய்ச்சி நோக்கங்களுக்காக மட்டுமே அவை பயன்படுத்தப்படும்.

### மாதிரி எண்.

#### 1. வயது

- 1.1 60-65 ஆண்டுகள்
- 1.2 66-70 ஆண்டுகள்
- 1.3 71-75 ஆண்டுகள்
- 1.4 >76 ஆண்டுகள்

#### 2. பாலினம்

- 2.1 ஆண்
- 2.2 பெண்

#### 3. மதம்

- 3.1 இந்து
- 3.2 இஸ்லாமியர்
- 3.3 கிறிஸ்துவர்
- 3.4 பிற (குறிப்பிடவும்)

**4. கல்வி நிலை**

4.1 கல்வியறிவு அற்றவர்

4.2 தொடக்க கல்வி

4.3 நடுநிலைக் கல்வி

4.4 உயர் நிலைக்கல்வி

4.5 பட்டப்படிப்பு மற்றும் அதற்கு மேல்

**5. குடும்ப வகை**

5.1 தனிக்குடும்பம்

5.2 கூட்டுக்குடும்பம்

5.3 விரிவுபடுத்தப்பட்ட குடும்பம்

**6. திருமணநிலை**

6.1 திருமணமாகாதவர்

6.2 திருமணமானவர்

6.3 பிரிந்து வாழ்பவர் / விவாகரத்தானவர்

6.4 விதவை / மனைவியை இழந்தவர்

**7. மாதாந்திர வருமானம்**

7.1 கிடையாது

7.2 < 2000

7.3 2001 – 6000

7.4 6001 – 10000

7.5 > 10000

**8. வருமானத்திற்கான ஆதாரம்**

- 8.1 ஓய்வூதியம்
- 8.2 பிறரிடமிருந்து ஆதரவு
- 8.3 சேமிப்புகள்
- 8.4 சொத்துக்கள்
- 8.5 கிடையாது
- 8.6 பிற (குறிப்பிடவும்)

**9. குழந்தைகளின் எண்ணிக்கை**

- 9.1 குழந்தைகள் கிடையாது
- 9.2 ஒன்று
- 9.3 இரண்டு
- 9.4 இரண்டுக்கும் மேல்

**10. துணை உண்டு**

- 10.1 ஆம்
- 10.2 இல்லை

**11. துணை உண்டு எனில், கணவன் / மனைவி இதே இல்லத்தில்**

**வசிக்கிறார்களா?**

- 11.1 ஆம்
- 11.2 இல்லை

**12. இல்லத்தில் வசிக்கும் கால அளவு**

- 12.1 ஒரு வருடம்
- 12.2 2-3 வருடம்
- 12.3 4-6 வருடங்கள்
- 12.4 >6 வருடங்கள்



## APPENDIX XIII

### CLINICAL VARIABLE PROFORMA

#### Purpose

This proforma is used to assess the risk factors for hypertension of elderly hypertensive clients.

#### Instructions

The researcher collects the following information from the participants and records by asking questions in the interview form and observation. Please be frank and free in answering, it will be kept confidential and anonymity will be maintained.

1. **Height** -----cms

2. **Weight** -----kgs

3. **Body mass index (Kg/m<sup>2</sup>)**

3.1 < 25

3.2 25-29

3.3 30-34

3.4 35-39

4. **Habit of taking non vegetarian diet**

4.1 Yes

4.2 No

**4.a. If yes, how many times do you take non-vegetarian food**

4.1 Once in a week

4.2 Twice in a week

4.3 Thrice in a week

4.4 Occasionally

**5. Habit of chewing tobacco**

5.1 Yes

5.2 No

**5.a. If yes, duration of chewing tobacco**

5.1 < 1 year

5.2 1-5 years

5.3 6-10 years

5.4 >10 years

**6. Habit of smoking**

6.1 Yes

6.2 No

**6.a. If yes, duration of smoking**

6.1 < 1 year

6.2 1-5 years

6.3 6-10 years

6.4 >10 years

**7. Habit of consuming alcohol**

7.1 Yes

7.2 No

**7.a.If yes, duration of consuming alcohol**

7.1 < 1 year

7.2 1-5 years

7.3 6-10 years

7.4 >10 years

**8. Nature of physical activity**

8.1 Sedentary

8.2 Moderate

8.3 Heavy

**9. History of hypertension**

9.1 < 1 year

9.2 1-5 years

9.3 6-10 years

9.4 >10 years

**10. Family history of hypertension**

- 10.1 No
- 10.2 Twins/Sibling
- 10.3 Parent
- 10.4 Grandparent

**11. History of taking anti-hypertensive drugs**

- 11.1 No
- 11.2 Regularly
- 11.3 Occasionally
- 11.4 Only during discomfort

**12. History of any other associated disease**

- 12.1 No
- 12.2 Diabetes
- 12.3 Kidney disease
- 12.4 Heart disease
- 12.5 Others

**13. Use of nonpharmacological treatment for hypertension**

- 13.1 Yes (specify)
- 13.2 No

## மருத்துவம் சார்ந்த மாறுப்பட்ட குறிப்புகள்

### நோக்கம்

இந்த குறிப்புகள் உயர் இரத்த அழுத்தத்தை உண்டாக்கும் ஆபத்தான காரணிகள் பற்றி மதிப்பிட பயன்படுத்தப்படுகிறது.

