

# GARLIC THERAPY ON BLOOD PRESSURE AMONG HYPERTENSIVE CLIENTS; A COMMUNITY BASED STUDY.

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## Abstract:

Hypertension is implicated in the etiology of numerous disease processes: 54% of stroke, 47% of ischemic heart disease, 75% of hypertensive disease, and 25% of other cardiovascular disease worldwide. Garlic is a vegetable herb best known as a flavoring for food. Garlic has numerous health benefits; it has an antihypertensive, antidiabetic, antilipid, antimicrobial and antiplatelet effect on the body. Mechanism of antihypertensive action is it interferes with the function of angiotensin I, thereby relaxes the smooth muscles of blood vessels. Present study was conducted to assess the effectiveness of garlic therapy on blood pressure among hypertensive clients in selected Community area. Using quantitative-evaluative approach using Quasi experimental design the study was conducted among 400 samples selected by non-probability convenient sampling from selected Community areas in Pathanamthitta District, Kerala. Results showed that use of Garlic therapy for 3 months have reduced the significant level of systolic and Diastolic Hypertension among the samples in experimental group. Post test Mean difference in Experimental group was 28.68mm of Hg in Systolic blood pressure and 9.76mm of Hg in Diastolic Blood pressure as compared to pre-test in control group. Further there was statistically significant difference in the systolic and diastolic blood pressure between samples in control group and experimental group.

**Index Terms** - Garlic therapy, Hypertensive clients, Systolic and Diastolic blood pressure

## INTRODUCTION:-

Prevalence of hypertension in all countries seems to be on the rise. According to WHO, today around 972 million people in the world suffer from hypertension. Approximately 60 million people in the United States have hypertension. Using a cut-off of 140 mmHg or greater systolic blood pressure (BP), or 90 mmHg or greater diastolic BP, the age-standardised prevalence of hypertension worldwide in the year 2000 was estimated to be 26.6% in men (95% confidence interval, CI 26.0 to 27.2) and 26.1% in women (95% CI 25.5 to 26.6). This was estimated to rise to 29.0% in men (95% CI 28.6 to 29.4) and 29.5% in women (95% CI 29.1 to 29.9) by 2025. Hypertension is implicated in the etiology of numerous disease processes: 54% of stroke, 47% of ischemic heart disease, 75% of hypertensive disease, and 25% of other. Non-pharmacological treatment options for hypertension have the potential to reduce the risk of cardiovascular disease at a population level. Many hypertensive patients try complementary/alternative medicine for blood pressure control.

Researchers reviewed various published articles on the effect of garlic on high blood pressure. Most of the studies used 600 to 900 mg of garlic powder per day, which provide 3.6–5.4 mg of allicin, an active component of garlic that helps to reduce blood pressure. The analysis showed that garlic appears to have an effect in reducing systolic and diastolic blood pressure in hypertensive patients as compared to those not taking garlic. Patients with high blood pressure at the beginning of the study showed a better effect as compared to those who did not have a high blood pressure at the beginning. In fact, the blood pressure lowering effects of garlic may be comparable to other drugs used for high blood pressure like beta – blockers, Angiotensin Converting Enzyme.

Garlic may cause reduction in blood pressure by relaxing blood vessels and interfering with the function of angiotensin I (an enzyme which plays a role in the development of high blood pressure). It may also exert an indirect effect by reducing cholesterol and breaking down clots in the blood vessels. Most of the studies included in the analysis were conducted for a short duration of around 12 to 23 weeks. Trials lasting for a longer duration are required to establish the long-term benefits of garlic in hypertension. Using standardized garlic preparations could possibly help to establish the relationship between garlic and blood pressure even better. Garlic preparations have several advantages over raw garlic. They help in avoiding the odor of garlic and thus prevent bad breath. They also prevent damage of the active compounds during the cooking process. Garlic could thus possibly be useful in the future to improve the effectiveness of antihypertensive medications. At the same time, it may help to keep the dosage of the medications under control, thus reducing the possibility of side effects

Researcher during her clinical experience found that, numbers of hypertensive clients attending outpatient clinics in community health centers are increasing day by day. Even though pharmacological measures are strongly advised to control hypertension, some of them verbalized that in spite of taking drugs, still their blood pressure are not up to the limit. Mental tiredness also occurs due to long term medication therapy. When reviewing various non-pharmacological measures, there is strong supporting evidence on use of garlic in minimizing blood pressure. Garlic is cost effective vegetable, used in preparing many food items in every day's meal. These things made intuition to researcher to take this study and prove its effectiveness in community settings. Results of the study will be highly beneficial to improve the outcome of hypertensive clients.

