

EFFECTIVENESS OF GARLIC INTAKE ON BLOOD PRESSURE AMONG PATIENTS WITH PREHYPERTENSION

¹Prof. Rajkannan N, ²Dr. Ratnachhaya Singh

¹Principal, Cauvery College of Nursing, Mysuru

²Principal, Mansarovar Nursing College, Bhopal

Email: ¹rajkannancon@gmail.com ²Chhayasingh7777@gmail.com

Abstract: A true experimental study to evaluate the effectiveness of garlic intake on blood pressure among patients with Prehypertension at selected rural area, Mysuru, Karnataka. The study objectives were to assess the pre- test level of blood pressure among experimental and control group, to evaluate the effectiveness of garlic intake on pre-test and post-test level of blood pressure among experimental and control group, to compare the post-test level of blood pressure between experimental and control group and to determine the association between post-test level of blood pressure among experimental and control group of patients with Prehypertension with their selected demographic variables. 60 Subjects (30 - experimental & 30 - control) were selected by using simple random sampling technique (Lottery method). Biophysiological measurement (sphygmomanometer) was used to assess the patient's blood pressure level. Data were analysed by using descriptive and inferential statistics. The result shows that, the pre-test mean score of systolic BP in the experimental group was 134.47 ± 3.61 and the post-test mean score was 123.90 ± 4.41 . The calculated paired 't' test value $t=13.837$ was found to be statistically significant at $p<0.001$ level. These findings clearly infers that garlic intake among the clients with prehypertension was found to be effective in reducing the level of systolic BP in the post-test. This was evident from the mean difference score of 10.57. The pre-test mean score of systolic BP in the control group was 134.20 ± 3.51 and the post-test mean score was 136.67 ± 5.25 . The calculated paired 't' test value $t=3.937$ was found to be statistically significant at $p<0.001$ level. There was increase in the level of systolic BP which was evident in the mean difference score of 2.47. The pre-test mean score of diastolic BP in the experimental group was 86.23 ± 1.47 and the post-test mean score was 82.03 ± 2.75 . The calculated paired 't' test value $t=9.831$ was found to be statistically significant at $p<0.001$ level. These findings clearly infers that garlic intake among the clients with prehypertension was found to be effective in reducing the level of diastolic BP in the post-test. This was evident from the mean difference score of 4.20. The pre-test mean score of diastolic BP in the control group was 85.97 ± 1.38 and the post-test mean score was 87.80 ± 2.28 . The calculated paired 't' test value $t=4.853$ was found to be statistically significant at $p<0.001$ level. There was increase in the level of diastolic BP which was evident in the mean difference score of 1.83.

Key words: Garlic Intake, Blood Pressure, Prehypertension.

1. INTRODUCTION:

Noncommunicable diseases (NCDs) kill 41 million people every year, equivalent to 71% of all deaths worldwide. Over 15 million people between the ages of 30 and 69 die from an NCD every year, with low- and middle-income nations accounting for 85% of these "premature" deaths. Low- and middle-income nations account for 77% of all NCD mortality. The majority of NCD deaths, approximately 17.9 million people per year, are caused by cardiovascular illnesses, followed by malignancies (9.3 million), respiratory conditions (4.1 million), and diabetes (1.5 million). WHO (2021) (1) Hypertension or High blood pressure is a serious medical condition that dramatically increased the risks of heart, brain, kidney and other diseases. Worldwide, 1.28 billion persons between the ages of 30 and 79 are estimated to have hypertension, with two thirds of them residing in low- and middle-income countries. (2) An estimated 46% of adults with hypertension are ignorant that they have the condition. Adults with hypertension are only diagnosed and treated in 42% of cases. 21 percent of persons who have hypertension have it under control. Around

the world, hypertension is a key factor in premature death. The reduction of hypertension prevalence by 33% between 2010 and 2030 is one of the global targets for noncommunicable diseases. (3) Hypertension (HTN) is diagnosed if, when it is measured on 2 different days, the systolic blood pressure readings on both days is ≥ 140 mm of Hg and/or the diastolic blood pressure readings on both days is ≥ 90 mm of Hg. (4) Prehypertension, a stage of high blood pressure between hypertension and normal blood pressure, is linked to damage to target organs and subclinical atherosclerosis. Both economically developed and developing countries have considerable clinical and public health issues pertaining to prehypertension and hypertension. The prevalence of both prehypertension and hypertension is underreported, because of the **hypertension is silence in nature (silent killer)**. (5) According to recent estimates, there could be up to 1.5 billion hypertensive patients worldwide by 2025, an increase of up to 15 to 20 percent. (6)