### அறிவுறுத்துதல்

கீழ்வரும் தகவல்களை ஆய்வாளரால் நேர்முக கலந்துரையாடல் மூலமும், மேற்காணல் மூலமும் சேகரிக்கப்படும். தயவுசெய்து உங்களது பதில்களை சுதந்திரமாகவும் மற்றும் வெளிப்படையாகவும் தெரிவிக்கவும். தகவல்கள் ரகசியமாக வைக்கப்படும் மற்றும் ஆராய்ச்சி நோக்கங்களுக்காக மட்டுமே அவை பயன்படுத்தப்படும்.

மாதிரி எண்.

#### 1. உயரம்

1.1 140 - 150 செ.மீட்டர்கள்

1.2 151 - 160 செ.மீட்டர்கள்

1.3 161 - 170 செ.மீட்டர்கள்

1.4 171 - 180 செ.மீட்டர்கள்

#### 2. எடை

2.1 30 - 45 கிலோ

2.2 46 - 60 கிலோ

2.3 61 - 75 கிலோ

#### 3. உடல் பருமன் குறியீட்டெண் (கிகி / மீ<sup>2</sup>)

3.1 < 25

3.2 25 - 29

3.3 30 - 34

3.4 35 - 39

**4. மாமிச உணவு எடுத்துக்கொள்ளும் பழக்கம்**

4.1 ஆம்

4.2 இல்லை

**4.a. ஆம் எனில் எத்தனை முறை மாமிச உணவு எடுப்பீர்கள்**

4.1 வாரத்தில் ஒரு முறை

4.2 வாரத்தில் இரு முறை

4.3 வாரத்தில் மூன்று முறை

4.4 எப்பொழுதாவது

**5 புகையிலை பழக்கம்**

5.1 ஆம்

5.2 இல்லை

**5.a. ஆம் எனில் எத்தனை வருடங்கள் புகையிலை பழக்கம்**

5.1 < 1 வருடம்

5.2 1 - 5 வருடங்கள்

5.3 6 - 10 வருடங்கள்

5.4 > 10 வருடங்கள்

**6 புகை பிடிக்கும் பழக்கம்**

6.1 ஆம்

6.2 இல்லை

**6.a. ஆம் எனில் எத்தனை வருடங்கள் புகைபிடிக்கும் பழக்கம்**

6.1 < 1 வருடம்

6.2 1 - 5 வருடங்கள்

6.3 6 - 10 வருடங்கள்

6.4 > 10 வருடங்கள்

**7 மது அருந்தும் பழக்கம்**

7.1 ஆம்

7.2 இல்லை

**7.a. ஆம் எனில் எத்தனை வருடங்கள் மது அருந்தும் பழக்கம்**

7.1 < 1 வருடம்

7.2 1 - 5 வருடங்கள்

7.3 6 - 10 வருடங்கள்

7.4 > 10 வருடங்கள்

**8 உடல் உழைப்பு தன்னை**

8.1 சுறுசுறுப்பற்ற வேலை செய்பவர்

8.2 மிதமான வேலை செய்பவர்

8.3 வலிமையான வேலை செய்பவர்

**9 உயர் இரத்த அழுத்தத்தின் கால அளவு**

9.1 < 1 வருடம்

9.2 1 - 5 வருடங்கள்

9.3 6 - 10 வருடங்கள்

9.4 > 10 வருடங்கள்

**10 குடும்பத்தில் உயர் இரத்த அழுத்தத்தின் வரலாறு**

10.1 கிடையாது

10.2 இரட்டையர் / உடன் பிறந்தவர்

10.3 பெற்றோர்கள்

10.4 மூதாதையர்

**11 உயர் இரத்த அழுத்திற்கு மருந்து எடுத்து கொள்ளும் வரலாறு**

11.1 கிடையாது

11.2 தவறாமல்

11.3 எப்பொழுதாவது

11.4 இடையூரின் போது

**12 வேறு ஏதேனும் நோய் உள்ளதா**

12.1 கிடையாது

12.2 நீரிழிவு (சர்க்கரை நோய்)

12.3 சிறுநீரக நோய்கள்

12.4 இருதய நோய்கள்

12.5 பிற (குறிப்பிடவும்)

**13 மருந்தியல் அல்லாத அளவீட்டில் மிக உபயோகமான முறை**

13.1 ஆம் (குறிப்பிடவும்)

13.2 இல்லை



## APPENDIX XIV

### OBSERVATIONAL CHECK LIST FOR BLOOD PRESSURE

#### Purpose

This check list is used to record the blood pressure value of the elderly hypertensive clients.

#### Instructions

The researcher will record the blood pressure values of the elderly hypertensive clients before, during and after the foot massage.

