EFFECTIVENESS OF GARLIC CLOVES ON BLOOD PRESSURE AMONG HYPERTENSIVE PATIENTS IN A SELECTED HOSPITAL, SALEM.

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CERTIFICATE

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ABSTRACT

A study to Evaluate the Effectiveness of Garlic Cloves on Blood Pressure among Hypertensive Patients in a Selected Hospital, Salem.

A Quantitative evaluative approach with Quasi experimental pre test and post test design study was conducted in Sri Gokulam hospital, Salem among 60 hypertensive patients by using non – probability convenience sampling technique, where each 30 patients were assigned to experimental and control group. Pre test was conducted on the 1st day by measuring the blood pressure for both experimental and control and 63 raw garlic cloves was given to each patients in experimental group and they have been instructed to chew 3 raw garlic cloves along with their breakfast a day for 21 days and to record it in the daily sheet which was provided. Post test was conducted on the 22nd day by measuring the blood pressure for both the group and data was analyzed by descriptive and inferential statistical. The demographic variables among the experimental and control group regarding non smoker is 22 (73.33%), 23 (76.67%) and regarding exercise is 24 (80%), 20 (66.67%). In the pre test no patients had normal blood pressure and pre hypertension in both the experimental and control group. Among experimental and control group, stage I hypertension was 11(36.67%), 10(33.33%) of patients and stage II hypertension was 19(63.33%), 20(66.67%) of patients respectively.

The calculated 'z' value 3.27 is greater than the table value (1.96) at $p<0.05$ level. Hence the research hypothesis H_1 is retained. In the experimental group significant association was found with the monthly income. There was no significant association with their selected demographic variables in control group. Hence the research hypothesis H_2 is retained in experimental group and is rejected in control group.

CHAPTER I

INTRODUCTION

"A man's life may be said to be a gift of his blood pressure,

just as a Egypt is a gift of the Nile".

-Sir. William Osler

Health is a gift of god to mankind: we often take it for granted and realize only when we are ill. We watch with considerable consternation, the emerging problem of a huge burden of life style related diseases all over the world. Non-communicable diseases are expected to cause more than three–fourths of all deaths. **(Alok Mukhopadhay, 2008)**

Blood flows throughout the circulatory system because of pressure changes which helps the blood to move from an area of high to an area of low pressure. The blood pressure is a good indicator of cardiovascular health. Blood pressure is not constant many factors continually influence blood pressure. Even under the best conditions, blood pressure changes from heart beat to heart beat. **(Potter. P, 2009)**

Hypertension is high blood pressure, also known as "silent killer", is a very common and serious condition that can lead to or complicate many health problems. About 31% of people who had pressures exceeding 140/90 mmHg were unaware of their elevated blood pressure. Once identified, elevated blood pressure should be monitored at regular intervals, because hypertension is a lifelong condition. There are number of reasons why people have hypertension, some of them are inherited such as being male or having a family history of early heart attacks or strokes. Other risks may be partly inherited, such as predisposition to hypertension or obesity. **(Hajjar & Kotchen, 2003)**

The adults with blood pressure above 140/90mmHg should be evaluated for hypertension. Studies have shown that some clients demonstrate higher recorded blood pressure in the physician's office than in the home setting is referred as "white coat effect". Some have only occasional elevation in blood pressure and normal readings at other times. These findings are called isolated pressure elevations. Isolated systolic blood pressure elevations of 160mmHg are more frequently occur in the elderly. **(Springhouse, 2001)**

The Hypertension is classified as primary (essential) or secondary hypertension. 90-95% of all cases have Primary hypertension. Remaining 5-10% has secondary hypertension, high blood pressure related to identified causes. These causes include narrowing of the renal arteries, renal parenchyma disease, hyperaldosteronism, certain medications and pregnancy. **(Suzanne. C. Smelter, 2008)**

Studies show that diets in fruits, vegetables and low fat dairy products can prevent the development of hypertension and can lower the elevated pressures. The nurse can encourage the patient to consult the dietitian regarding restriction of diet and fat intake. **(Suzanne. C. Smelter, 2004)**

Diets high in fruits, vegetables and low fat dairy products can prevent the development of hypertension. Garlic has been used as a herbal remedy as an effective method for treating hypertension due to its extended inhibition of the natural synthesis of nitric oxide, a component responsible for vasoconstriction. Limitation of the synthesis of nitric oxide will result to vasodilatation (relaxation of blood vessels), allowing blood vessels hence resulting to stabilization of blood pressure. There are three chemicals found in garlic that are alliin, allinase, and allicin, was noted to be the compound responsible for garlic's anti hypertensive effect. **(Sacks, et.al, 2001)**

The word garlic comes from old English Garleac, means 'Spear leek". Garlic commonly known as Allium sativum, and it is a species in the onion family Alliaceae. Throughout the history garlic has been used for both culinary and medicinal purposes. The garlic plants bulb is the most commonly used part of the plant. The characteristic of cloves are pungent, spicy flavor and also sweetens when cooking. It is also used for cloning, can be consumed as raw or cooked form and also has medical purpose. **(Katzer.G, 2007)**

Need for the Study

Cardiovascular diseases are responsible for around 20% of all deaths worldwide. They are the principal cause of death in developed countries, accounting for about 50% of all deaths and also in developing countries it ranks third and emerges as a prominent public health problem with approximately 16% of all deaths. The annual rate of hypertension development, or incidence, is difficult to determine because hypertension goes undiagnosed in so many cases. The percentage of people who receive treatment for hypertension has increased from 31% to 55% and of those with controlled hypertension from 10% - 29%. The combined effects of these measures have contributed to a 60% decline in stroke and a 53% decline in the mortality rate from coronary artery disease. **(Jennifer Dungar, 2008)**

Hypertension is a complex, multifactorial disease process. In a number of ways morbidity can be "measured". Historically, diastolic blood pressure was viewed the more important measure to control, but recent information shows that systolic blood pressure is the stronger predictor of total morbidity and adverse cardiovascular events in a number of large, comprehensive clinical trials. Quarter of the adult population is affected with hypertension. The prevalence of hypertension depends on the age, racial composition and the criteria to define the condition. In a white

population 20% of the adults in the age group 35-65 yrs have a diastolic blood pressure in the range 90-109mmHg, 4-5% have a range of 110-129mmHg and 0.5% have blood pressure levels >130mmHg. In the white population the prevalence is higher. **(Arun Prasad K.P, 2002)**

In Global prevalence of hypertension for the year 2000 was 26.4% adults worldwide. The national prevalence rate for the United States is similar at 28.7% of adults (approximately 65 million persons). Epidemiological studies show a rising trend in the prevalence of hypertension in India in the last three decades. Studies show overall prevalence in the age group of 25-64 yrs as 25.6% and 45-65 yrs as 33%. Report shows that the prevalence in Delhi (Criteria >=160/90) to be 11% among males and 12% among females in the urban areas and 4% and 3% respectively in rural areas. One in every 5 persons in Chennai is hypertensive. Overall was 20%, it was higher among men (23.2%) than women (17.1%). **(Health and Nutrition National Survey, 1999-2000)**

Nature has gifted us lots of things to keep our self healthy. Garlic is one among those gifts. Raw garlic is used by some to treat the symptoms of acne and there is evidence that it can assist in managing high cholesterol levels. The nutrients which are present in the garlic cloves are water soluble nutrients include vitamins, enzymes, amino acids and natural sugars. Allin is an amino acid which converts into a pungent compound called allicin which has a antibiotic properties. A study on garlic as a natural agent for the treatment of hypertension, it concluded that garlic is effective for the treatment of hypertension. (**Cherry, 2005)**

Diet can be a powerful strategy to combat hypertension, consuming a diet which is rich in fiber, high in potassium, calcium and magnesium from vegetables, fruits, legumes, whole grains, low fat diet product reduce the blood pressure. The diet

is the backbone of any treatment plan for hypertension, without dietary intervention good metabolic control usually cannot be achieved; dietary changes are of paramount importance for reducing the risk of hypertension. (**Park, 2002)**

Investigator believes that the control of hypertension can be achieved by garlic. Garlic is a vegetable which has various nutrients that is beneficial to the heart and the entire cardiovascular system. In some of the clinical studies it was found that garlic decreases the systolic blood pressure of 20 mmHg to 30 mmHg and the diastolic blood pressure of 10 mmHg to 20 mmHg. Garlic has long been used by poor communities in order to treat hypertension. Garlic has become the drug of choices in places where medicines are very costly. So investigator selected as the study topic and thought that the garlic can be a solution for high blood pressure because it is cheap and also very easy to consume than the medicines.

Statement of the Problem

A Study to Evaluate the Effectiveness of Garlic Cloves on Blood Pressure among Hypertensive Patients in a selected hospital, Salem.

Objectives

1. To assess the blood pressure among hypertensive patients in experimental and control group.
2. To evaluate the effectiveness of garlic cloves on blood pressure among hypertensive patients in experimental and control group.
3. To associate the blood pressure among hypertensive patients with their selected demographic variables in experimental and control group.

Operational Definitions

1. Effectiveness

Reduction of blood pressure after giving garlic cloves among hypertensive patient as measured by sphygmomanometer.