2. NEED FOR THE STUDY:

According to the ICMR-INDIAB survey conducted in India, 31.5 percent of urban and 26.2 percent of rural Karnataka residents had HTN. (7) Even though prehypertension is not yet recognised as a disease, it can reduce the chance of developing hypertension and cardiovascular risk if it is caught early. For the prevention of prehypertension and hypertension in young adults, a primary intervention with lifestyle change is advised. The multisystem physiological adaptation to exercise mediates the advantages of future cardiovascular and cerebrovascular risk. For the correct management of hypertension, pharmacological and non-pharmacological measures are needed. (8) Over the past few years, the general public has increasingly turned to natural remedies for a variety of illnesses. This is due not only to the ease with which they can be obtained, without the need for a prescription, cost, or appointment with a medical professional, but also to the perception that natural remedies have fewer side effects than synthetic medications. (Vora) (9)

Garlic, also known as *Allium sativum*, is widely utilised around the world for both culinary and therapeutic uses. (Rahman) (10)

Researchers found that this specific interaction caused the chemicals in garlic to be converted into water, which aids in relaxing blood capillaries or vessels. The smooth muscles are relaxed as a result of the hydrogen sulphide that is created in the vascular system acting on cell membranes and lowering blood pressure. Garlic is said to have a tiny peptide that prevents the creation of a certain hormone that raises blood pressure, according to a paper in the German journal *Planta Medica*. (11)

Chitra et al, conducted a quasi-experimental study on effect of garlic on hypertension. The purposive sampling technique were used to collect 60 subjects, in that 30 were in experimental group and 30 were in control group. The experimental group only received garlic per day for continuous 15 days and the control group was treated with routine drugs. The study result revealed that the patients with hypertension had lower mean blood pressure following the administration of garlic therapy than before. (15.2, 7.6, and $t = 29$). In the hypertension patient group, the mean blood pressure level after garlic intake ($t' 9.64$, $p > 0.05$) was lower than the mean blood pressure level in the control group ($t' 3.27$, $p > 0.05$). (12). The majority of patients are not aware of complementary and alternative medicines to lower blood pressure, despite the fact that they are hypertensive. Studies to determine what patients know about complementary or alternative medicines are few and far between. The researcher is of the opinion that alternative therapy lowers blood pressure. As a result, the public will be educated, more people will be aware, and individuals will change their dietary habits and lifestyles to prevent hypertension in pre-hypertensive states. Consequently, this study was started by the researcher.

3. STATEMENT OF THE PROBLEM:

A study to evaluate the effectiveness of garlic intake on blood pressure among clients with Prehypertension at selected rural area, Mysuru, Karnataka.

4. OBJECTIVES:

- To assess the pre- test level of blood pressure among experimental and control group of clients with Pre hypertension at selected rural area, Mysuru, Karnataka.
- To evaluate the effectiveness of garlic intake on pre-test and post-test level of blood pressure among experimental and control group of clients with Prehypertension at selected rural area, Mysuru, Karnataka.
- To compare the post-test level of blood pressure between experimental and control group of clients with Prehypertension at selected rural area, Mysuru, Karnataka.
- To determine the association between post-test level of blood pressure among experimental and control group of clients with Prehypertension and their selected demographic variables

4.1 Hypotheses

- **H1:** There will be a significant difference in pre-test and post-test level of blood pressure between experimental and control group of clients with Prehypertension at selected rural area, Mysuru, Karnataka.
- **H2:** There will be a significant difference between the post- test level of blood pressure in both experimental and control group of clients with Prehypertension at selected rural area, Mysuru, Karnataka.
- **H3:** There will be a significant association between the post- test level of blood pressure with their selected demographic variables at selected rural area, Mysuru, Karnataka.