Observation	Day of observation	Blood pressure (mm Hg)	
		Pre-test	Post test
1	1 <sup>st</sup> reading before the therapy		
2	2 <sup>nd</sup> day of the therapy		
3	4 <sup>th</sup> day of the therapy		
4	6 <sup>th</sup> day of the therapy		
5	8 <sup>th</sup> day of the therapy		

## Interpretations of blood pressure values

The blood pressure values were classified based on the British Hypertension Society as follows,

<b>Category</b>	<b>Systolic blood pressure (mm Hg)</b>	<b>Diastolic blood pressure (mm Hg)</b>
Normal	120- 139	80- 89
Mild	140-159	90-99
Moderate	160-179	100-109
Severe	180 $\geq$ 180	110 $\geq$ 110

**BLUE PRINT ON RATING SCALE ON SATISFACTION OF FOOT MASSAGE  
UPON BLOOD PRESSURE**

<b>Sl. No</b>	<b>CONTENT</b>	<b>ITEM NUMBER</b>	<b>ITEMS</b>	<b>PERCENTAGE</b>
1	Characteristics of researcher	1,2,3,4	4	33.3%
2	Method of administration	5,6,7	3	25%
3	Effectiveness of foot massage	8,9,10,11,12	5	41.7%

## APPENDIX XV

### RATING SCALE ON LEVEL OF SATISFACTION ON ADMINISTRATION OF FOOT MASSAGE

#### Purposes

This rating scale is designed to assess the level of satisfaction of the elderly hypertensive clients regarding foot massage.

#### Instructions

The researcher will assess the level of satisfaction by interviewing the clients and put (√) mark against the appropriate response. Response extent from highly satisfied to dissatisfied.

SL. NO	ITEMS	HIGHLY SATISFIED 3	SATISFIED 2	DISSATISFIED 1
1.	Explanation of the procedure of foot massage			
2.	Easy to understand the method of instruction			
3.	Approachable			
4.	Way of performing the procedure			
5.	Frequency of foot massage			
6.	Duration of administration of foot			

	massage			
<b>7.</b>	Was the foot massage given at appropriate time			
<b>8.</b>	Use of foot massage in reducing blood pressure			
<b>9.</b>	Cost effectiveness			
<b>10.</b>	Best method of non-pharmacological intervention for reducing blood pressure			
<b>11.</b>	No side effects			
<b>12.</b>	Promotes relaxation			

**Scoring Key**

Highly satisfied : 3

Satisfied : 2

Dissatisfied : 1

## Scoring Interpretation

The total score is converted in to percentage and graded as given below.

<b>SCORE</b>	<b>PERCENTAGE</b>	<b>INTERPRETATION</b>
<12	<28%	Dissatisfied
12- 24	28- 67%	Satisfied
25- 36	67- 100%	Highly satisfied

**பாத மசாஜின் (தொக்கனம்) திருப்தியை அளக்கும் தர அளவுகோல்**

**நோக்கம்**

இந்த தர அளவுகோல் இரத்த அழுத்தம் அதிகமாக உள்ள வயதானவர்களின் பாத மசாஜின் திருப்தியின் அளவை அறிய பயன்படுகிறது.

**குறிப்பு**

இங்கு பத்து தனி விவரங்கள் கீழே கொடுக்கப்பட்டுள்ளது. ஒவ்வொரு தனி விவரத்திற்கு மூன்று பதில்கள் உள்ளன ஒவ்வொரு கேள்வியின் பதிலையும் மிகவும் திருப்தியாக உள்ளதா, திருப்தியாக உள்ளதா அல்லது அதிருப்தியாக உள்ளதா எனத் தெரிவிக்கவும். உங்கள் பதில்களைத் தெளிவாகவும் ஒளிவு மறைவின்றி தெரிக்கவும். உங்கள் பதில்கள் பத்திரமாக பாதுகாக்கப்படும்.

வரிசை எண்	தனி விவரம்	மிகவும் திருப்தி	திருப்தி	அதிருப்தி
		3	2	1
1.	விவரமாக எடுத்துரைக்கப்பட்டது			
2.	எளிதாக புரிந்து கொள்ளுதல்			
3.	பாத மசாஜின் எண்ணிக்கை			
4.	பாத மசாஜின் அளவு காலம்			
5.	தகுந்த நேரத்தில் கொடுக்கப்பட்டது			
6.	இரத்த அழுத்தத்தை குறைக்க உதவுகிறது			
7.	சிக்கனமானதாக உள்ளுத			
8.	மருந்தியல் அல்லாத அளவீட்டில் மிக நல்லமுறை			
9.	பக்க விளைவுகள் இல்லை			

10.	தளர்த்துதல்			
11.	ஆணுகுமுறை			
12.	செயல்படுத்தும் முறை			



## **APPENDIX XVI**

### **PROCEDURE FOR FOOT MASSAGE**

#### **Definition**

It is a technique by which both the feet of the recipient are held at various positions, stroked gently and rhythmically to attain a relaxation response.

#### **Duration**

20 minutes.