2. Garlic Cloves

A strong smelling pungent-tasting bulb, where three cloves given along with breakfast for hypertensive patients

3. Blood Pressure

Blood pressure is the force exerted by the blood against the walls of the blood vessels as if flows through the blood vessels as measured by sphygmomanometer.

4. Hypertension

When systolic blood pressure is greater than 140mmHg and diastolic pressure is greater than 90mmHg over a sustained period as measured by sphygmomanometer.

5. Hypertensive Patients

The person who has a higher blood pressure of 140-160/90-100 mmHg between age group of 35-65 years who are attending Sri Gokulam hospital OPD, Salem.

Assumptions

1. Prevalence of hypertension is common among 35-65 yrs.
2. Adjuvant therapies may have an effect on blood pressure.
3. Specific and appropriate intervention may reduce hypertension.

Hypotheses

H_1 There will be significant difference in blood pressure among hypertensive patients after taking garlic cloves at P< 0.0 5 level.

H_2 There will be significant association between the blood pressure among hypertensive patients with their selected demographic variables of experimental and control group at P< 0.05 level.

Delimitations

1. The study was limited to hypertensive patients.
2. The study was limited to patients attending in Sri Gokulam Hospital Out Patient Department, Salem.
3. Data collection period was limited to 4 weeks.

ProjectedOutcome

1. This study would help to evaluate the effectiveness of garlic cloves on blood pressure among hypertensive patients.
2. The findings of the study will help to practice the intake of garlic cloves in reducing high blood pressure.

Conceptual Framework

The researcher adopted Imogene king's goal attainment theory (1981) based on the personal and interpersonal systems including interaction, perception, judgment, communication and transaction.

The investigator adopted goal attainment as a basic theory conceptual framework, which is aimed to show effectiveness of garlic cloves in reducing blood pressure in hypertensive patients. This involves interaction between the researcher and the hypertensive patients who are attending outpatient department.

Six major concepts describe these phenomena

Perception

It refers to people's representation of reality. Here the researcher and the patients perceivedthe need of raw ga rlic cloves to reduce the blood pressure.

Judgment

Judgment is decision which is made. Here the researcher decides to provide raw garlic cloves to reduce the blood pressure in hypertensive patients and the patients decide to participate in the research study.

Action

This refers to the changes that have to be achieved. The researcher action to provide raw garlic cloves to reduce the blood pressure in hypertensive patients and patients decide to receive the treatment.

Reaction

Reaction helps in setting a mut ual goal. In this study the researcher and hypertensive patients set a mutual goal. Here the mutual goal is to reduce the blood pressure with garlic cloves.

Interaction

It refers to the verbal communication between one individual and environment or between two or more individual who involve goal directed perception. Here the researcher encourages hypertensive patients to participate in intake of raw garlic cloves.

Transaction

This is the achievement of a goal. Here the researcher goal is to reduce blood pressure and evaluate the effectiveness of garlic cloves by using sphygmomanometer.

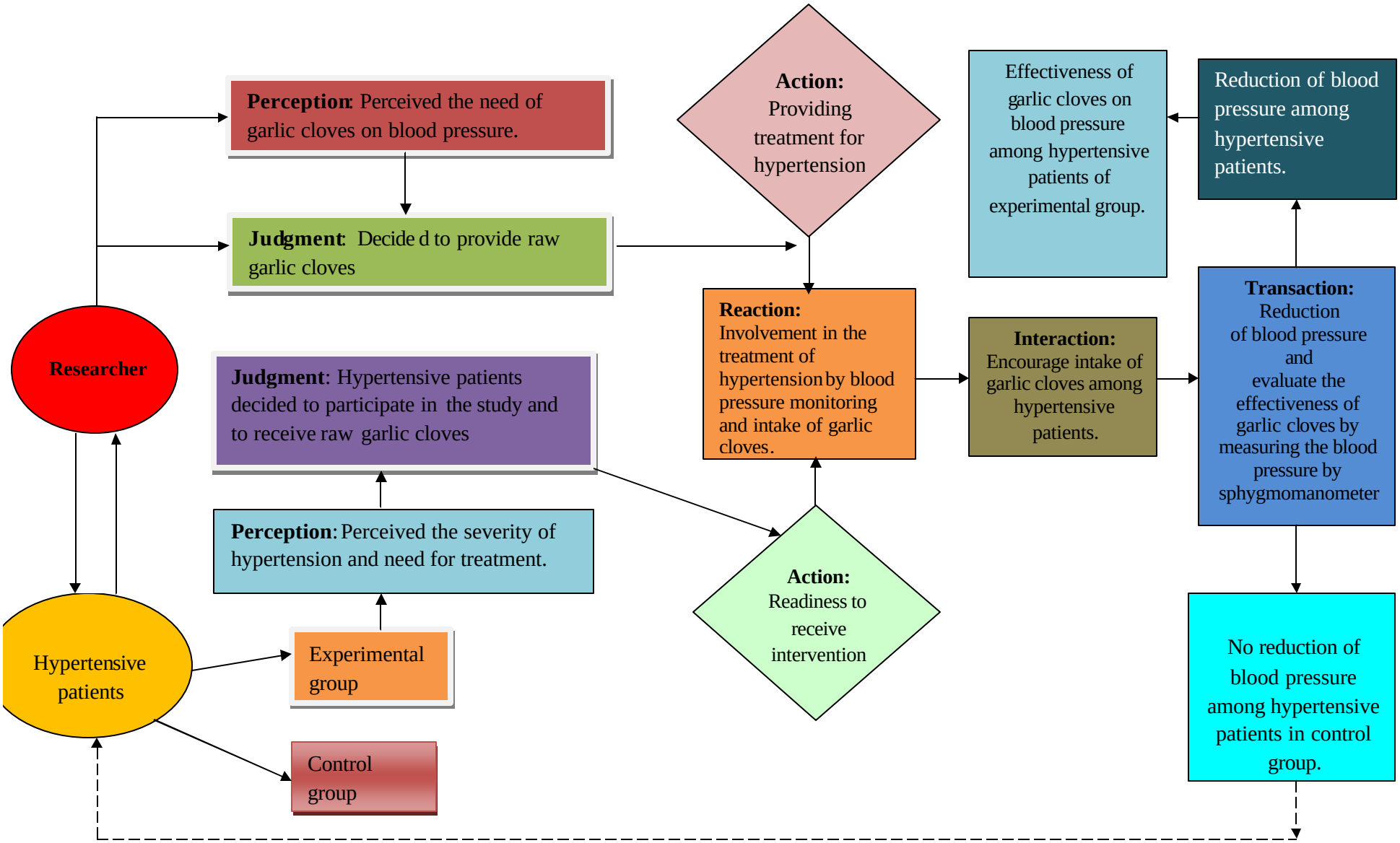

FIGURE 1.1: CONCEPTUAL FRAMEWORK BASED ON IMOGENE KING'S GOAL ATTAINMENT THEORY (1981)

Summary

This chapter dealt with introduction, need for the study, statement of the problem, objectives, operational definition, assumptions, delimitation, projected outcome and conceptual frame work.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is an essential step in the development of a research project. It helps the researcher to design the proposed study in a scientific manner so as to achieve the desired result. It helps to determine the gaps, consistencies and inconsistencies in the available literature about particular subject under the study.

Review of literature for the present study is classified under the following headings

1. Literature related to hypertension.
2. Literature related to effectiveness of garlic cloves on hypertension.

1. Literature related to Hypertension

Patrick Smith, et.al, (2010) conducted a comparative study to find the effectiveness on effect of Dietary Approaches to Stop Hypertension (DASH diet), exercise, calorie restriction in improving the mental function and heart health in overweight, among 124 hypertension adults between the average age 52. The participants were divided into three groups: (DASH diet) combined with a behavioral weight and calorie restriction; the (DASH diet) alone in one group; and no diet or exercise in control group. None were receiving medication for hypertension. Researcher found that the diet and weight management group had improved cognitive function, strikingly reduced blood pressure by systolic pressure 16mmHg and diastolic pressure 10 mm Hg over the 4 month study period, improved cardio vascular fitness and lower weight as well as reduced blood pressure blood pressure compared to the other groups.

David Conen, et.al, (2009) conducted a prospective Cohort study to assess the socioeconomic status, blood pressure progression and incident hypertension among female health professionals. Investigator selected 27,207 female health professional who are free of hypertension and cardiovascular disease at baseline. Participants were grouped in five educational categories and in six income categories. At 48 months of follow – up, 48% of women had blood pressure progression. In joint analyzes education but not income remained associated with progression and incident hypertension. It was concluded that the socio economic status, determined by education not by income, is a strong independent predictor of blood pressure progression and incident hypertension in women.

Norman. M. Kaplan, (2007) conducted a prospective study on the factors to associate with alterations in renal function among 53 hypertensive patients in whom the serum creatinine rised from 1.5 to 1.9 mg/dl **(**133 to 168 µmol/L). Smoking was the most significant independent factor for rise in blood pressure. This study revealed that there are about 1.3 billion (82%) cigarette smokers, in developing countries with each cigarette, the blood pressure rises transiently. Smoking should be avoided in any hypertensive patients because it can markedly increase the risk of secondary cardio vascular complications and enhance the progression of renal insufficiency.