5. REVIEW OF LITERATURE:

SECTION A: REVIEWS RELATED TO PREVALENCE OF PREHYPERTENSION

Koussoh SM, (2022) done a Systematic Review and meta-analysis on Prevalence and Risks Factors of Prehypertension in Africa. There were 27 articles selected. Prehypertension prevalence in children and adolescents ranged from 2.5% to 34%, according to the review. Prevalence in adults ranged from 32.9% to 56.8%. Prehypertension was correlated with a number of characteristics. Age, sex, and lifestyle choices including smoking, drinking, not getting enough exercise, being overweight, and obesity were among these influences. Along with a few additional characteristics, cardiometabolic factors were linked to prehypertension. (13)

SECTION B: REVIEWS RELATED TO EFFECTIVENESS OF GARLIC INTAKE ON BLOOD PRESSURE AMONG PATIENTS WITH PREHYPERTENSION

Bala Subramanian, et al, (2020) done a quasi-experimental (pre & post-test with control group design) study on effect of garlic on hypertension. The purposive sampling technique were used to collect 40 subjects, in that 20 were in experimental group and 20 were in control group. The study result revealed that, Systolic blood pressure pre-test mean score decreased from 161.35 to 148.75 after 21 days. Similarly, the diastolic blood pressure reading after 21 days was 88.6, which was lower than the pre-test mean score of 98.3. The t-test was used to establish the relevance of the data. It was statistically significant because the P value was $p < 0.001$. The conclusion was drawn from the fact that the experimental group's post-test blood pressure had significantly dropped after garlic administration. (14)

6. MATERIALS AND METHODS:

The research approach and design were selected for this study was quantitative approach and true experimental research design, a pre- test post- test control group design respectively. 60 Subjects (30 - experimental & 30 - control) were selected by using simple random sampling technique (Lottery method). Biophysiological measurement (sphygmomanometer) was used to assess the patient's blood pressure level. The investigator was selected the rural area in Mysore Karnataka for experimental group and control group by using lottery method. First lot would be for experimental group and 2nd lot would be for control group. After selecting experimental group, the blood pressure level was checked for the clients between age group of 30 - 60 years in selected rural area. Based on the inclusion criteria desired sample were selected for experimental group by using lottery method. Next day blood pressure level was checked for control group and desired sample were selected by using lottery method. After the pre-test the garlic was given to the clients with Prehypertension among experimental group. The procedure is scheduled for 30 days in early morning before the breakfast. The investigator was conducted post-test with sphygmomanometer to check the blood pressure level on 30th day among experimental and control group. The data were analysed by the descriptive and inferential statistics.

7. DATA ANALYSIS:

SECTION A: DESCRIPTION OF THE DEMOGRAPHIC VARIABLES OF CLIENTS WITH PREHYPERTENSION.

Table 1: Frequency and percentage distribution of demographic variables of clients with prehypertension in the experimental and control group.

N = 60(30+30)

Demographic Variables	Experimental Group		Control Group		Chi-Square for Homogeneity
	F	%	F	%	
Age (in year)					$\chi^2=5.827$ d.f=2 p=0.054 N.S
30 – 40 yrs	6	20.0	13	43.3	
41 – 50 yrs	14	46.7	6	20.0	
51 – 60 yrs	10	33.3	11	36.7	