#### **Procedure**

1. Let the patient lie in supine position on the bed with the head on a soft pillow.
2. Focus on the well being of the patient in an act of unconditional love.
3. Assess both the feet.
4. Look for contraindication such as cuts, wounds, ulceration, swelling, fracture, toe deformity, extreme arthritic pain.
5. Examine the feet for colour, crease, cleanliness and condition of nail and skin.
6. Warm up the palms by rubbing it again each other.
7. Take a little 'oil' in hand and apply it gently to both feet of the patient spreading it evenly.

#### **Preliminary steps**

8. Hold the right foot gently but firmly (15sec) to let the patient feel your presence and touch before your begin.
9. Soothe the dorsum and the lateral sides of the foot with gentle strokes (15 sec) using both of one's hands and repeat the above steps on the left foot (total 2 minutes).

10. Never take off both one's hand from the foot at once, thus disrupting the contact one has established.

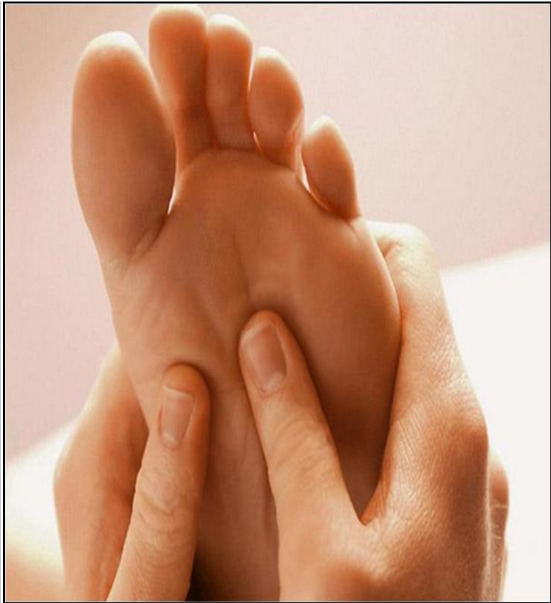
### **Rocking steps**

11. Gently rock the foot from side to side, with the heels of ones hands at the broadest part of the right foot (15 sec).
12. Gently rock the foot from side to side with the heels of your hands at the narrow part of the right foot (15 sec).
13. Grasp all toes, support the heel and rotate foot 3 times clockwise and 3 times anticlockwise direction (15 sec).
14. Hold foot in the position, flex it forward and backward three times (15 sec) watching out for flexibility.
15. Hold foot at broader area from both sides and bring the sides forward and backward 3 times (15 sec).
16. Support the base of each toe with hand with the other rotate 3 times in both directions (15 sec).
17. Repeat the step 12-17 in the left foot.

### **Squeezing steps**

18. Expose the right foot and stroke the same from above the ankle to the toes 3 times and squeeze along both sides of the foot from ankle to toes (15 sec).
19. Gently rest both hands one by one at various places on the foot by holding and grasping, providing warmth using the following steps, stretch the sole, soothe the dorsum from ankle to toes medially, laterally down towards the heel.
20. Reverse the movements (15 sec) massage smoothly and evenly. All movements have to be soft, with very gentle pressure.

21. Repeat steps 19-21 on the left foot (2min).
22. Repeat the above steps using a massage-rest-massage sequence on both feet.
23. Follow this steps by stoking both the feet with progressively lighter movements (3 min) allowing the patient to go into a deeply relaxed state. Finish the procedure by quietly covering both feet with the towel (the instructor may stay with the patient until patient becomes awake).



## APPENDIX XVII

### DATA CODE SHEET

<b>1.Age in years</b>	<b>AG</b>	Two	9.3
60-65 yrs	1.1	More than two	9.4
66-70 yrs	1.2	<b>10.Spouse is alive</b>	<b>SA</b>
71-75 yrs	1.3	Yes	10.1
>75 yrs	1.4	No	10.2
<b>2.Gender</b>	<b>G</b>	<b>11.Spouse residing home</b>	<b>SRH</b>
Male	2.1	Yes	11.1
Female	2.2	No	11.2
<b>3.Religion</b>	<b>RN</b>	<b>12.Duration of stay</b>	<b>DS</b>
Hindu	3.1	Less than 1year	12.1
Muslim	3.2	2 - 3 years	12.2
Christian	3.3	4 - 6 years	12.3
Others (specify)	3.4	> 6 years	12.4
<b>4.Educational status</b>	<b>ED</b>	<b>1.Height</b>	<b>HT</b>
Illiterate	4.1	<b>2.Weight</b>	<b>WT</b>
Primary education	4.2	<b>3.Body mass index</b>	<b>BMI</b>
Secondary education	4.3	<25	3.1
Higher secondary education	4.4	25 - 29	3.2
Graduate & above	4.5	30 - 34	3.3
<b>5.Type of family</b>	<b>TF</b>	35 - 39	3.4
Nuclear	<b>5.1</b>	<b>4.Non vegetarian</b>	<b>NV</b>
Joint	5.2	Yes	4.1
Extended family	5.3	No	4.2
<b>6.Marital status</b>	<b>MS</b>	<b>5.Habit of Chewing tobacco</b>	<b>HCT</b>
Unmarried	6.1	Yes	5.1
Married	6.2	No	5.2
Separated/Divorced	6.3	<b>6.Habit of Smoking</b>	<b>HS</b>
Widow/Widower	<b>6.4</b>	Yes	6.1
<b>7.Monthly Income</b>	<b>MI</b>	No	6.2
Nil	7.1	<b>7.Habit of Alcohol</b>	<b>HA</b>
<Rs 2000	7.2	Yes	7.1
Rs 2001-6000	7.3	No	7.2
Rs 6001-10000	7.4	<b>8.Physical activity</b>	<b>PA</b>
>Rs 10000	7.5	Sedentary	8.1
<b>8.Source of Income</b>	<b>SI</b>	Moderate	8.2
Pensioners	8.1	Heavy	8.3
Govt aid	8.2	<b>9.History of hypertension</b>	<b>HT</b>
Property	8.3	<1 year	9.1
Savings	8.4	1 - 5 years	9.2
Others (specify)	8.5	6 - 10 years	9.3
<b>9.Number of Children</b>	<b>NC</b>	>10 years	9.4
No	9.1		
One	9.2		