Toprak. D. et.al, (2007) conducted a study to assess hypertensive patients baseline health behaviors, health status, knowledge about their disease, life styles, behavioral modifications sources of information about their disease, and management of hypertension, the researcher administered questioner to 72 hypertensive patients. The patients mean Body Mass Index was 27 ± 4.0 kg/ m2, and though a change of diet had been advised to most patients. The most common traditional self treatments for hypertensive patients were eating egg yogurt with garlic (27.8%) and eating sour

foods (25%). From the media a considerable proportion of patients gained their knowledge regarding hypertension. It concluded that media, patient education and behavioral modification can be achieved and it will help in the treatment and control of hypertension.

Wenyu. Wang, (2006) conducted a longitudinal study regarding risk factors of hypertension and their relation to cardiovascular disease. Data was collected from 4549 American Indian participants. Generalized linear models were used to identify the risk factors for hypertension and to correlate the blood pressure. American Indian between the age group of 45 to 74 years has the risk of developing hypertension was risins. Pre hypertension participants had 3.2/ 1.74 times higher risk of developing hypertension or cardio vascular disease than normotensive participants. Age, diabetes and micro or macro albuminuria were independently significant risk factors of both hypertension and cardio vascular disease.

Gupta. et.al, (2003) conducted a study to determine trends in age specific blood pressure distribution and hypertension prevalence in an urban Indian population. In the first study 2212 subjects (1412 men, 797 women) and in the second 1123 subjects (550 men, 573 women) were randomly selected. The mean values of systolic and diastolic blood pressure were not significantly difference in various age groups in the first and second studies. In conclusion the increasing variance in blood pressure distribution in this urban Indian population has resulted in a significant increase in severe forms of hypertension. In this population hypertension appears to be increased due to obesity and high levels of physical inactivity.

Steffen, et.al, (2001) conducted a study on effect of exercise and weight loss on high blood pressure. Over 100 people with high blood pressure who were not taking medication for it, agreed to have their blood pressure measured through out of

the course of the 6 months study and divided into 3 groups. One group used a combined exercise and weight management programme, another group used only exercise, and a last group did not use exercise or the weight management programme. It concluded that exercise specially when combined with weight loss, reduces blood pressure but intense physical activity and emotional distress increases the blood pressure.

2. Literature related to Effectiveness of Garlic Cloves on Hypertension

Sobenim. et. al, (2009) conducted a double blind, placebo controlled trail study to assess the effect of time release garlic powder tablets lowers systolic and diastolic blood pressure in men with mild and moderate arterial hypertension. Compared with that of regular garlic pills (Kwai) and garlic powder tablets in 84 men with mild or moderate arterial hypertension. After an 8 week placebo treatment patients were randomized either to 600 mg allicer (n= 30) or to placebo (n=20) daily for 8 weeks. In addition, in the open label branch, patients received either 2400mg allicer daily (n=18) or 900 mg Kwai daily (n=16). Allicer treatment (600mg daily) resulted in a reduction of both systolic and diastolic pressure by 7.0 mmHg and 3.8 mmHg respectively. Treatment with Kwai resulted in same decrease in systolic blood pressure (5.4 mmHg) as that seen with Allicer, but no decrease in diastolic blood pressure was observed with Kwai. The results of this study show that time released garlic powder tablets are more effective for the treatment of mild and moderate arterial hypertension than are regular garlic supplements.

Frank, (2008) conducted a Meta analysis study in the University of Adelaide, South Australia with 100 subjects showed a mean decrease of 4.6+/- 2.8 mmHg for systolic blood pressure in the garlic group compared to placebo (n= 10, p=0.001), while the mean decrease in the hypertensive sub group was 8.4=/- mmHg for systolic

blood pressure (n=4, p<0.001), and 7.3+/- 1.5 mmHg for diastolic blood pressure. Regression analysis revealed a significant association between blood pressure before the intervention and the level of blood pressure reduction.

Reinhart, (2008) conducted a study to evaluate the effects of garlic on blood pressure in patients with or without systolic hypertension. The study objective was to examine the effect of garlic on blood pressure in patients with or without elevated systolic blood pressure. Studies whose population had a mean baseline systolic blood pressure greater than 140mmHg were evaluated separately from those whose population had lower baseline blood pressure. Garlic's effect on systolic blood pressure and diastolic blood pressure was treated as a continuous variables and mean differences were calculated using a random effects model. Ten trails were included in the analyses 3 of these had patients with elevated systolic blood pressure. Garlic reduced systolic blood pressure by 16.3 mmHg and diastolic blood pressure by 9.3 mmHg compared with placebo in patients with elevated systolic blood pressure.

Kishen, (2007) conducted a study on high blood pressure in West Germany. Among 100 subjects with diastolic blood pressure between 95 to 104 mmHg. The patients were given 2 raw garlic cloves a day for 4 weeks in duration. Blood pressure was monitored during the treatment. Eight trials were identified all using garlic cloves, of the seven trails compared the effect of garlic cloves with that of placebo. Four showed significant decrease in diastolic blood pressure (18mmHg). The overall pooled mean difference in the absolute change in diastolic blood pressure was greater in the study, which were treated with the garlic cloves.

Livingston, (2007) conducted a clinical study for 12 week with participants having high blood pressure. To lower the high blood pressure a single clove of garlic per day was ingested by the participants. There was a significant reduc tion in their

systolic blood pressure 20 mmHg to 30mmHg and the diastolic blood pressure by 10mmHg to 20mmHg in participants.

Ried., et.al, (2007) conducted a randomized controlled trials with true placebo groups study to assess the effects of garlic on blood pressure., using garlic only preparation and reporting mean systolic and or diastolic blood pressure and standard deviation were included in meta analysis. Meta regression analysis was performed to test the associations between blood pressure outcomes and duration of treatment, dosage, and the blood pressure at start of treatment. Meta analysis of all studies showed a mean decreased of 4.6 ± 2.8 mm Hg for systolic blood pressure in the garlic group compared to placebo (n=10, p <0.001) while the mean decreased in the hypertensive sub group was 8.4 ± 2.8 mm Hg for systolic blood pressure (n= 4, p<0.001), and 7.3 ± 1.5 mm Hg for diastolic blood pressure (n=3, p<0.001). Regression analysis revealed that there is a significant association between blood pressure at the start of the intervention and the level of the blood pressure reduction systolic blood pressure, R=0.057, (p<0.03), diastolic blood pressure R=0.315, (p<0.02).

Dhawan. Jain, (2005) was conducted a comparative study to assess effect of garlic supplementation prevents oxidative DNA damage in essential hypertension. Blood pressure was checked by using the Joint national Commission (JNC), VI, criteria. Twenty patients of essential hypertension as per the Joint national Commission (JNC), VI, criteria (group I) and 20 age, sex matched normotensive controls (group II) were enrolled in this study. Both groups were given garlic pearls in a dosage of 250 mg/day for 2 months. Baseline samples were taken at the start of the study from 0 day and thereafter 2 months follow up was made. A moderate blood pressure and significant reduction in 8 – hydroxyl Deoxy Guanosine (OHDG), no

levels and lipid per oxidation in group I, subjects with garlic pearls supplementation but significant increase in vitamin leve ls and total antioxidant status was observed in this group as compared to control subjects. It was conclude d that garlic has beneficial effects in reducing blood pressure and counteracting oxidative stress, and thereby offering cardio protection in essential hypertension.

Qid Wai, et.al, (2000) conducted a study regarding the effectiveness of dietary garlic on blood pressure. A questionnaire was developed in order to estimate the dietary intake of garlic per person per month and to record 3 blood pressure readings on each individual. The questionnaire was administered to 101 adult participants and found that the blood pressure on the lower side is found to consume more garlic in their diets. The mean difference is significant for systolic with $p<0.05$. This study concludes that individuals from the lower side are consuming more garlic in their diets which reduced their blood pressure.

CHAPTER III

METHODOLOGY

This chapter describes the methodology adopted for assessing the effectiveness of garlic cloves on blood pressure among hypertensive patients of selected hospital.

Research Approach

Quantitative Evaluative Research Approach.

Research Design

The research design chosen for this study was Quasi experimental pre test and post test design. The design can be represented as,

E	**= O_1**	**X**	**O_2**
C	**=O_1**		**O_2.**

E Experimental group among hypertensive patient in a selected hospital.

C Control group among hypertensive patients in a selected hospital

O_1 Pre assessment of blood pressure with sphygmomanometer.

X Administration of raw garlic cloves.

O_2 Post assessment of blood pressure with sphygmomanometer.