#### **OBJECTIVES OF THE STUDY:-**

- To assess level of systolic and Diastolic blood pressure before and after garlic administration among samples in control group and experimental group.
- To compare the mean difference in systolic blood pressure within and between samples in control group and experimental group.
- To compare the mean difference in diastolic blood pressure within and between samples in control group and experimental group.
- To find association between the pre-test level of Systolic blood pressure among samples in experimental group with their selected demographic variables.
- To find association between the pre-test level of Diastolic blood pressure among samples in experimental group with their selected demographic variables.

#### **LITERATURE REVIEW:-**

**Prashant R Kokiwar,2012** conducted community based cross sectional study in rural community to find out prevalence of hypertension in central India and to know the factors contributing to it. 924 study subjects aged 30 years and above were selected using systematic random sampling of houses. Anthropometry, Blood Glucose, and Blood pressures were measured with standard instruments and methodology for all the study subjects. Statistical tests like Chi square, Student's t test and chi square trend were used to analyze the data where ever applicable. Results showed Prevalence of hypertension was 19.04%. It was higher in females (23.4%) than males (14.4%). It was seen that prevalence of hypertension increased with age. Prevalence of Pre hypertension was high (18.8%). 4.3% had isolated systolic hypertension and 0.9% had isolated diastolic hypertension. Older age, increased body mass index and waist hip ratio were significantly higher among hypertensive compared to normotensive. Factors like upper social class, sedentary physical activity, tobacco use and diabetes were significantly associated with hypertension. Alcohol intake was not associated with hypertension.

**Stabler SN,Tejani AM,Huynh F,Fowkes C,2012** systematic review to determine the garlic as monotherapy, in hypertensive patients, lowers the risk of cardiovascular morbidity and mortality compared to placebo. Systematic search for trials was conducted in the Cochrane hypertension group register, CENTRAL, MEDLINE, EMBASE, AMED and CINAHL upto November 2011. Search identified two randomized controlled trials for inclusion. One trial included 47 hypertensive patients and showed that garlic significantly reduces mean supine systolic blood pressure by 12mmHg (95% CI 0.56 to 23.44mmHg, p=0.04) and mean supine diastolic blood pressure by 9mmHg (95% CI 2.49 to 15.51mm Hg, p=0.007) versus placebo. The author further states that garlic was "free from side effects" and that no serious side effects were reported. The second trial couldn't be meta-analysed as they did not report the number of people randomized to each treatment group. They did report that 200mg of garlic powder given three times daily, produced a mean reduction of systolic blood pressure by 10-11mg and of diastolic blood pressure by 6-8mmHg versus placebo.

#### **THEORITICAL FRAMEWORK:-**

Establish the theoretical relationship among variables:

• Research variables-

Independent variable is administration of garlic Therapy.

Dependent variable is variation in the systolic and diastolic blood pressure in hypertensive patients

• Demographic variables- Age, years of marriage, education, occupation, monthly income, religion

#### **RESEARCH METHODOLOGY:-**

Research Design – In the present study, due to its evocative nature a Quantitative approach, quasi experimental, design was used

Benefits:- This study is beneficial for hypertensive clients

The benefits are listed below:

1. This study will aid garlic therapy which will be beneficial in controlling hypertension.
2. Garlic therapy will reduce the incidence of hypertension by reducing systolic and diastolic hypertension.
3. Timely use of complimentary therapies can reduce the complications among the client and ensure productive usage of time by health care professionals.