Demographic Variables	Experimental Group		Control Group		Chi-Square for Homogeneity
	F	%	F	%	
Gender					$\chi^2=0.000$ d.f=1 p=1.000 N.S
Male	9	30.0	9	30.0	
Female	21	70.0	21	70.0	
Educational status					$\chi^2=5.151$ d.f=3 p=0.161 N.S
Illiterate	11	36.6	10	33.3	
Primary	9	30.0	10	33.3	
High school	8	26.7	3	10.0	
Graduates	2	6.7	7	23.4	
Religion					$\chi^2=3.158$ d.f=1 p=0.076 N.S
Hindu	30	100.0	27	90.0	
Christian	0	0	3	10.0	
Muslim	-	-	-	-	
Others	-	-	-	-	
Marital status					$\chi^2=1.017$ d.f=1 p=0.313 N.S
Married	29	96.7	30	100.0	
Unmarried	-	-	-	-	
Widow/Widower	1	3.3	0	0	
Family history of hypertension					$\chi^2=4.333$ d.f=3 p=0.228 N.S
Both parents	5	16.7	1	3.3	
Mother	6	20.0	6	20.0	
Father	4	13.3	2	6.7	
None	15	50.0	21	70.0	
Dietary pattern					$\chi^2=0.218$ d.f=1 p=0.640 N.S
Vegetarian	27	90.0	28	93.3	
Non-vegetarian	3	10.0	2	6.7	
Hypertension diet					$\chi^2=0.351$ d.f=1 p=0.554 N.S
Yes	2	6.7	1	3.3	
No	28	93.3	29	96.7	
Habit of smoking					$\chi^2=0.000$ d.f=1 p=1.000 N.S
Yes	4	13.3	4	13.3	
No	26	86.7	26	86.7	
How long smoking					$\chi^2=4.019$ d.f=3 p=0.259 N.S
Nil	0	0	1	3.3	
1 – 5 yrs	0	0	2	6.7	
6 – 10 yrs	3	10.0	1	3.3	
11 – 15 yrs	27	90.0	26	86.7	
Regular exercise					$\chi^2=0.218$ d.f=1 p=0.640 N.S
Yes	3	10.0	2	6.7	
No	27	90.0	28	93.3	
Body Mass Index					$\chi^2=5.079$ d.f=1 p=0.024 S*
<18	-	-	-	-	
18 – 25	13	43.3	5	16.7	
More than 25	17	56.7	25	83.3	

*p<0.05, S – Significant, N.S – Not Significant

The table 1 shows that, most of the clients with prehypertension 14(46.7%) of the experimental group were aged between 41 – 50 yrs and 13(43.3%) in the control group were aged between 30 – 40 yrs, 21(70%) in the experimental group and control group were female, 11(36.6%) in the experimental group were illiterates and 10(33.3%) in the control group were illiterates and had primary education, 30(100%) in the experimental group and 27(90%) in the control group were Hindus, 29(96.7%) in the experimental group and 30(100%) in the control group were married, 15(50%) in the experimental group and 21(70%) in the control group had no family history of hypertension, 27(90%) in the experimental group and 28(93.3%) in the control group were vegetarian, 28(93.3%) in the experimental group and 29(96.7%) in the control group had not followed hypertension diet, 26(86.7%) in the experimental group and control group had no habit of smoking, 27(90%) in the experimental group and 26(86.7%) in the control group were smoking for 11 – 15 yrs, 27(90%) in the experimental group and 28(93.3%) in the control group had not done regular exercise and 17(56.7%) in the experimental group and 25(83.3%) in the control group had Body Mass Index of more than 25.

SECTION B: ASSESSMENT OF PRE-TEST AND POST-TEST LEVEL OF BLOOD PRESSURE AMONG CLIENTS WITH PREHYPERTENSION IN THE EXPERIMENTAL AND CONTROL GROUP.

Table 2: Assessment of pre-test and post-test level of blood pressure among clients with prehypertension in the experimental group.

n = 30

Blood pressure	Systolic BP		Diastolic BP	
	Pretest	Post Test	Pretest	Post Test
Minimum Score	129.0	117.0	83.0	80.0
Maximum Score	139.0	137.0	89.0	89.0
Median	135.0	125.0	86.50	80.0
Mean	134.47	123.90	86.23	82.03
Standard Deviation (S.D)	3.61	4.41	1.48	2.75

The table 2 shows that in the pretest of systolic BP in the experimental group, the mean score was 134.47±3.61 with median score of 135.0. The minimum score was 129.0 and maximum score was 139.0. Whereas in the post test of systolic BP, the mean score was 123.90±4.41 with median score of 125.0. The minimum score of 117.0 and maximum score was 137.0. The table 2 shows that in the pretest of diastolic BP in the experimental group, the mean score was 86.23±1.48 with median score of 86.50. The minimum score was 83.0 and maximum score was 89.0. Whereas in the post test of diastolic BP, the mean score was 82.03±2.75 with median score of 80.0. The minimum score of 80.0 and maximum score was 89.0.