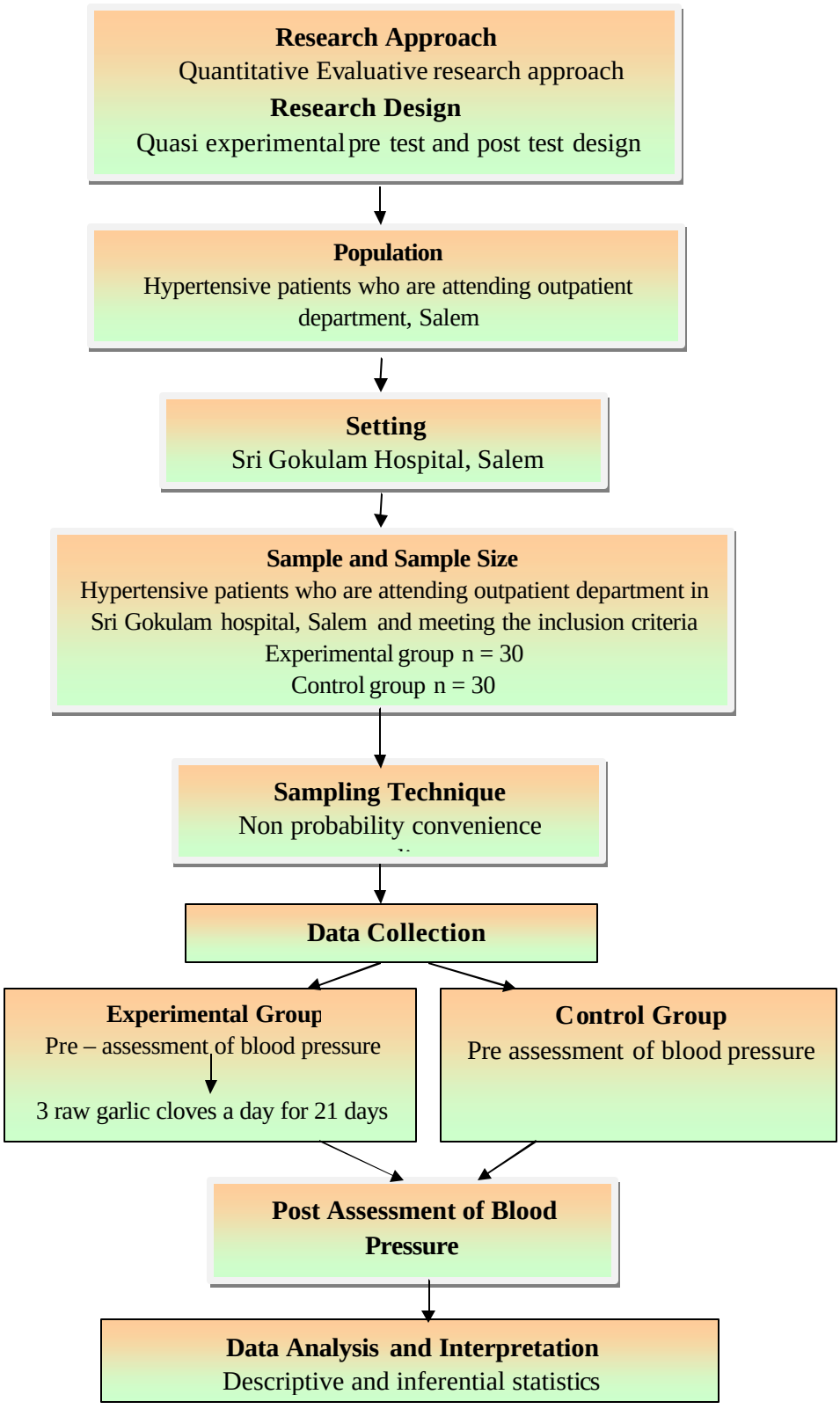

Fig- 3.1: Schematic Representation of Research Methodology.

Population

The population for this study was hypertensive patients who are attending outpatient department, Salem. There are 15 private hospitals and a multi specialty Government hospital around Salem city.

Description of the Setting

The investigator had selected Sri Gokulam hospital to conduct this study. The total number of hypertensive patients attending Sri Gokulam hospital Outpatient Department per day is 20 – 30.The Sri Gokulam hospital is a 350 bedded hospital situated in the middle of the city which is 15 Km from Sri Gokulam College of nursing. The Sri Gokulam hospital is providing excellent care to the patients in and around Salem city. The Sri Gokulam hospital was selected for an experimental and control group for study.

Sampling

- Sample

  The sample for this study was hypertensive patients who are attending outpatient department Sri Gokulam hospital, Salem, during the study period and those who meet the sampling criteria.

- Sample Size

  The sample size for this study was 60 hypertensive patients. Among them, 30 hypertensive patients were assigned to the experimental group and other 30 hypertensive patients were assigned to control group.

- Sampling technique

  The hypertensive patients were selected through non probability convenience sampling technique.

✍ Criteria for Sample Selection

Inclusion criteria

The patient who are:

- ? between35 - 65years of age.
- ? willing to participate in the study
- ? attending the out- patient department.
- ? diagnosed as hypertensive patients within one year.
- ? in antihypertensive agents.

Exclusion criteria:

- ? Hypertensive Patients with associated illness like diabetes mellitus, asthma, cardiac diseases and chronic renal failure.
- ? Patients with bleeding disorder and anticoagulant therapy.
- ? Patients above 65 years of age.

Variables

Independent variable: Garlic cloves

Dependent variable **:** Blood pressure.

Description of the Tool

The tool was prepared by the investigator after an extensive study of the related literature and with the guidance of experts. The tool consists of two sections.

Section-A Demographic variables

This section consists of demographic variables like age, sex, occupation, monthly income, family history of hypertension, habit of smoking, habit of alcoholism, dietary habits, habit of exercise and body mass index. The base line data was collected by using structured interview schedule.

Section-B Assessment of blood pressure among hypertensive patients

Blood pressure was measured by using sphygmomanometer and was categorized according to Joint National Commission VII, 2003, classification of blood pressure for adults above 18 years of age.

According to Joint National Commission VII of

Early detection and treatment of hypertension, 2003.

BLOODPRESSURE CATEGORY	SYSTOLIC (mmHg)	DIASTOLIC (mmHg)
Normal	<120	<80
Pre hypertension	120-139 or	80 – 89
Stage I hypertension	140 – 159 or	90 – 99
Stage II hypertension	=160 or	=100

Table-3.1: Scoring procedure for blood pressure category

Category	Score
Normal	0
Pre hypertension	1
Stage I hypertension	2
Stage II hypertension	3

Validity and Reliability

Validity

Validity of the tool was obtained by experts, 6 from the field of nursing, 2 from the field of medicine and one dietician.

Reliability

The reliability of the tool was checked and was established by using interrater method r^1 = 0.98 which showed that the tool was reliable and was considered for proceeding.

Pilot Study

Pilot study was conducted from 07.06.2010 to 13.06.2010 in SKS hospital, Salem to find out the feasibility of the study. A formal permission was obtained from the concerned authority of the hospital. Six hypertensive patients were selected by using convenience sampling technique. In this, 3 hypertensive patients were selected for experimental group and 3 hypertensive patients were selected for control group. The collected data were analyzed by using descriptive and inferential statistics. The samples of pilot study were exempted during the main study. Findings of the pilot study revealed that the tool was practicable and feasible to conduct the study.

Method of Data Collection

Ethical consideration

Written permission was obtained from the Managing Director of Sri Gokulam hospital, Salem.

Informed oral consent obtained from the hypertensive patients.

Data collection procedure

The data was collected from 05.07.2010 to 31.07.2010. On the first week hypertensive patients who fulfilled the inclusion criteria were selected from the hospital by non probability convenience sampling technique and their general information was collected by using structured interview schedule and their blood pressure was measured by using sphygmomanometer for both experimental and control group. For each hypertensive patients in experimental group, the investigator gave 63 raw garlic cloves and was asked to chew and swallow 3 raw garlic cloves daily along with their breakfast for 21 days. Also the patients were provided with daily record sheet and were instructed to maintain it daily. Their address and phone number were collected. On second and third week investigator went for home visits

and made phone calls as follow up. The post test was conducted on the 22nd day and the blood pressure of both experimental and control groups were measured.

Plan for Data Analysis

The data will be analyzed by using both descriptive and inferential statistics. The data related to demographic variables will be analyzed by using descriptive measures (frequency, percentage) and blood pressure among hypertensive patients will be analyzed by using descriptive statistics (mean, standard deviation). The effectiveness of garlic cloves on blood pressure will be analyzed by 'z' -test. The association between the blood pressure with their selected demographic variables will be analyzed by using inferential statistics (chi – square test).

Summary

This chapter dealt with research approach, research design, settings, variables, population, sampling, criteria for sample selection, description of the tool, validity and reliability, pilot study, data collection and plan for data analysis. The analysis and interpretation of the study are present in the following chapter.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collected to evaluate the effectiveness of Garlic Cloves on Blood Pressure among Hypertensive patients. The purpose of the analysis is to reduce the data to manageable and interpretable form so that the research problem can be suited and tested.

The collected data was tabulated, organized and analyzed by using descriptive and inferential statistics as follows.

Section A Distribution of blood pressure according to their demographic variables among hypertensive patients in experimental and control group.

Section B a. Distribution of blood pressure according to the pre test among hypertensive patients in experimental and control group.

b. Distribution of blood pressure according to the post test among hypertensive patients in experimental and control group.

Section C a. Comparison of blood pressure according to the pre and post test among hypertensive patients in experimental and control group.

b. Comparison of mean, standard deviation and mean difference on blood pressure among hypertensive patients in experimental and control group.

Section D Hypotheses Testing.

a. Effectiveness of garlic cloves on blood pressure among hypertensive patients in experimental and control group.

b. Association of blood pressure among hypertensive patients with their selected demographic variables in experimental and control group.