**10.Family history of hypertension****FHT**

No	10.1
Twins/sibling	10.1
Parent	10.2
Grandparent	10.3

**11.History of drug****HD**

No	11.1
Regularly	11.2
Occasionally	11.3
Only during discomfort	11.4

**12.Associated Disease****AD**

No	12.1
----	------

Diabetes	12.2
----------	------

Kidney disease	12.3
----------------	------

Heart disease	12.4
---------------	------

Others	12.5
--------	------

**13.Use of nonpharmacological NP treatment**

Yes (specify)	13.1
---------------	------

No	13.2
----	------

<b>Percentage</b>	<b>PER</b>
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<b>Score</b>	<b>SC</b>
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**APPENDIX XVIII**  
**MASTER CODE SHEET**

CONTROL GROUP																									
SN	DEMOGRAPHIC VARIABLE												CLINICAL VARIABLE												
	AG	G	RN	ED	TF	MS	MI	SI	NC	SA	SRH	DS	HT	WT	BMI	NV	HCT	HS	HA	PA	HHT	FHT	HD	AD	NP
1	1.4	2.2	3.1	4.3	5.2	6.4	7.1	8.5	9.4	10.2	11.2	12.2	1.1	2.3	3.3	4.1	5.1	6.2	7.2	8.1	9.2	10.2	11.2	12.2	13.2
2	1.2	2.2	3.1	4.2	5.1	6.4	7.1	8.5	9.2	10.2	11.2	12.2	1.2	2.2	3.1	4.1	5.1	6.2	7.2	8.2	9.1	10.1	11.2	12.1	13.2
3	1.4	2.2	3.3	4.2	5.2	6.4	7.1	8.5	9.1	10.2	11.2	12.4	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.1	9.4	10.1	11.2	12.1	13.2
4	1.4	2.2	3.1	4.1	5.1	6.4	7.1	8.5	9.1	10.2	11.2	12.4	1.1	2.2	3.2	4.1	5.2	6.2	7.2	8.1	9.3	10.1	11.2	12.1	13.2
5	1.4	2.2	3.1	4.1	5.1	6.4	7.1	8.5	9.4	10.2	11.2	12.1	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.1	9.2	10.1	11.2	12.2	13.1
6	1.4	2.2	3.2	4.2	5.1	6.4	7.1	8.5	9.3	10.2	11.2	12.1	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.1	9.2	10.4	11.2	12.1	13.2
7	1.1	2.2	3.3	4.3	5.1	6.4	7.1	8.5	9.2	10.2	11.2	12.4	1.1	2.3	3.2	4.1	5.2	6.2	7.2	8.1	9.2	10.2	11.2	12.4	13.2
8	1.2	2.2	3.1	4.1	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.2	1.2	2.2	3.1	4.1	5.1	6.2	7.2	8.2	9.3	10.3	11.2	12.2	13.2
9	1.4	2.2	3.3	4.1	5.2	6.4	7.1	8.5	9.4	10.2	11.2	12.1	1.1	2.2	3.2	4.1	5.1	6.2	7.2	8.2	9.2	10.3	11.2	12.1	13.1
10	1.4	2.2	3.1	4.1	5.2	6.4	7.1	8.5	9.1	10.2	11.2	12.3	1.3	2.3	3.2	4.1	5.2	6.2	7.2	8.2	9.3	10.3	11.2	12.1	13.1
11	1.3	2.2	3.1	4.1	5.2	6.3	7.1	8.5	9.2	10.1	11.2	12.2	1.1	2.2	3.2	4.1	5.2	6.2	7.2	8.2	9.3	10.1	11.2	12.1	13.2
12	1.1	2.2	3.3	4.1	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.4	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.1	9.3	10.2	11.2	12.2	13.2
13	1.4	2.2	3.3	4.1	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.3	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.2	9.2	10.3	11.2	12.2	13.2
14	1.4	2.2	3.1	4.1	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.4	1.1	2.2	3.2	4.1	5.2	6.2	7.2	8.2	9.2	10.4	11.2	12.1	13.2
15	1.4	2.2	3.1	4.1	5.1	6.4	7.1	8.5	9.4	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.2	9.3	10.3	11.2	12.2	13.2
16	1.3	2.2	3.3	4.1	5.2	6.4	7.1	8.5	9.4	10.2	11.2	12.3	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.1	9.3	10.3	11.2	12.2	13.2
17	1.1	2.1	3.1	4.3	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.2	1.2	2.2	3.1	4.1	5.2	6.2	7.1	8.2	9.2	10.1	11.2	12.2	13.2
18	1.1	2.1	3.3	4.2	5.2	6.1	7.1	8.5	9.1	10.2	11.2	12.2	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.3	9.2	10.3	11.2	12.2	13.2
19	1.4	2.1	3.1	4.1	5.2	6.4	7.1	8.5	9.4	10.2	11.2	12.4	1.3	2.3	3.2	4.1	5.2	6.1	7.1	8.2	9.4	10.1	11.2	12.2	13.2
20	1.4	2.1	3.3	4.4	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.2	9.2	10.1	11.2	12.1	13.2
21	1.3	2.1	3.3	4.2	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.3	1.3	2.2	3.1	4.1	5.2	6.1	7.1	8.2	9.3	10.3	11.2	12.2	13.2
22	1.4	2.1	3.1	4.1	5.2	6.3	7.1	8.5	9.2	10.2	11.2	12.4	1.3	2.3	3.1	4.1	5.1	6.1	7.1	8.2	9.3	10.3	11.2	12.1	13.2
23	1.1	2.1	3.1	4.2	5.1	6.4	7.1	8.5	9.2	10.2	11.2	12.4	1.2	2.2	3.1	4.1	5.2	6.1	7.1	8.2	9.3	10.3	11.2	12.4	13.2
24	1.2	2.1	3.3	4.1	5.1	6.4	7.1	8.5	9.3	10.2	11.2	12.3	1.3	2.3	3.2	4.1	5.2	6.1	7.1	8.1	9.3	10.2	11.2	12.1	13.2
25	1.3	2.1	3.1	4.1	5.2	6.4	7.1	8.5	9.3	10.1	11.2	12.3	1.2	2.2	3.1	4.1	5.2	6.1	7.2	8.2	9.3	10.1	11.2	12.2	13.2
26	1.4	2.1	3.1	4.1	5.1	6.4	7.1	8.5	9.3	10.2	11.2	12.3	1.3	2.3	3.2	4.1	5.2	6.1	7.1	8.2	9.4	10.3	11.2	12.2	13.2
27	1.1	2.1	3.3	4.3	5.2	6.4	7.1	8.5	9.1	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.1	6.1	7.1	8.1	9.3	10.3	11.2	12.2	13.2
28	1.3	2.1	3.1	4.1	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.3	1.3	2.3	3.2	4.2	5.2	6.2	7.3	8.2	9.3	10.3	11.2	12.2	13.1
29	1.2	2.1	3.1	4.1	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.4	1.3	2.2	3.2	4.2	5.1	6.2	7.2	8.2	9.2	10.1	11.2	12.1	13.2
30	1.4	2.1	3.1	4.1	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.3	1.3	2.2	3.2	4.2	5.2	6.1	7.1	8.1	9.3	10.2	11.2	12.1	13.1

