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Research Article

**ASSESSMENT OF THE EFFECTIVENESS OF *PIPER BETEL* LEAF JUICE
CONSUMPTION IN CONTROL OF THE BLOOD PRESSURE AMONG
HYPERTENSION CLIENTS**

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Abstract:

Background: The researcher emphasizes the need to implement effective and low cost management regimens based on absolute levels of cardiovascular risk appropriate for economic context. Studies that examine cost-effective approaches to control BP optimally among Indians are needed.

Aim & objectives: A study to assess the effectiveness of Piper betel leaf juice consumption in control of blood pressure among hypertensive clients.

Methodology: The study was conducted in selected community area at Madanapalle. The research design used was one group pre-test posttest experimental design. The samples were selected by convenient sampling technique. The sample size consisted of 30 hypertensive clients. The tool used for the data collection was a structured interview schedule to assess the level of knowledge regarding hypertension. The tool used to collect the data comprised of 3 sections. Data was collected for four weeks in the selected community area. The data was analyzed by using descriptive statistics and inferential statistics.

Results & Discussion: The mean post- test systolic blood pressure was 132.22, SD 11.53 and the mean pre- test systolic blood pressure was 144.94, SD 12.35. The mean post- test diastolic blood pressure was 86.83, SD 10.845 and the mean pre- test diastolic blood pressure was 94.25, SD 8.853.

Conclusion: After the consumption of Piper betel leaf juice, the blood pressure was reduced to some extent.

Keywords Diastolic blood pressure; Hypertension; Piper betel leaf juice; Systolic blood pressure

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1. INTRODUCTION:

Hypertension may contribute to myocardial infarction, cerebrovascular accident, renal failure and atherosclerosis. High blood pressure (HBP) is a major public health problem in India and its prevalence is rapidly increasing among both urban and rural populations. In fact, hypertension is the most prevalent chronic disease in India. Overall, *Piper betel* is an important plant with a rich cultural and medicinal history. While further research is needed to fully understand its potential therapeutic benefits, the plant remains an important part of many cultures and traditional medicine practices. ^[1]

Researchers found that the *Piper betel* leaf juice reduced aortic blood pressure and myocardial oxygen demand even when the volunteers were under cold-induced stress \pm and concluded that *Piper betel* leaf juice provide cardio-protection by reducing overload to the heart, causing it to work more easily during stressful situations. Thus the researcher wants to provide a cost effective and a preventive approach for reducing the prevalence of hypertension, which could be acquired through regular intake of *Piper betel* leaf juice consumption.

2. MATERIALS AND METHODS:

2.1. Research design: Quasi experimental design.

2.2. Variables:

Independent variable : *Piper betel* leaf consumption

Dependent Variable : Control of Blood Pressure

Attribute Variable : Age, Education, Sex, Religion, Type of family, Occupation, Income, Dietary pattern, Marital Status.

2.3. Setting of the study: The selection of setting will be done based on feasibility of conducting the study, availability of subject and permission from authorities. The study will be conducted in Madanapalle region.

2.4. Population: Population is the hypertensive clients between 40 \pm 70 years in Madanapalle region.

2.5. Sample: Samples are hypertensive clients between 40 \pm 70 years, who are residing at Madanapalle region.

2.6. Sample Size: 30

2.7. Sampling criteria:

2.7.1. Inclusion criteria: • Both sex

- Clients who have only hypertension
- Newly identified Hypertensive clients between 40-70 years.
- Who are willing to participate.

2.7.2. Exclusion criteria:

- Who have associated health problems
- Who are not willing to participate.
- Clients who are not present during time of data collection.
- Clients who are with known hypertension.

2.8. Development of tool

The following tools were used for the present study,

1. Structured interview schedule to assess the knowledge of hypertension among hypertensive clients between 40-70 years.

2. The observation checklist was developed to assess the blood pressure level of hypertensive clients.

2.9. Data collection procedure

The present study was conducted in the regions of Madanapalle. The data was collected for 4 weeks. Prior permission from the authority was sought and obtained. Individual consent was taken from the study samples. The study samples were selected by convenient sampling method based on sample selection criteria. All the persons who are between 40-70 years from the selected PHC were screened. In that 30 clients who were identified as new cases of hypertension were recruited for the study. The objectives and purpose of the study were explained and assured that the confidentiality will be maintained. Pretest was conducted before administering the watermelon by observing the blood pressure levels using the observed checklist method among the hypertensive clients. In a day an average of 5 individuals was assessed. The time for assessment was varied from 15-20 minutes. The *Piper betel* leaf juice of 150 ml was administered to the study group and immediately after 1 hour post test was conducted by observation checklist. The tool was checked for completion.