Section A

Distribution of blood pressure According to their Demographic Variables among hypertensive patients in Experimental and Control Group

Table-4.1:

Frequency and percentage distribution of biographic variables among hypertensive patients in experimental and control group

n=60

Sl. No	Biographic variables	Experimental group (n =30)		Control group (n = 30)	
		f	%	f	%
1	**Age in years**				
	a. 35-45	9	30	5	16.67
	b. 46-55	12	40	12	40
	c. 56-65	9	30	13	43.33
2	**Sex**				
	a. Male	14	46.67	17	56.67
	b. Female	16	53.33	13	43.33
3	**Type of Work**				
	a. Sedentary	8	26.67	8	26.67
	b. Moderate	7	23.33	10	33.33
	c. Heavy	15	50	12	40
4	**Monthly Income(in rupees)**				
	a. Below 2000	5	16.67	10	33.33
	b. 2001 – 4000/-	10	33.33	8	26.67
	c. 4001 – 6000/-	8	26.67	5	16.67
	d. Above 6001/-	7	23.33	7	23.33

The above table shows that in experimental group 12(40%) of them were in 45-55yrs of age and in control group 13(43.33%) were 56 – 65 yrs of age. 16(53.33%) were females in experimental group and 17 (56.67%) were males in control group. 15(50%) and 12(40%) were doing heavy work in both experimental group and control group. About 10(33.33%) belongs to 2001 – 4000/- monthly income in experimental group and 10(33.33%) were below 2000/- monthly income in control group.

Table-4.2:

Frequency and percentage distribution of illness related variables among hypertensive patients in experimental and control group

n=60

Sl. No	Illness related variables	Experimental group (n=30)		Control group (n = 30)	
		f	%	f	%
1.	**Family history of hypertension**				
	a. Yes	17	56.67	15	50
	b. No	13	43.33	15	50
2.	**Habit of smoking**				
	a. Yes	8	26.67	7	23.33
	b. No	22	73.33	23	76.67
3.	**Habit of alcoholism**				
	a. Yes	9	30	9	30
	b. No	21	70	21	70
4.	**Dietary habits**				
	a. Vegetarian	15	50	14	46.67
	b. Non vegetarian	15	50	16	53.33
5.	**Habit of exercise**				
	a. Yes	24	80	20	66.67
	b. No	6	20	10	33.33
6.	**Body mass index**				
	a. 18.5 24.9 (normal)	5	16.66	10	33.33
	b. 25 – 29.9 (over weight)	8	26.67	10	33.33
	c. 30 – 34.9 (obesity grade I)	11	36.67	5	16.67
	d. 35 – 39.9 (obesity grade II)	5	16.67	5	16.67
	e. 40andabove(obesity grade III)	1	3.32	-	-

The table shows that 17(56.67%) and 15(50%) were from family history of hypertension in both experimental group and control group. 22(73.33%) and 23(76.67%) were not smokers in both experimental group and control group. 24(80%) were not alcoholic in both experimental group and in control group. In experimental group 15(50%) were vegetarian and non vegetarian and in control group 16(53.33%) were non vegetarian. About 24(80%) and 20(66.67%) were having habit of exercise in both experimental group and in control group. About 11(36.67%) were having obesity grade I in experimental group and 10(33.33%) were having normal BMI and over weight in control group.

Section B

Distribution of blood pressure According to the Pre -test among hypertensive patients in experimental and control group

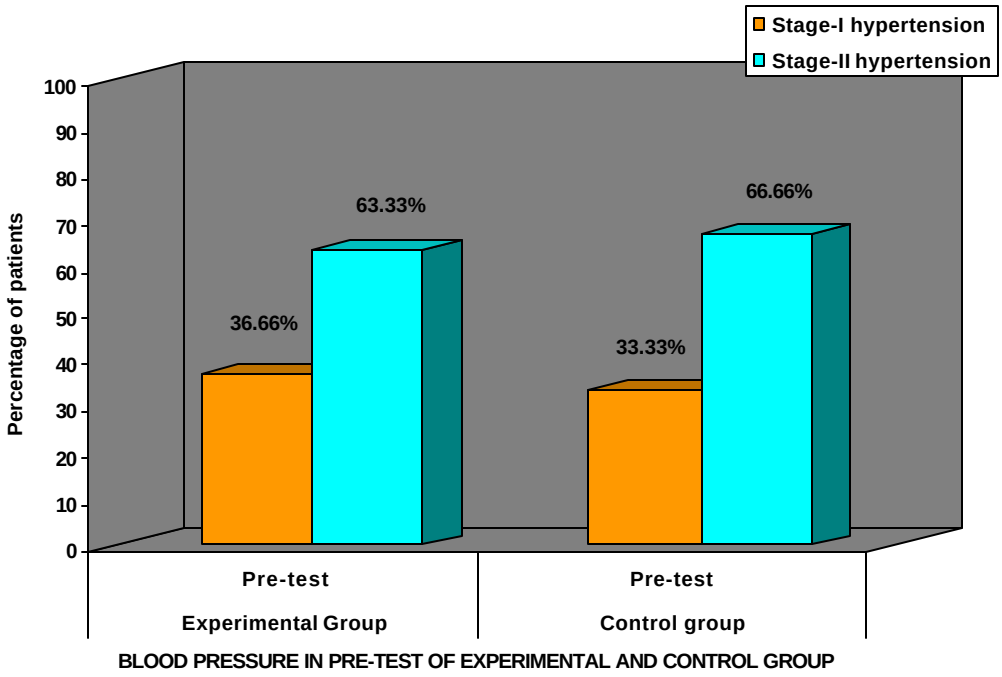

Figure -4.1: Percentage distribution of blood pressure according to the pre test among hypertensive patients in experimental and control group.

The above figure shows that in the pre test no patients had normal blood pressure and pre hypertension in both the experimental and control group. In the experimental group 11(36.67%) of patients had stage I hypertension and 10(33.33%) in the control group. In the experimental group 19(63.33%) of patients had stage II hypertension and 20(66.67%) in the control group.

Distribution of Blood Pressure According to the Post-test among Hypertensive Patients in Experimental and Control Group

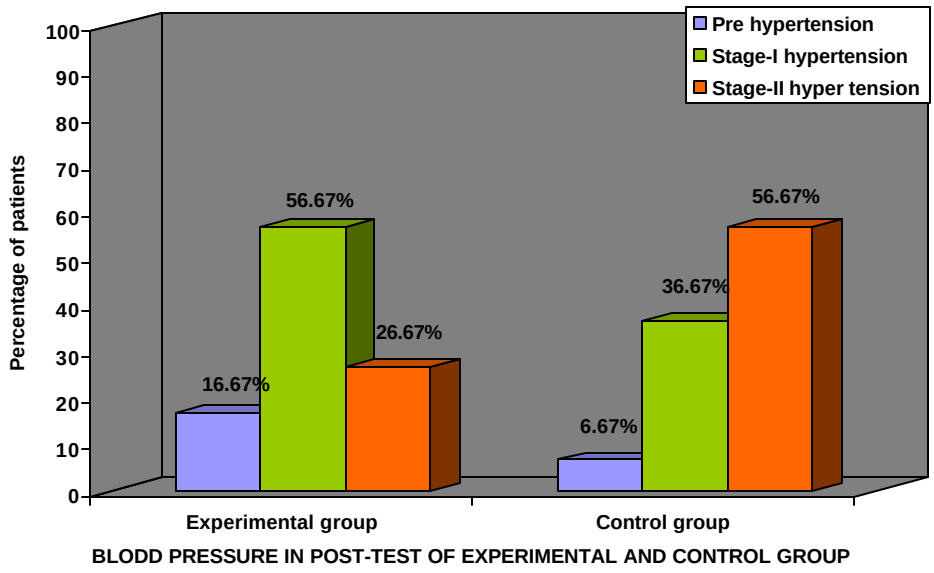

Figure -4.2 : Percentage distribution of blood pressure according to the post test among hypertensive patients in experimental and control group.

The above figure shows that in the post test no patients had normal blood pressure in both the experimental and control group. In the experimental group 5(16.67 %) of patients had pre hypertension and 2(6.67%) in the control group. In the experimental group 17(56.67%) of patients had stage I hypertension and 11(36.67%) had in the control group. In the experimental group 8(26.67%) had Stage II hypertension and 17 (56.67%) of patients had in the control group.

Section C

Comparison of blood pressure according to the pre and post-test among hypertensive patients in experimental and control group.

Table 4.3:

Frequency and percentage distribution of blood pressure according to the pre-test and post-test among hypertensive patients in experimental and control group.

n=60

Blood Pressure Category	Experimental group (n=30)				Control group (n=30)			
	Pre test		Post test		Pre test		Post test	
	f	%	f	%	f	%	f	%
Normal	-	-	-	-	-	-	-	-
Pre hypertension	-	-	5	16.67	-	-	2	6.67
Stage I hypertension	11	36.66	17	56.67	10	33.33	11	36.67
Stage II hypertension	19	63.33	8	26.67	20	66.67	17	56.67

In the pre test no patients had normal blood pressure and pre hypertension in both the experimental and control group. In the experimental group 11(36.67%) of patients had stage I hypertension and 10(33.33%) in the control group. In the experimental group 19(63.33%) of patients had stage II hypertension and 20(66.67%) in the control group.