## MASTER CODE SHEET

EXPERIMENTAL GROUP																												
SN	DEMOGRAPHIC VARIABLE												CLINICAL VARIABLE														LEVEL OF SATISFACTION	
	AG	G	RN	ED	TF	MS	MI	SI	NC	SA	SRH	DS	HT	WT	BMI	NV	HCT	HS	HA	PA	HHT	FHT	HD	AD	NP	SC	PER	LEVEL
1	1.3	2.2	3.1	4.1	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.4	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.1	9.4	10.3	11.2	12.2	13.2	34	94	HS
2	1.4	2.2	3.2	4.2	5.1	6.4	7.1	8.5	9.3	10.2	11.2	12.3	1.2	2.3	3.2	4.1	5.2	6.2	7.2	8.2	9.2	10.1	11.2	12.4	13.2	34	94	HS
3	1.4	2.2	3.1	4.1	5.2	6.4	7.1	8.5	9.1	10.2	11.2	12.1	1.2	2.3	3.2	4.1	5.2	6.2	7.2	8.1	9.2	10.2	11.2	12.2	13.1	24	67	S
4	1.3	2.2	3.1	4.2	5.1	6.4	7.1	8.5	9.2	10.2	11.2	12.1	1.1	2.2	3.2	4.1	5.2	6.2	7.2	8.1	9.2	10.3	11.2	12.2	13.2	35	97	HS
5	1.1	2.2	3.2	4.1	5.1	6.3	7.1	8.5	9.2	10.1	11.2	12.3	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.2	9.2	10.1	11.3	12.2	13.1	36	100	HS
6	1.2	2.2	3.1	4.2	5.1	6.4	7.1	8.5	9.3	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.2	9.2	10.2	11.3	12.2	13.2	36	100	HS
7	1.1	2.2	3.1	4.1	5.1	6.3	7.1	8.5	9.2	10.1	11.2	12.2	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.2	9.4	10.3	11.1	12.1	13.2	24	67	S
8	1.2	2.2	3.1	4.1	5.1	6.4	7.1	8.5	9.3	10.2	11.2	12.3	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.2	9.1	10.2	11.2	12.1	13.2	33	92	HS
9	1.3	2.2	3.3	4.2	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.3	1.2	2.2	3.1	4.1	5.2	6.1	7.2	8.1	9.2	10.1	11.2	12.2	13.2	35	97	HS
10	1.1	2.1	3.1	4.2	5.1	6.1	7.1	8.5	9.1	10.2	11.2	12.3	1.2	2.2	3.1	4.1	5.2	6.2	7.1	8.3	9.4	10.1	11.2	12.2	13.2	34	94	HS
11	1.1	2.1	3.1	4.2	5.2	6.3	7.1	8.5	9.3	10.2	11.2	12.1	1.2	2.3	3.2	4.1	5.2	6.1	7.2	8.2	9.2	10.1	11.2	12.2	13.2	34	94	HS
12	1.1	2.1	3.1	4.2	5.2	6.3	7.1	8.5	9.3	10.1	11.2	12.2	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.1	9.2	10.1	11.1	12.4	13.1	33	92	HS
13	1.2	2.1	3.3	4.2	5.1	6.2	7.1	8.5	9.1	10.1	11.1	12.1	1.2	2.3	3.2	4.1	5.2	6.1	7.2	8.2	9.4	10.3	11.2	12.2	13.2	28	78	HS