2.10. Ethical consideration

The study objectives, intervention and data collection procedure were approved by the research and ethical committee of the institution.

2.11. Data analysis

Data on demographic variables of hypertensive clients between 40-70 years was analyzed by frequency and percentage distribution. Data on knowledge score of the hypertensive clients regarding hypertension. Data on effectiveness of watermelon consumption on post test blood pressure

level among hypertensive clients between 40--70 years was analyzed by paired t-test. Data on association between pre-test blood pressure level in

relation to demographic variables among hypertensive clients between 40-70 years was analyzed by using inferential statistics.

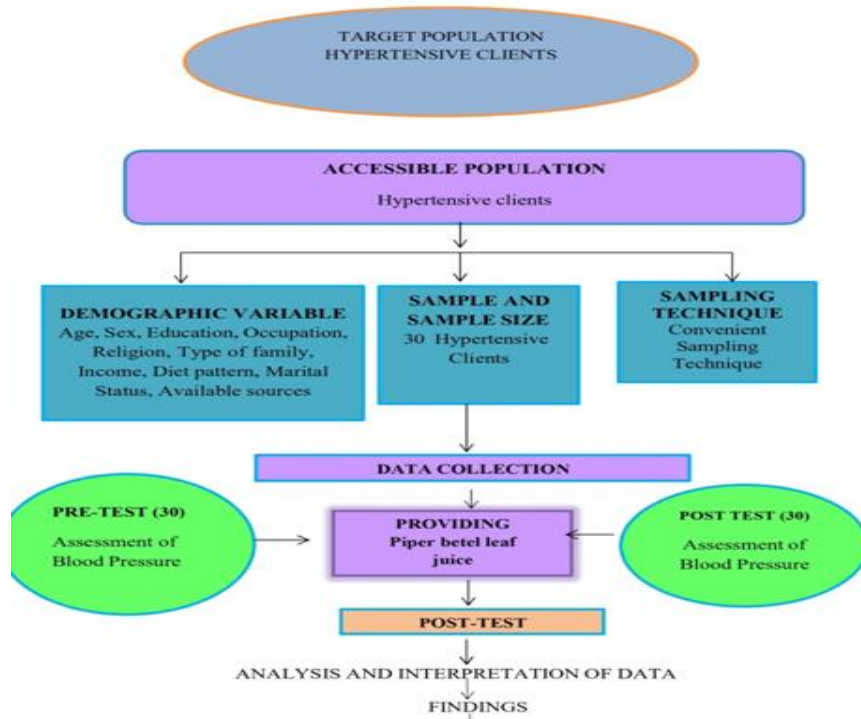


Figure 1. Conceptual framework

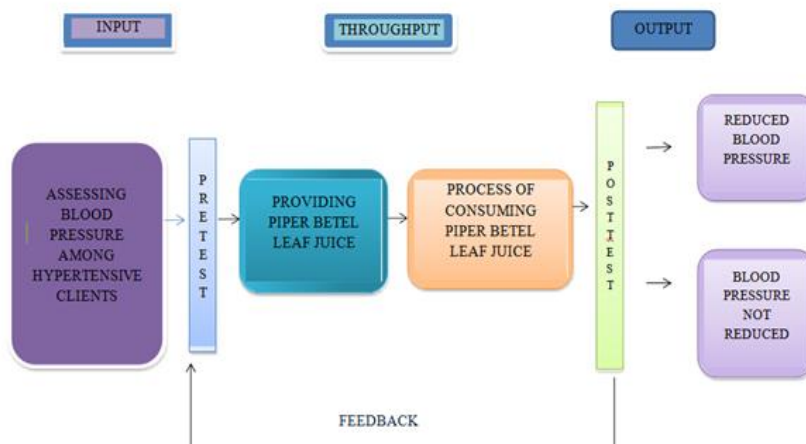


Figure 2. Plan of work

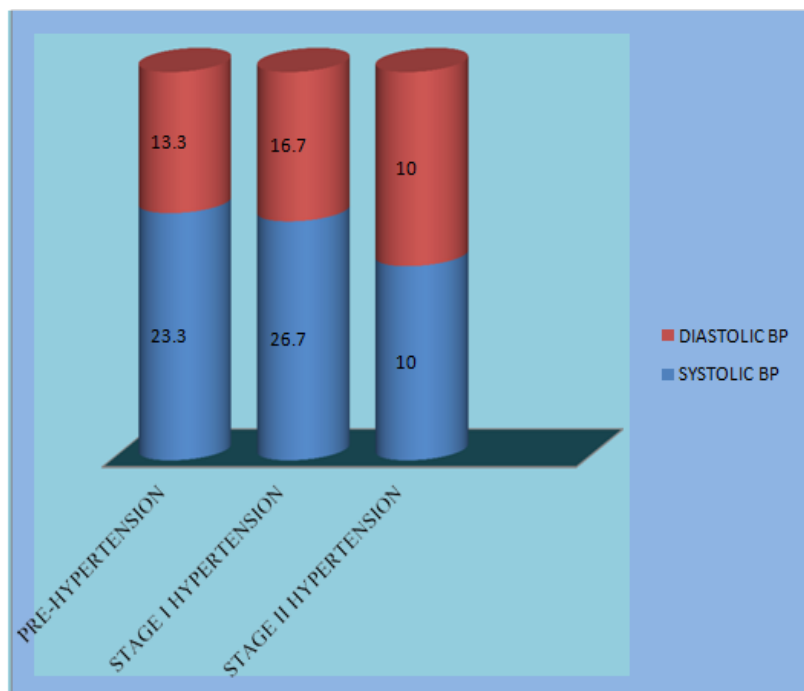


Figure 3. Frequency and percentage distribution of hypertensive clients according to their level of knowledge regarding hypertension in the pretest

The above data shows that 12(40%) of hypertensive clients had below average knowledge, 13 (43.3%) had average knowledge and 5 (16.7 %) had good knowledge about hypertension.

3. RESULTS:

With regard to sex, 13(43.3 %) were male and 17 (56.7%) were female. Regarding the educational qualification of the hypertensive clients 14(46.7%) were illiterate, 11(36.7%) were having primary education and 5 (16.6 %) were graduates. Regarding the occupation of the hypertensive clients 9(30%) were homemakers, 11(36.7%) were coolie and 10 (33.3 %) of the people were other type of workers. Regarding the type of family 16(53.4%) were from