Table 3: Assessment of pre-test and post-test level of blood pressure among clients with prehypertension in the control group.

n = 30

Blood pressure	Systolic BP		Diastolic BP	
	Pretest	Post Test	Pretest	Post Test
Minimum Score	130.0	130.0	85.0	85.0
Maximum Score	139.0	150.0	89.0	90.0
Median	135.0	138.50	85.0	88.0
Mean	134.20	136.67	85.97	87.80
Standard Deviation (S.D)	3.51	5.25	1.38	2.28

The table 3 shows that in the pretest of systolic BP in the control group, the mean score was 134.20±3.51 with median score of 135.0. The minimum score was 130.0 and maximum score was 139.0. Whereas in the post test of systolic BP, the mean score was 136.67±5.25 with median score of 138.50. The minimum score of 130.0 and maximum score was 150.0. The table 3 shows that in the pretest of diastolic BP in the experimental group, the mean score was 85.97±1.38 with median score of 85.0. The minimum score was 85.0 and maximum score was 89.0. Whereas in the post test of diastolic BP, the mean score was 87.80±2.28 with median score of 88.0. The minimum score of 85.0 and maximum score was 90.0.

SECTION C: EFFECTIVENESS OF GARLIC INTAKE ON PRE-TEST AND POST-TEST LEVEL OF BLOOD PRESSURE AMONG EXPERIMENTAL AND CONTROL GROUP OF CLIENTS WITH PREHYPERTENSION.

Table 4: Comparison of pre-test and post-test systolic BP score among clients with prehypertension within and between the experimental and control group.

N=60(30+30)

Variables	Pretest		Post Test		Mean Diff. Score	Paired 't' Test & p-value
	Mean	S.D	Mean	S.D		
Experimental Group	134.47	3.61	123.90	4.41	10.57 ↓	t = 13.837 p = 0.0001, S***
Control Group	134.20	3.51	136.67	5.25	2.47 ↑	t = 3.937 p = 0.0001, S***
Mean Diff. Score	0.27		12.77			***p<0.001 S – Significant N.S – Not Significant
Student Independent 't' test & p-value	t = 0.290 p = 0.773, N.S		t = 10.191 p = 0.0001, S***			

The table 4 shows the comparison of pre-test and post-test systolic BP scores among clients with prehypertension within and between the experimental and control group. The pre-test mean score of systolic BP in the experimental group was 134.47±3.61 and the post-test mean score was 123.90±4.41. The calculated paired 't' test value t=13.837 was found to be statistically significant at p<0.001 level. These findings clearly infers that garlic intake among the clients with prehypertension was found to be effective in reducing the level of systolic BP in the post-test. This was evident from the mean difference score of 10.57. The pre-test mean score of systolic BP in the control group was 134.20±3.51 and the post-test mean score was 136.67±5.25. The calculated paired 't' test value t=3.937 was found to be statistically significant at p<0.001 level. There was increase in the level of systolic BP which was evident in the mean difference score of 2.47. Student Independent 't' test was computed to compare the pre-test and post-test systolic BP scores among clients with prehypertension between the experimental and control group. The calculated student independent 't' test score of t = 0.290 was not found to be statistically significant which clearly shows that there was no significant difference between the groups in the level of systolic BP at the pretest level. In the post–test the calculated student independent 't' test score of t = 10.191 was found to be statistically significant at p<0.001 level which clearly shows that garlic intake among the clients with prehypertension in the experimental group was found to be effective in reducing the level of systolic BP in the post-test than the clients with prehypertension in the control group who had undergone normal routines. This was evident from the mean difference score of 12.77.

Table 5: Comparison of pre-test and post-test diastolic BP score among clients with prehypertension within and between the experimental and control group.