14	1.1	2.1	3.1	4.3	5.1	6.4	7.1	8.5	9.2	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.2	6.1	7.1	8.2	9.3	10.3	11.2	12.1	13.2	36	100	HS
15	1.3	2.2	3.3	4.2	5.2	6.3	7.1	8.5	9.1	10.1	11.2	12.4	1.2	2.3	3.2	4.1	5.1	6.2	7.2	8.2	9.2	10.3	11.2	12.2	13.2	21	58	S
16	1.4	2.2	3.3	4.4	5.1	6.1	7.1	8.5	9.1	10.2	11.2	12.4	1.1	2.1	3.1	4.1	5.2	6.2	7.2	8.1	9.2	10.1	11.2	12.2	13.1	26	72	HS
17	1.2	2.2	3.1	4.1	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.2	9.2	10.1	11.3	12.2	13.2	34	94	HS
18	1.1	2.2	3.1	4.1	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.1	1.1	2.3	3.3	4.1	5.2	6.2	7.2	8.1	9.1	10.3	11.2	12.2	13.2	23	64	S
19	1.1	2.2	3.1	4.2	5.1	6.4	7.1	8.5	9.3	10.2	11.2	12.2	1.2	2.2	3.1	4.2	5.2	6.2	7.2	8.2	9.2	10.1	11.2	12.1	13.1	35	97	HS
20	1.3	2.2	3.3	4.2	5.1	6.4	7.1	8.5	9.4	10.2	11.2	12.2	1.2	2.3	3.1	4.2	5.2	6.2	7.2	8.2	9.2	10.2	11.3	12.2	13.2	32	89	HS
21	1.4	2.2	3.2	4.2	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.1	1.1	2.3	3.3	4.2	5.2	6.2	7.2	8.1	9.2	10.1	11.2	12.2	13.2	30	83	HS
22	1.4	2.2	3.1	4.2	5.1	6.3	7.1	8.5	9.1	10.1	11.2	12.3	1.2	2.3	3.2	4.2	5.2	6.2	7.2	8.1	9.2	10.3	11.2	12.1	13.1	24	67	S
23	1.4	2.1	3.1	4.1	5.1	6.4	7.1	8.5	9.1	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.2	6.2	7.2	8.1	9.2	10.1	11.1	12.1	13.2	33	92	HS
24	1.2	2.1	3.1	4.1	5.2	6.4	7.1	8.5	9.2	10.2	11.2	12.3	1.2	2.2	3.1	4.1	5.1	6.1	7.1	8.2	9.3	10.1	11.2	12.2	13.2	32	89	HS
25	1.3	2.1	3.1	4.1	5.2	6.4	7.1	8.5	9.3	10.2	11.2	12.4	1.3	2.3	3.2	4.1	5.2	6.1	7.1	8.2	9.4	10.1	11.2	12.2	13.2	34	94	HS
26	1.1	2.1	3.1	4.3	5.1	6.4	7.1	8.5	9.1	10.2	11.2	12.1	1.3	2.3	3.2	4.2	5.2	6.2	7.2	8.1	9.2	10.1	11.3	12.2	13.2	33	92	HS
27	1.1	2.1	3.1	4.3	5.1	6.3	7.1	8.5	9.4	10.1	11.2	12.4	1.2	2.2	3.1	4.1	5.2	6.1	7.1	8.1	9.3	10.1	11.1	12.2	13.2	28	78	HS
28	1.1	2.1	3.1	4.1	5.2	6.3	7.1	8.5	9.4	10.1	11.2	12.4	1.3	2.3	3.2	4.1	5.2	6.2	7.1	8.1	9.2	10.3	11.2	12.2	13.2	34	94	HS
29	1.1	2.1	3.1	4.1	5.1	6.3	7.1	8.5	9.3	10.1	11.2	12.2	1.2	2.3	3.2	4.1	5.1	6.1	7.1	8.1	9.2	10.3	11.1	12.1	13.2	34	94	HS
30	1.3	2.1	3.1	4.2	5.2	6.4	7.1	8.5	9.1	10.2	11.2	12.1	1.2	2.2	3.1	4.1	5.1	6.1	7.1	8.1	9.2	10.1	11.2	12.1	13.2	32	89	HS