In the post test no patients had normal blood pressure in both the experimental and control group. In the experimental group 5(16.67%) of patients had pre hypertension and 2(6.67%) in the control group. In the experimental group 17(56.67%) of patients had stage I hypertension and 11(36.67%) had in the control group. In the experimental group 8(26.67%) had Stage II hypertension and 17 (56.67%) of patients had in the control group.

Table 4.4 :

Comparison of mean, standard deviation and mean difference of Blood Pressure among hypertensive patients in experimental and control group.

n= 60

Group	Pre test		Post test		Mean difference
	Mean	S.D	Mean	S.D	
Experimental group	2.633	0.49	2.10	0.66	0.53
Control group	2.66	0.47	2.50	0.62	0.16

The above table shows that in the experimental group the pre and post test mean, Standard deviation score was 2.63 ± 0.49 and 2.10±0.66 respectively and the mean difference was 0.53. In the control group, the pre and post test mean, Standard deviation was 2.66 ± 0.47 and 2.50±0.62 respectively and the mean difference was 0.16. The mean difference shows that blood pressure was reduced in experimental group than in control group.

Section D

Hypotheses Testing

Table-4.5:

Effectiveness of garlic cloves on blood pressure among hypertensive patients in experimental and control group.

n=60

Group	Pre test		Post test		'z' test
	Mean	S.D	Mean	S.D	
Experimental group	2.633	0.49	2.10	0.66	3.27*
Control group	2.66	0.47	2.50	0.62	

***significant (p < 0 .05)**

The above table shows that in the experimental group the pre and post test mean and Standard deviation score was 2.63 ± 0.49 and 2.10±0.66 respectively. In the control group, the pre and post test mean and Standard deviation was 2.66 ± 0.47 and 2.50±0.62 respectively. The calculated 'z' value (3.27) at ($p< 0.05$) is greater than table value (1.96), hence the research hypothesis H_1 is retained. It was evident that garlic cloves on blood pressure among hypertensive patients were effective.

Table-4.6:

Association of blood pressure among hypertensive patients with their selected demographic variables in experimental and control group.

n =60

Sl. No	Demographic variables	Experimental group (n=30)			Control group (n=30)		
		df	$?^2$	Table value	df	$?^2$	Table value
1.	Age in yrs	2	1.16	5.99	2	0.75	5.99
2.	Sex	1	0.44	3.84	1	0.44	3.84
3.	Monthly Income (in rupees)	3	9.26*	7.81	3	2.92	7.81
4.	Family history of hypertension	1	2.4	3.84	1	2.4	3.84
5.	Habit of smoking	1	0.63	3.84	1	1.47	3.84
6.	Dietary habit	1	0.45	3.84	1	0.45	3.84

***significant ($p<0.05$)**

The above table shows that, in experimental group there was significant association of the blood pressure and monthly income. In the control group there was no significant association with the selected demographic variables. Hence research hypothesis H_2 is retained for monthly income in experimental group.

Summary

This chapter dealt with data analysis and interpretation in the form of statistical values based on the objectives, frequency and percentage on the blood pressure among hypertensive patients with their selected demographic variables was analyzed. The 'z' test was used to evaluate the effectiveness of garlic cloves on blood pressure among hypertensive patients. The Chi-square analysis was used to find out the association between the blood pressure among hypertensive patients with their selected demographic variables.

CHAPTER V

DISCUSSION

The Quasi experimental pre test and post test design study was done to evaluate the effectiveness on blood pressure among hypertensive patients in a selected, Salem. The findings of the study have been discussed with reference to the objective and relevant study from the review of literature.

- The demographic variables of the hypertensive patients in experimental group 12(40%) of them were in 45 – 55 years of age where as in the control 13 (43.33%) of them were in 56 – 65 years of age.
- Majority were 16(53.33%) females in the experimental group and in the control group 17 (56.67%) were males.
- In experimental group 15 (50%) were doing heavy work and in the control group12 (40%) were doing heavy work.
- In the experimental group the monthly income were 10 (33.33%) between Rs. 2001 – 4000 and the monthly income of control group 10 (33.33%) belongs to below Rs. 2000.
- Majority were 17 (56.67%) from experimental group have family history of hypertension and in the control group 15 (50%) have the family history of hypertension.
- In the experimental group majority 22 (73.33%) were non smokers, in control group 23 (76.67%) were non smokers.
- Majority 24 (80%) were having habit of doing exercise in experimental group, about 20 (66.67%) were having the habit of doing exercise in the control group.

? About 11(36.67%) were having obesity grade I in experimental group and 10(33.33%) were having normal BMI and over weight in control group.

Assess the blood pressure among hypertensive patients

In pre test 11(36.67 %) of patients had stage I hypertension and 19(63.33%) of patients had stage II hypertension in experimental group. In control group 10(33.33%) of patients had Stage I hypertension, 20(66.67%) of patients had Stage II hypertension.

Researcher felt that the majority of hypertensive patients are more in Stage II hypertension category. A need was felt to provide adjuvant therapy (garlic cloves) along with the anti hypertensive agents to reduce the blood pressure in hypertensive patients.

Effectiveness of garlic cloves on blood pressure among hypertensive patients:

In the post test 5(16.67%) of patients had pre hypertension, 17(56.67%) of patients had stage I hypertension and 8(26.67%) had Stage II hypertension in the experimental group. and in the control group 2(6.67%) of patients had pre hypertension, 11(36.67%) had stage I hypertension and 17 (56.67%) of patients had stage II hypertension.

In the experimental group the pre test mean score was 2.63 ± 0.49. The post test mean score was 2.10±0.66. In control group the pre test mean score was 2.66 ± 0.47 and the post test mean score was 2.50±0.62. The difference formed in the mean score value were true difference. The 'z' value is 3.27 significant at ($p< 0.05$) level which is greater than the table value 1.96, hence the research hypothesis H_1 is retained. This shows that Garlic cloves on blood pressure were effective among hypertensive patients.

The support study was conducted by **shiny paulose, 2010,** on the effectiveness of garlic administration on blood pressure among hypertensive patients. In this study the garlic were given daily morning and instructed to have in empty stomach. The study result shows that there was significant reduction in mean systolic blood pressure and diastolic blood pressure after garlic administration among hypertensive patients in experimental group $t = 7.179$ ($p < 0.001$).

The finding of the study correlates with the above study findings, that administration of garlic cloves can reduce the blood pressure.

Associate the blood pressure among hypertensive patients with their selected demographic variables.

The present study finding reveals that there is significant association between the blood pressure with the monthly income at $p<0.05$ level in an experimental group where as in control group there is no significant association between the blood pressure with their selected demographic variables like age, sex, and monthly income, family history of hypertension, habit of smoking and dietary habit. Hence research hypothesis H_2 is retained in experimental group and rejected in control group.

Summary

This chapter dealt with the discussion of the study with reference to the objective and supportive studies. All the three objectives have been obtained and the two research hypotheses H_1 and H_2 retained in the experimental group and H_2 rejected in the control group.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATIONS

This chapter consists of four sections. In the first two sections consists of summary, conclusion and in the last two sections consists of, the implications for nursing practice and recommendations.

Summary

The main focus of the study was to evaluate the effectiveness of garlic cloves on blood pressure among hypertensive patients. A Quasi experimental pre test and post test design study was conducted in Sri Gokulam hospital, Salem, and 60 patients were selected irrespective of their age, attending Outpatient Department and diagnosed to have hypertension within one year and in anti hypertensive agents. Non probability convenience sampling technique was adopted for the study, 30 hypertensive patients for experimental group and 30 hypertensive patients for control group were assigned. The general information was collected by structured interview schedule. The blood pressure was measured by using sphygmomanometer and instructed to take 3 raw garlic cloves along with their breakfast a day for 21 days and post test was done on 22nd day by measuring the blood pressure for both the group.

The baseline data was tabulated by formulating frequency table. The blood pressure was assessed by using descriptive statistics. The effectiveness of garlic cloves was evaluated by inferential statistics 'z' test. The chi – square analysis was done to associate the blood pressure with their selected demographic variables of hypertensive patients.

Findings of the Study

- The demographic variables of the hypertensive patients in experimental group 12(40%) of them were in 45 – 55 years of age where as in the control 13 (43.33%) of them were in 56 – 65 years of age.
- Majority were 16(53.33%) females in the experimental group and in the control group 17 (56.67%) were males.
- In experimental group 15 (50%) were doing heavy work and in the control group12 (40%) were doing heavy work.
- In the experimental group the monthly income were 10 (33.33%) between Rs. 2001 – 4000 and the monthly income of control group 10 (33.33%) belongs to below Rs. 2000.
- Majority were 17 (56.67%) from experimental group have family history of hypertension and in the control group 15 (50%) have the family history of hypertension.
- In the experimental group majority 22 (73.33%) were non smokers, in control group 23 (76.67%) were non smokers.
- Majority 24 (80%) were having habit of doing exercise in experimental group, about 20 (66.67%) were having the habit of doing exercise in the control group.
- About 11(36.67%) were having obesity grade I in experimental group and 10(33.33%) were having normal BMI and over weight in control group.
- In percentage distribution of blood pressure among hypertensive patients according to the pre test majority of them had Stage II hypertension in experimental and control group.