N=60(30+30)

Variables	Pretest		Post Test		Mean Diff. Score	Paired 't' Test & p-value
	Mean	S.D	Mean	S.D		
Experimental Group	86.23	1.47	82.03	2.75	4.20 ↓	t = 9.831 p = 0.0001, S***
Control Group	85.97	1.38	87.80	2.28	1.83 ↑	t = 4.853 p = 0.0001, S***
Mean Diff. Score	0.26		5.77			***p<0.001 S – Significant N.S – Not Significant
Student Independent 't' test & p-value	t = 0.723 p = 0.473, N.S		t = 8.845 p = 0.0001, S***			

The table 5 shows the comparison of pre-test and post-test diastolic BP scores among clients with prehypertension within and between the experimental and control group. The pre-test mean score of diastolic BP in the experimental group was 86.23±1.47 and the post-test mean score was 82.03±2.75. The calculated paired 't' test value t=9.831 was found to be statistically significant at p<0.001 level. These findings clearly infers that garlic intake among the clients with prehypertension was found to be effective in reducing the level of diastolic BP in the post-test. This was

evident from the mean difference score of 4.20. The pre-test mean score of diastolic BP in the control group was 85.97 ± 1.38 and the post-test mean score was 87.80 ± 2.28 . The calculated paired 't' test value $t=4.853$ was found to be statistically significant at $p < 0.001$ level. There was increase in the level of diastolic BP which was evident in the mean difference score of 1.83. Student Independent 't' test was computed to compare the pre-test and post-test diastolic BP scores among clients with prehypertension between the experimental and control group. The calculated student independent 't' test score of $t = 0.723$ was not found to be statistically significant which clearly shows that there was no significant difference between the groups in the level of diastolic BP at the pretest level.

In the post-test the calculated student independent 't' test score of $t = 8.845$ was found to be statistically significant at $p < 0.001$ level which clearly shows that garlic intake among the clients with prehypertension in the experimental group was found to be effective in reducing the level of diastolic BP in the post-test than the clients with prehypertension in the control group who had undergone normal routines. This was evident from the mean difference score of 5.77.

SECTION D: ASSOCIATION OF POST TEST BLOOD PRESSURE SCORE AMONG PATIENTS WITH PREHYPERTENSION WITH SELECTED DEMOGRAPHIC VARIABLES.

Table 6: Association of post test level of blood pressure score among patients with prehypertension with their selected demographic variables in the experimental group.

n = 30

Demographic Variables	Frequency	Oneway ANOVA / Unpaired 't' test Value	Oneway ANOVA / Unpaired 't' test Value
Age (in year)			
30 – 40 yrs	6	F=3.867 p=0.033 S*	F=2.263 p=0.123 N.S
41 – 50 yrs	14		
51 – 60 yrs	10		
Gender			
Male	9	t=2.083 p=0.063 N.S	t=1.705 p=0.118 N.S
Female	21		
Educational status			
Illiterate	11	F=2.098 p=0.125 N.S	F=1.294 p=0.298 N.S
Primary	9		
High school	8		
Graduates	2		
Religion			
Hindu	30	-	-
Christian	0		
Muslim	-		
Others	-		
Marital status			
Married	29	-	-
Unmarried	-		
Widow/Widower	1		
Family history of hypertension			
Both parents	5	F=1.172 p=0.339 N.S	F=0.916 p=0.447 N.S
Mother	6		
Father	4		
None	15		

Demographic Variables	Frequency	Oneway ANOVA / Unpaired 't' test Value	Oneway ANOVA / Unpaired 't' test Value
Dietary pattern			
Vegetarian	27	t=0.622 p=0.588	t=1.008 p=0.381
Non-vegetarian	3	N.S	N.S
Hypertension diet			
Yes	2	t=1.367 p=0.183	t=0.359 p=0.770
No	28	N.S	N.S
Habit of smoking			
Yes	4	t=3.589 p=0.027	t=5.754 p=0.003
No	26	S*	S**
How long smoking			
Nil	0	t=3.137	t=6.043
1 – 5 yrs	0	p=0.075	p=0.009
6 – 10 yrs	3	N.S	S**
11 – 15 yrs	27		
Regular exercise			
Yes	3	t=1.637 p=0.220	t=4.179 p=0.0001
No	27	N.S	S***
Body Mass Index			
<18	-	t=0.971	t=1.386
18 – 25	13	p=0.343	p=0.180
More than 25	17	N.S	N.S

***p<0.001, **p<0.01, *p<0.05, S – Significant, N.S – Not Significant

The table 6 shows that the demographic variables age (**F=3.867, p=0.033**) and habit of smoking (**t=3.589, p=0.027**) had shown statistically significant association with post-test level of systolic BP among clients with pre-hypertension at p<0.05 level and the other demographic variables did not show statistically significant association with post-test level of systolic BP among clients with pre-hypertension in the experimental group.