- Community health nurses can educate the hypertensive clients about daily consumption of garlic and its beneficial effects on health module developed as a part of this study.
- Review of study result will be valuable for future researchers

Method of data collection:-

Betty Newman's System Model was considered as a conceptual framework. Quantitative evaluative research approach with Quasi-experimental design (Non equivalent control group pre-test post-test design) was used to achieve the objectives of the study. The study was conducted in Kanjeettukara Community Health centre which is located in Pathanamthitta District; Kerala. Formal permission was obtained from concern authority of Kanjeettukara Community health centre. Individual written consent was got from the samples. Non probability convenient sampling was used as sampling technique. The sample size was 200 in each group. The tools used were; Demographic variable proforma, flow chart used to record the blood pressure. On day-1, Demographic data was collected through interview method, height and weight of samples were taken to find the Body Mass Index followed by systolic and diastolic blood pressures were measured for both groups. Followed by samples in experimental group were instructed with the method of taking garlic therapy (3 cloves of crushed fresh garlic mixed with 100ml of skimmed milk) in the morning from Day 2 to Day 90. Individual follow up of samples was made to find the compliance and to note side effects. Post-test blood pressures for samples were obtained at the end of 1 month, 2 month and 3 month in their homes. Finally, the collected data were analysed by using descriptive and inferential statistics and interpreted based on objectives and hypotheses of the study.

#### DATA ANALYSIS AND INTERPRETATION:-

##### Findings related to effect of garlic on systolic blood pressure among samples in control group and Experimental group

In pre-test, in regard to mean systolic blood pressure difference, control group had a mean score of 157.81 with SD 3.73 (range 51-164) and in experimental group, mean score was 157.15 with SD 5.23 (range-145-165). Mean Difference was about 0.66. At 1 month, control group had a mean systolic blood pressure score was 141.40 with SD 3.43 (range -132-150). In experimental group, mean score was 143.64 with SD 6.21 (range- 130-160). Mean difference was about 2.24.

At 2 month, in control group had a mean score 147.66 with SD 2.52 (range-141-155). In experimental group, mean score was 136.04 with SD 3.97 (range -130-147). Mean difference was about 11.62. At 3 months control group had a mean score 153.81 with SD 3.75 (range-146-164) and experimental group, mean score was 128.47 with SD 3.52 (range -123-139). Mean difference was about 25.34.

Difference between mean systolic blood pressure in control group at pre-test and 3 months was 4mm of Hg, but in experimental group it was 28.68mm of Hg. These highlights the effectiveness of garlic therapy in experimental group. Within control group and experimental group at ANOVA on Comparison of pre-test mean systolic blood pressure with post-test mean systolic blood pressure at 1 month, 2 month and 3 month was 0.000 which had a highly statistical significance at the Level of significance  $p < 0.01$ .

**Table 1: Mean, Standard deviation, mean difference and unpaired t' value on Systolic blood pressure between control group and experimental group**  $n_1=n_2=200$

S.no	SBP	CG		EG		Mean difference	Unpaired 't' value	P value
		Mean	SD	Mean	SD			
1.	Pre test	157.81	3.73	157.15	5.233	0.66	1.452*	0.147
2.	Post test	153.81	3.75	128.47	3.522	25.33	69.60**	0.00**

Significant at  $p < 0.01$  level; \* Not significant;  
\*\* Highly significant

Above table highlights that the Unpaired t' value between control group and experimental group in post-test on systolic blood pressure was 69.60 with the p value 0.00 which was highly significant at  $p < 0.01$  level.

##### 2. Findings related to effect of garlic on Diastolic blood pressure among samples in control group and Experimental group

In pretest, mean diastolic blood pressure score of control group was 94.13 with SD 1.53 (range- 91-97) and in experimental group it was 94.25 with SD 2.46 (range -88-99). There was only slight difference between two means which was about 0.12. At 1 month, control group had a mean score of 88.43 with SD 2.79 (range-82-95) and experimental group had a mean score of 87.80 with SD 2.14 (range -83-95). Mean difference was about 0.63. At 2 month, Mean diastolic difference in control group was 90.69 with SD 2.09 (range- 86-94) and in experimental group, mean score was 81.38 with SD 3.80 (range -72-92). Mean difference was about 9.31. At 3 month, control group had a mean score of 92.87 with SD 1.86 (range- 89-96) and in experimental group, mean score was 84.49 with SD 1.99 (range -81-88). Mean difference was about 8.38.