## MASTER CODE SHEET

LEVEL OF BLOOD PRESSURE OF CONTROL GROUP											LEVEL OF BLOOD PRESSURE OF EXPERIMENTAL GROUP									
SNO	PRE-TEST		2ND DAY		4TH DAY		6TH DAY		POST TEST		PRE-TEST		2ND DAY		4TH DAY		6TH DAY		POST TEST	
	SBP	DBP	SBP	DBP	SBP	DBP	SBP	DBP	SBP	DBP	SBP	DBP	SBP	DBP	SBP	DBP	SBP	DBP	SBP	DBP
1	146	90	142	86	156	80	150	90	150	90	170	110	166	100	160	96	150	90	140	86
2	160	100	162	96	160	90	166	90	160	90	160	100	160	96	160	90	156	90	150	80
3	170	90	176	100	172	96	170	100	170	100	160	96	150	96	146	96	140	90	140	80
4	166	100	160	90	162	100	160	100	160	90	170	100	160	92	156	90	150	90	140	86
5	150	100	152	96	156	90	160	100	156	90	150	90	140	86	140	80	132	80	126	80
6	146	90	150	96	152	90	156	92	140	96	160	100	156	96	148	90	140	80	130	80
7	156	90	150	92	156	90	150	96	150	96	150	100	146	92	140	90	130	86	130	80
8	160	92	160	90	156	92	150	90	160	90	150	90	146	90	136	88	130	82	130	80
9	170	86	172	86	170	92	170	96	170	90	160	90	150	86	146	82	140	80	136	80
10	180	90	176	100	170	110	176	100	182	100	156	96	156	90	150	90	144	86	140	80
11	146	86	142	82	146	90	148	96	140	80	200	110	184	100	180	96	180	90	170	90
12	170	90	172	96	170	96	176	90	176	80	170	100	160	100	156	96	150	90	146	82
13	156	90	150	96	152	90	160	90	140	80	150	100	146	96	140	90	136	84	130	80
14	166	90	160	92	166	96	160	90	156	100	150	90	140	88	130	82	130	80	120	82
15	170	80	176	86	172	90	170	92	172	100	150	96	140	86	130	80	120	80	120	80
16	140	90	146	92	142	90	146	96	150	90	160	100	150	90	146	82	140	80	130	80
17	166	100	170	90	170	100	176	100	170	100	160	90	156	90	142	86	140	80	130	80
18	150	90	152	92	150	90	156	96	156	80	150	96	150	90	150	86	142	80	130	80
19	140	80	146	82	140	80	142	82	146	90	160	100	150	96	146	92	136	90	130	86
20	156	100	150	96	152	90	156	92	150	100	150	90	142	86	136	80	130	80	120	80
21	160	100	162	96	160	90	162	92	166	90	150	96	146	90	140	86	130	80	120	80
22	140	90	146	96	150	90	156	96	150	96	150	90	142	90	130	86	126	80	120	80
23	160	100	166	96	162	100	160	100	170	100	160	100	156	90	146	86	140	80	130	80
24	180	90	180	96	180	92	186	100	180	100	150	90	150	90	146	80	140	80	136	80
25	200	90	200	92	196	100	190	96	200	110	150	90	146	88	136	86	130	80	120	80
26	190	96	180	90	190	100	196	90	180	90	180	110	170	100	166	96	160	90	150	86
27	170	90	176	100	170	90	170	100	170	100	150	96	150	96	146	92	140	90	136	80
28	150	96	150	100	156	90	160	96	150	100	156	90	146	86	140	80	130	80	126	80
29	140	100	146	96	142	96	146	90	140	90	160	100	150	96	146	90	140	90	132	80
30	160	90	162	96	160	100	166	90	160	100	140	96	130	86	126	82	120	80	120	80

**APPENDIX -XIX**

**PHOTGRAPHS DURING FOOT MASSAGE**