The table 6 shows that the demographic variable regular exercise (**t=4.179, p=0.0001**) had shown statistically significant association with post-test level of diastolic BP among clients with pre-hypertension at p<0.001 level. The demographic variables habit of smoking (**t=5.754, p=0.003**) and how long smoking (**t=6.043, p=0.009**) had shown statistically significant association with post-test level of diastolic BP among clients with pre-hypertension at p<0.01 level and the other demographic variables did not show statistically significant association with post-test level of diastolic BP among clients with pre-hypertension in the experimental group.

Table 7: Association of post test level of blood pressure score among patients with prehypertension with their selected demographic variables in the control group.

n = 30

Demographic Variables	Frequency	Oneway ANOVA / Unpaired 't' test Value	Oneway ANOVA / Unpaired 't' test Value
Age (in year)			
30 – 40 yrs	13	F=1.922 p=0.177	F=4.554 p=0.020
41 – 50 yrs	6	N.S	S*
51 – 60 yrs	11		
Gender			
Male	9	t=1.556 p=0.135	t=0.792 p=0.442
Female	21	N.S	N.S

Demographic Variables	Frequency	Oneway ANOVA / Unpaired 't' test Value	Oneway ANOVA / Unpaired 't' test Value
Educational status			
Illiterate	10	F=4.990 p=0.007 S**	F=3.537 p=0.028 S*
Primary	10		
High school	3		
Graduates	7		
Religion			
Hindu	27	t=2.382 p=0.030 S*	t=3.735 p=0.003 S**
Christian	3		
Muslim	-		
Others	-		
Marital status			
Married	30	-	-
Unmarried	-		
Widow/Widower	0		
Family history of hypertension			
Both parents	1	F=3.361 p=0.034 S*	F=1.066 p=0.381 N.S
Mother	6		
Father	2		
None	21		
Dietary pattern			
Vegetarian	28	t=-0.331 p=0.785 N.S	t=1.177 p=0.400 N.S
Non-vegetarian	2		
Hypertension diet			
Yes	1	-	-
No	29		
Habit of smoking			
Yes	4	t=0.728 p=0.511 N.S	t=0.826 p=0.457 N.S
No	26		
How long smoking			
Nil	1	t=1.623 p=0.208 N.S	t=1.553 p=0.225 N.S
1 – 5 yrs	2		
6 – 10 yrs	1		
11 – 15 yrs	26		
Regular exercise			
Yes	2	t=1.758 p=0.318 N.S	t=5.469 p=0.0001 S***
No	28		
Body Mass Index			
<18	-	t=1.801 p=0.109 N.S	t=0.886 p=0.410 N.S
18 – 25	5		
More than 25	25		

***p<0.001, **p<0.01, *p<0.05, S – Significant, N.S – Not Significant

The table 7 shows that the demographic variable educational status (**F=4.990, p=0.007**) had shown statistically significant association with post-test level of systolic BP among clients with pre-hypertension at p<0.01 level. The demographic variables religion (**t=2.382, p=0.030**) and had family history of hypertension (**F=3.361, p=0.034**) shown statistically significant association with post-test level of systolic BP among clients with pre-hypertension at p<0.05

level and the other demographic variables did not show statistically significant association with post-test level of systolic BP among clients with pre-hypertension in the control group.