- In percentage distribution of blood pressure among hypertensive patients according to the post test majority of them had Stage II hypertension to pre hypertension in experimental and control group.
- The pre and post test mean, Standard deviation was 2.63 ± 0.49 and 2.10 ± 0.66 and mean difference was 0.53 in experimental group and in control group 2.66 ± 0.47 and 2.50 ± 0.62 and mean difference was 0.16. The mean difference shows that blood pressure was reduced in experimental group than in control group.
- The 'z' test value 3.27 was greater than the table value (1.96) at $p < 0.05$ level. Thus garlic cloves were effective in reducing blood pressure. Hence hypothesis research H_1 is retained.
- There was significant association between the blood pressure with the monthly income at $p<0.05$ level in the experimental group. There was no significant association between the blood pressure with their selected demographic variables like age, sex and monthly income, family history of hypertension, habit of smoking and dietary habit in the control group. Hence the research hypothesis H_2 is retained for monthly income in experimental group and rejected in control group.

Conclusion

This study was done to evaluate the effectiveness of garlic cloves on blood pressure among hypertensive patients in a selected hospital, Salem. The result of this study showed that the garlic cloves were effective among hypertensive patients in reducing blood pressure in experimental group. There is significant association between blood pressure with the monthly income in experimental group. There is no significant association in control group with any other demographic variables.

Implications

The findings of this study have the following implications in the various areas of nursing service, nursing education, nursing administration and nursing research.

Nursing service

- The nurse can develop sensitivity to the effect of garlic cloves in reducing blood pressure.
- The nurse should understand the importance of garlic cloves as an adjunct to pharmacological therapy in nursing practice.
- The nurse should teach the benefit of garlic cloves in reducing blood pressure among hypertensive patients.
- The nurse can provide adequate clinical exposure to the student's settings where garlic cloves were used in reducing blood pressure.

Nursing education

- The medical surgical and advanced clinical oriented curriculum imparted to nursing students should emphasize more on garlic cloves on blood pressure.
- Nursing educators should encourage the nursing students to know about the measures which reduce blood pressure among hypertensive patients.
- Staff nurses must be encouraged to actively participate in in-service education and workshop regarding the importance of complementary therapy on hypertension.

Nursing administration

- The administrator should collaborate with governing bodies in formulating policies to employ qualified nurses in medical units and periodically supervise their application of garlic cloves.

- The administrator should organize in-service education programme on adjuvant therapy for the nursing personals.
- The administrator should provide opportunity for nurses to attend training programme on adjuvant therapy.
- The administrator should arrange patient education services an integral part of high quality, cost effect care regarding adjuvant therapy.
- The nursing administrator should see that the health promotion aspect is included in the nursing care.
- Administrator should appoint separate complementary therapist to guide the nursing personnel regarding adjuvant therapy.

Nursing research

- The researcher should encourage for further research on use of garlic cloves on blood pressure.
- The investigator should disseminate the findings through conferences, seminars, publication in professional, national and international journal and the World Wide Web.
- The findings of the study help to expand the scientific body of professional knowledge upon which further research can be conducted.
- The study can be a base line to build upon future studies.

Recommendations

- A similar study can be conducted for a large group.
- Administration of garlic can be studied more significantly and used as specific nursing intervention.
- Comparative study can be done on the effectiveness of garlic cloves versus other reducing measures on blood pressure.

? Comparative study can be done on the effectiveness of garlic and hypertensive patients without taking anti hypertensive agents.

Summary

This chapter dealt with summary, conclusion, implications for nursing practice and recommendations.

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ANNEXURE - A

LETTER SEEKING PERMISSION TO CONDUCT A RESEARCH STUDY

SRI GOKULAM COLLEGE OF NURSING
3/836, Periyakalam, Neikkarapatti, Salem - 636 010.
Phone : 0427 - 6544550 Fax : 0427 - 2270200, 2447077
Email : sgcon2001@yahoo.com, sgcon2001@gmail.com

Date : .....03-07-2010.....

To

The Managing Director,
Sri Gokulam Hospital,
Salem.

Respected Sir,

Sub: Permission to conduct a Research Study request reg.

This is to introduce Ms.Sapthiga.I., (M.Sc.Nursing) student of our college. She is to conduct Research project which is to be submitted to the Tamilnadu Dr.M.G.R.Medical University,Chennai in partial fulfillment of University requirement for the award of M.Sc.(Nursing)Degree.

Topic: "A Study to Evaluate the Effectiveness of Garlic Cloves on Blood Pressure among Hypertensive Patient at Selected Hospital, Salem."

I request you to kindly permit her to conduct the study in your esteemed Hospital from 05.07.10.to 31.07.10. She will adhere to the Institutional policies and regulations.

Thanking you.

Yours Sincerely,

3/7/10

(Prof. A. Jayasudha)

PRINCIPAL
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SALEM - 636 010

APPENDIX – B

Tool for Data Collection

Section – A Demographic Variables

Instruction

The interviewer will ask question listed below and place a tick mark (✍) against the correct response given by respondent.

Date : Sample No: ☐☐

1. Age in years
   a. 35 – 45 ☐
   b. 46 – 55 ☐
   c. 56 – 65 ☐
2. Sex
   a. Male ☐
   b. Female ☐
3. Occupation
   a. Coolie ☐
   b. Farmer ☐
   c. Government employee ☐
   d. Business ☐
   e. Private employee ☐
   f. Unemployed ☐
   g. Retried ☐

4. Monthly income (in rupees)
    a. Below 2000 ☐
    b. 2001 -4000/- ☐
    c. 4001 -6000/- ☐
    d. Above 6001/- ☐
5. Family history of hypertension
    a. Yes ☐
    b. No ☐
6. Smoking habit
    a. Yes ☐
    b. No ☐
        i. If yes, No. of cigarettes per day
            a. 1 - 5 ☐
            b. 6 – 10 ☐
            c. Above 10 ☐
        ii. Duration of smoking
            a. Below 5 yrs ☐
            b. 5 – 10 yrs ☐
            c. Above 10 yrs ☐
7. Habit of alcoholism
    a. Yes ☐
    b. No ☐
        i. If yes, duration of alcohol intake
            a. Below 5yrs ☐
            b. 5 – 10 yrs ☐
            c. Above 10 yrs ☐

8. Dietary habits

   a. Pure vegetarian ☐

   b. Non vegetarian ☐

9. Practicing regular exercise

   a. Yes ☐

   b. No ☐

      i, if yes, frequency of exercises

         a. Weekly 4 times ☐

         b. Weekly 3 times ☐

         c. Every day ☐

      ii. Types of exercises

         a. Walking ☐

         b. Jogging ☐

         c. Cycling ☐

         d. If any specify ……

10. Body Mass Index ……..

   a. 18.5 – 24.9 (normal) ☐

   b. 25 - 29.9 (over weight ☐

   c. 30 – 34.9 (obesity grade I) ☐

   d. 35 – 39.9 (obesity grade II) ☐

   e. 40 and above (obesity grade III) ☐

Section – B

Assessment of Blood Pressure Among Hypertensive Patients

Categories for Blood Pressure Levels in Adults (Ages 18 Years and Older)

According to Joint National Commission of early detection and treatment of hypertension VII, 2003.

Category	**Systolic (mmHg)**		**Diastolic (mmHg)**
Normal	<120		<80
Pre hypertension	120 - 139	or	80 – 89
Stage 1 hypertension	140 – 159	or	90 – 99
Stage 2 hypertension	=160	or	=100

Scoring for blood pressure category

Category	**Score**
Normal	0
Pre hypertension	1
Stage I hypertension	2
Stage II hypertension	3

Daily Record on Garlic Intake

Samples No:

S. No	Date	Garlic Taken		Signature of the sample
		Yes	No	
1				
2				
3				
4				
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19 20				
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Procedure on Blood Pressure

Blood pressure

Blood pressure is the force exerted on the walls of an artery created by the pulsing blood under pressure from the heart.

Equipment

A clean tray contains

Article	**Purpose**
Sphygmomanometer	To check the blood pressure
Stethoscope	To ausculta te the korotkoff sound
Spirit swab	To clean the ear piece of stethoscope
Kidney dish	To collect the waste

Procedure

PROCEDURE	**RATIONALE**
1. Explain the procedure to the patient.	1. To get co-operation and to gain confidence.
2. Place patient in sitting position, and instruct patient to keep feel flat on floor without legs crossed.	2. Leg crossing falsely increases systolic and diastolic blood pressure.
3. Expose extremity (arm) fully by removing constricting clothing.	3. Ensures proper cuff application.
4. Palpate brachial artery. Apply bladder of cuff above the artery. Position cuff 2.5cm above site of pulsation wrap cuff evenly and snugly around extremity.	4. Inflating bladder directly over artery ensures proper pressure is applied during inflation. Loose fitting cuff causes false high readings.
5. Palp ate artery distal to the cuff with fingertips of non dominate hand while inflating cuff note point at which pulse disappears and continue to inflate cuff	5.Palpate determines maximal inflation point for accurate reading .completely deflating cuff prevents venous congestion and

to a pressure 30mmhg above that point .note pressure reading slowly deflate cuff, and note point when pulse reappears .deflate cuff fully and wait 30 seconds	false –high reading
6. Place stethoscope earpieces in ears, and be sure sounds are clear, not muffled.	6 Ensures each ear piece follows angle of ear canal to facilitate hearing.
7. Relocate brachial artery, and place bell or diaphragm of stethoscope over it .do not allow chest piece to touch cuff or clothing.	7 Proper placement ensures the best sound reception.
8. Close value of pressure bulb clockwise until tight.	8 Prevents air leak during inflation.
9. Quickly inflate cuff to 30mmHg above patients estimated systolic pressure.	9 Rapid inflation ensures accurate measurement of systolic pressure.
10. Slowly release pressure bulb valve, and there are no extraneous sounds.	10 Too rapid or slow a decline in pressure release causes inaccurate readings. Noise interferes.
11. Note point on manometer when the first clear sound heard. The sound will slowly increase in intensity.	11 First korotkoff sound reflects systolic blood pressure.
12. Continue to deflate cuff gradually, noting point at which sound disappears in adults.	12 Indication of diastolic pressure.
13. Record the blood pressure measurements in pre test and post test.	13 Data analysis and interpretation.