Difference between mean Diastolic blood pressure in control group at pre-test and 3 months was 1.26mm of Hg, but in experimental group it was 9.76mm of Hg. These highlights the effectiveness of garlic therapy in experimental group.

Within control group and experimental group at ANOVA on Comparison of pre-test mean Diastolic blood pressure with post-test mean systolic blood pressure at 1 month, 2 month and 3 month was 0.000 which had a highly statistical significance at the Level of significance  $p < 0.01$ .

**Table 2: Mean, Standard deviation, mean difference and unpaired t' value on Diastolic blood pressure between control group and experimental group**

S. No	Diastolic blood pressure	n <sub>1</sub> =n <sub>2</sub> =200				Mean difference	Unpaired 't' value	P value
		Control group		Experimental group				
		Mean	SD	Mean	SD			
1.	Pre test	94.13	1.53	94.26	2.46	-0.125	-0.610	0.542*
2.	Post test	92.87	1.86	84.49	1.99	8.375	43.45	0.00**

\* Significant at  $p < 0.01$  level;

\* Not significant;

\*\*Highly significant

Above table highlights that the Unpaired t' value between control group and experimental group in post-test on Diastolic blood pressure was 43.45 with the p value 0.00 which was highly significant at  $p < 0.01$

### 3. Findings related to Association between pre-test systolic and Diastolic Blood pressure of Experimental group with selected Demographic variables.

There was a significant association between pre-test level of systolic blood pressure in experimental group with their age, occupation, type of family, duration of illness, strain in job, smoking status, regular practice of exercises with chi-square value was greater than table value with p value less than 0.001

There was a significant association between pre-test level of diastolic blood pressure in experimental group with their age, occupation, duration of illness, strain in job and regular practice of exercises with chi-square value was greater than table value with p value less than 0.001

#### IMPLICATIONS

The findings of the study have implication in various areas of nursing practice, nursing education, nursing administration and nursing research.

##### (a) Nursing Practice

Nurses play a very important role in providing health promotion in the community. Health promotion mainly involves health education on healthy life styles which has major role in preventing or controlling non communicable disease. Individuals with chronic illness needs long term drug therapy. So nurses can educate on complementary therapy like garlic therapy which will be beneficial in controlling hypertension. Even these simple home remedies have enormous effect to improve health outcome of hypertensive clients. Findings of this present study clearly point out the effect of garlic therapy in reducing systolic and diastolic hypertension. So community health nurses can educate the hypertensive clients about daily consumption of garlic and its beneficial effects on health.

##### (b) Nursing Education

Present study proved that garlic's effect in reducing systolic and Diastolic hypertension. Community health nurses should be educated with alternative therapies to control chronic illness like hypertension. So they will dynamically educate individuals at community level. The curriculum is responsible for preparing the future nurses with more emphasis on preventive and promotive health practices.

##### (c) Nursing Administration

The nursing administrator who is a member in the planning committee and should be more assertive in the formation and reviewing of their policies, design and practice related to use of alternative therapy in controlling hypertension. They should develop protocols for use these therapy at community level. The nurse administrator should take interest in disseminating the information through instructional materials such as pamphlets, posters that impart health information to the patients

##### (d) Nursing Research

Present study helps the nursing personnel to develop inquiry by providing a base for further research. There is a need for extensive and intensive research focusing nursing staff. So that strategies to educate the hypertensive clients can be developed on alternative therapy.

#### Limitation of the study:

- ❖ The study is limited to only to one pre-test and three post test at the end of 1 month, 2 month and 3 month.
- ❖ About 20 samples had attrition from the study since they developed epigastric irritation due to garlic intake.

#### CONCLUSION:

The results of the present study highlights that garlic therapy was very effective in reducing systolic and Diastolic Blood pressure among Hypertensive clients. Garlic consumption in day today meal is a simple and cost-effective way of controlling hypertension in the community set up.

#### ACKNOWLEDGMENT

A research venture can by no means become successful without the synchronized efforts of members of the team. To begin, we thank the most beneficent and merciful almighty God who helped us all the way through. This research is a result of many helping hands, without their support it would not have been possible to do the work of this magnitude, support in the form of guide ,colleagues and friends.

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