The table 7 shows that the demographic variable regular exercise ($t=5.469$, $p=0.0001$) had shown statistically significant association with post-test level of diastolic BP among clients with pre-hypertension at $p<0.001$ level. The demographic variable religion ($t=3.735$, $p=0.003$) had shown statistically significant association with post-test level of diastolic BP among clients with pre-hypertension at $p<0.01$ level. The demographic variables age ($F=4.554$, $p=0.020$) and educational status ($F=3.537$, $p=0.028$) had shown statistically significant association with post-test level of diastolic BP among clients with pre-hypertension at $p<0.05$ level and the other demographic variables did not show statistically significant association with post-test level of diastolic BP among clients with pre-hypertension in the control group.

9. RECOMMENDATION:

- A Similar study can be conducted on a large number of samples to generalize the study findings.
- A similar study can be conducted to find out the blood pressure among hypertensive patients.
- This study can be conducted by using non-probability sampling technique.
- This study can be conducted in community health centres and district hospitals.
- Comparative study can be done between the complementary therapy and other alternative methods.
- A follow-up study may be taken up to determine the long-term effects of intervention in terms their level of blood pressure.

10. CONCLUSION:

The study concluded that, garlic intake among the clients with prehypertension was found to be effective in reducing the level of Blood Pressure.

REFERENCES:

1. World Health Organization (WHO), non-communicable disease report. Geneva, 13 April 2021. (1)
2. World Health Organization (WHO), hypertension report. Geneva, 13 April 2021. (2)
3. World Health Organization (WHO), hypertension report. Geneva, 2021 (3)
4. World Health Organization (WHO), hypertension report. Geneva, 2022. (4)
5. World Health Organization (WHO), hypertension report on India. 2022. <https://www.who.int/india/health-topics/hypertension> (5)
6. Spies LA, Bader SG, Opollo JG, Gray J. Nurse-Led interventions for hypertension: A scoping review with implications for Evidence-Based practice. *Worldviews on Evidence-Based Nursing* 2018;15(4):247-256. (6)
7. Flodgren, G., Rachas, A., Farmer, A. J., Inzitari, M., & Shepperd, S. (2015). Interactive telemedicine: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* ;9:CD002098. [doi: 10.1002/14651858.CD002098.pub2] [Medline: 26343551] (7)
8. Du, S., Zhou, Y., Fu, C., Wang, Y., Du, X., & Xie, R. (2018). Health literacy and health outcomes in hypertension: An integrative review. *International Journal of Nursing Sciences*,5(3), 301-309. doi: 10.1016/j.ijnss.2018.06.001 (8)
9. Wolever, R. Q., Simmons, L. A., Sforzo, G. A., Dill, D., Kaye, M., Bechard, E. M., Southard, M. E., Kennedy, M., Vosloo, J., & Yang, N. (2013). A Systematic Review of the Literature on Health and Wellness Coaching: Defining a Key Behavioral intervention in health care. *Global Advances in Health and Medicine*, 2(4),38-57. doi: 10.7453/gahmj.2013.042 (9)
10. Carey, R. M., Muntner, P., Bosworth, H. B., & Whelton, P. K. (2018). Reprint of: Prevention and Control of Hypertension: JACC Health Promotion Series. *Journal of the American College of Cardiology (JACC)*, 72(23), 2996–3011. doi:10.1016/j.jacc.2018.10.022 (10)
11. S Tamilselvi, V Hemalatha “effectiveness of nurse led intervention on management of hypertension among hypertensive clients” *International Journal of Advance Research in Community Health Nursing* 2020; 2(2): 95-97 (11)
12. Rose Clarke Nanyonga “effectiveness of nurse-led group interventions on hypertension lifestyle management” *Journal of nursing scholarship* 07 November 2021 <https://doi.org/10.1111/jnu.12732v> (12)
13. Jian-Hong Miao, Hai-Shan Wang, Na Liu “evaluation of a nurse-led hypertension management model in an urban community healthcare” *National library of medicine*, 2020 Jul 2. doi: 10.1097/MD.00000000000020967 (13)
14. Balasubramanian A, Nair SS, Rakesh PS, Leelamoni K. Adherence to treatment among hypertensives of rural Kerala, India. *J Family Med Prim Care*. 2018 Jan-Feb;7(1):64-69. doi: 10.4103/jfmpc.jfmpc_423_16. PMID: 29915735; PMCID: PMC5958595. (14)