Procedure on Garlic Cloves

Garlic cloves

Allium sativum, commonly known as garlic. The garlic clove contains various nutrients and has a characteristics of pungent and spicy flavor.

Mechanism of action

The secret of garlic in treating hypertension due to its extended inhibition of the natural synthesis of nitric oxide, a component responsible for vasoconstriction. Limitation of the synthesis of nitric oxide will result to vasodilatation (relaxation of blood vessels), allowing blood vessels hence resulting to stabilization of blood pressure. There are three chemicals found in garlic that are alliin, allinase, and allicin, was noted to be the compound responsible for garlic's anti hypertensive effect.

Procedure

1. Explain the procedure to the patient.
2. Instruct to take 3 raw garlic cloves along with breakfast, which is to be chewed and swallowed for 21 days and to maintain in a daily recordsheet.
3. Instruct to come for follow up on 22nd day.

பிரிவு - அ

தனிநபர் பற்றிய அடிப்படை வினாக்கள்

குறிப்பு: பேட்டி காண்பவர் கீழே கொடுக்கப்பட்டுள்ள கேள்விகளைப்

பங்கேற்பாளரிடம் கேட்டு அதற்குரிய பதில்களுக்கு எதிரே உள்ள

கட்டத்தில் ( ) என்ற குறியிடுவார்.

அளிக்கப்படும் தகவல்கள் இரகசியமாக வைக்கப்படும்.

தேதி: **பங்கேற்பாளர் எண்:**

1. வயது (வருடங்களில்)

அ) 35 - 45 ☐

ஆ) 46 - 55 ☐

இ) 56 - 65 ☐

2. பாலினம்

அ) ஆண் ☐

ஆ) பெண் ☐

3. வேலையின் வகை

அ). எளிய வேலை ☐

ஆ). மிதமான வேலை ☐

இ). கடின மான வேலை ☐

4. மாத வருமானம்

அ). ரூ.2000க்கு குறைவாக ☐

ஆ). ரூ .2001 - 4000 ☐

இ). ரூ .4001 - 6000 ☐

ஈ). ரூ.6000க்கு மேல் ☐

5. உங்கள் குடும்பத்தில் வேறு யாருக்கேனும் இரத்த கொதிப்பு நோய் உள்ளதா?

அ). ஆம் ☐

ஆ). இல்லை ☐

6. புகைப்பிடிக்கும் பழக்கம் உள்ளதா?

அ). ஆம் ☐

ஆ). இல்லை ☐

(i) ஆம் எனில், ஒரு நாளுக்கு எத்தனை சிகரெட்டுகள்

அ). 1 - 5 ☐

ஆ). 6 - 10 ☐

இ). 10க்கு ☐

(ii) எவ்வளவு காலமாக புகைப்பிடிக்கும் பழக்கம் உள்ளது?

☐

அ). 5 வருடத்திற்கு குறைவாக

ஆ). 5 - 10 வருடங்கள் ☐

இ). 10 வருடங்களுக்கு மேல் ☐

7. மது அருந்தும் பழக்கம் உள்ளதா

அ). ஆம் ☐

ஆ). இல்லை ☐

(i) ஆம் எனில் எவ்வளவு காலமாக .....

அ). 5 வருடத்திற்கு குறைவாக ☐

ஆ). 5 - 10 வருடங்கள் ☐

இ). 10 வருடங்களுக்கு மேல் ☐

8. உணவு பழக்கம்

அ). சைவம் ☐

ஆ). அசைவம் ☐

9. உடற்பயிற்சி செய்யும் பழக்கம் உள்ளதா?

அ). ஆம் ☐

ஆ). இல்லை ☐

(i) ஆம் எனில் எத்தனை முறை உடற்பயிற்சி செய்கிறீர்கள்?.

அ). வாரத்தில் நான்கு முறை ☐

ஆ). வாரத்தில் மூன்று முறை ☐

இ). தினந்தோறும் ☐

(ii) . உடற்பயிற்சியின் வகைகள்?

அ). நடத்தல் ☐

ஆ). குலுங்கி நடத்தல் ☐

இ). மிதிவண்டி மிதித்தல் ☐

ஈ). வேறு ஏதவாது பழக்கம் குறிப்பிடு ☐

10. உடல்பருமன் அளவு (அ) எடை

அ). 18.5 - 24.9 (சரியான அளவு) ☐

ஆ). 25 - 29.9 (அதிக எடை) ☐

இ). 30 - 34.9 (முதல் நிலை) உடல் பருமன் ☐

ஈ). 35 - 39.9 (இரண்டாம் நிலை) உடல பருமன நிலை ☐

உ) 40 மற்றும் அதற்கு மேல (மூன்றாம் நிலை) உடல பருமன ☐

பூண டு உட கொளவ தைப் பதிவு செய்யும தின

சரி அட்ட வ ணை பங்கே ற் பாள ர் எண் :

வ .எண்	தேதி	பூண டு உட கொண டீர்களா		பங்கேற்பாள ரின் கை யொப்பம
		ஆம	இ லலை	
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APPENDIX - C

LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERTS FOR CONTENT VALIDITY OF THE RESEARCH TOOL

From

Ms. Sapthiga.I,
Final year M.Sc. (N),
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

Respected Sir/ Madam,

Sub: Requesting opinion and suggestions of expert for establishing content validity of the tool

I, Ms. Sapthiga.I, a Final Year M.Sc. (Nursing) student of Sri Gokulam College of Nursing, Salem, in partial fulfillment of Master's Degree in Nursing, I have selected the topic mentioned below for the research project to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

Topic: "A study to evaluate the effectiveness of Garlic cloves on blood pressure among hypertensive patients in a selected hospital, Salem".

I wish to request you kindly validate the tool and give your expert opinion for necessary modification. I will be grateful to you for this.

Thanking you.

Place: Salem
Date

Yours sincerely,

(SAPTHIGA.I)

Enclosed:

1. Certificate of validation.
2. Criteria checklist of evaluation of tool.
3. Categories of blood pressure levels.

APPENDIX – D

CONTENT VALIDITY CERTIFICATE

This is to certify that the tool developed by Ms.Sapthiga. I., Final year M.Sc. Nursing stude nt of Sri Gokulam College of Nursing, Salem (affiliated to The Tamil Nadu Dr. M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled "**A Study to evaluate the Effectiveness of Garlic cloves on blood pressure among hypertensive patients in a selected hospital, Salem".**

Signature:

Place: Name :

Date: Designation :

Seal :

APPENDIX – E

LIST OF NURSING AND MEDICAL EXPERTS VALIDATED THE TOOL

1. **Prof. RAJI, M.Sc (N), Ph.D(N).,**
   Vice Principal
   KG College of Nursing & Hospital
   Coimbatore.

2. **Mr. KANDASAMY, M.Sc(N).,**
   Associate Professor
   HOD, Community Health Nursing
   Sri Gokulam College of Nursing
   Salem.

3. **Ms. SHEELAVATHY, M.Sc(N).,**
   Associate Professor
   Sri Gokulam College of Nursing
   Salem.

4. **Mrs. LAKSHMI PRABHA, M.Sc (N).,**
   Lecturer
   Vinayaka Mission Annapoorni College of Nursing
   Salem.

5. **Mrs. SUMATHY, MSC (N).,**
   Lecturer
   Vinayaka Mission Annapoorni College of Nursing
   Salem.

6. **Mrs . PUSHPALATHA, M. Sc(N).,**
   Lecturer
   Shanmuga College of Nursing
   Salem.

7. **Dr. K. SELVAKUMARI, MD,**
Consultant Physician,
Sri Gokulam Hospital,
Salem.

8. **Dr. D. JEYAPAL, M.D (Gen). Dip. DIAB, DM (Cardio).,**
Consultant Cardiologist
Sri Gokulam Hospital
Salem.

9. **Mr. Kannan, M.Sc, (Nutrition),**
Dietician,
Sri Gokulam Hospital,
Salem.

ANNEXURE – F

CERTIFICATE OF EDITING

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled **"A study to evaluate the effectiveness of Garlic cloves on blood pressure among hypertensive patients in a selected hospital, Salem"** by **Ms. SAPTHIGA. I,** Final year M.Sc(N), student of Sri Gokulam College of Nursing. It has been checked for accuracy and correctness of English language usage and that the language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.

SIGNATURE

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Five Roads, SALEM-636 004

ANNEXURE – G

PHOTOS