nuclear family, 10(33.3%) were from joint family and 4(13.3 %) were from extended family. Regarding the type of occupation of the hypertensive clients 6(20%) were sedentary workers, 16(53.4%) were moderate workers and 8 (26.6 %) were heavy workers. Regarding the monthly income of the family 16(53.4%) of them belongs to less than 5000/-, 12(40%) had

5000-10000/-and 2(6.6 %) had more than 10000/-. Among the hypertensive clients 26(86.7%) were married, 4(13.3 %) were widower and none of them were unmarried. Regarding the dietary pattern of the hypertensive clients 6(20%) were vegetarian, 22(73.4%) were non vegetarian and 2(6.6 %) were ova vegetarian. Regarding the habit of the hypertensive clients 2(6.6 %) were smokers, 2(6.6 %) had the habit of alcohol intake, 6(20%) had betel chewing habit and 20(66.6 %) were with no bad habits. All the hypertensive clients 30(100%) were residing in the village, rural area. Regarding the previous source of information 4(13.3 %) had through media, 16(53.4%) had through family members and 10 (33.3%) had through medical persons. The above data reveals that with regard to demographic variables of hypertension clients.

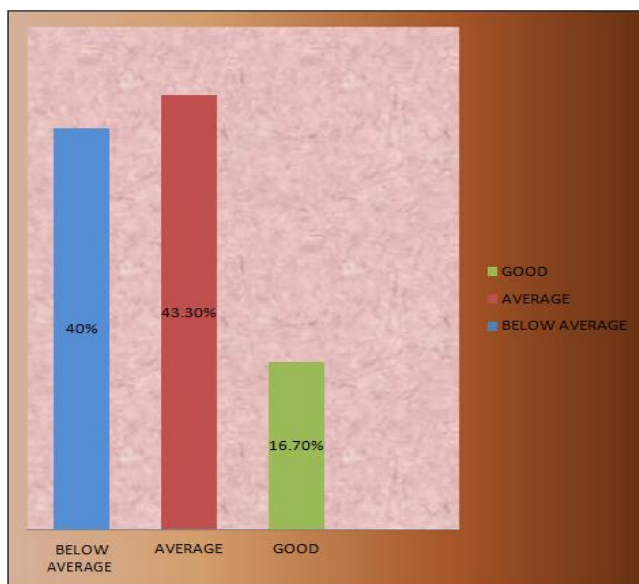


Figure-4: Frequency, percentage distribution of blood pressure level among hypertensive clients

Table-1: Frequency, percentage distribution and χ^2 value of the demographic variable with pre-test blood pressure level among hypertensive clients.

S.No	Demographic variables	Pre hypertension		Stage I hypertension		Stage II hypertension		P-value
		F	%	F	%	F	%	
1	Age in years							
	(a) 41-50	4	13.3	3	10	0	-	
	(b) 51-60	4	13.3	7	23.3	3	10	1.0117
	(c) 61-70	3	10	3	10	3	10	NS
2	Sex							
	(a) Male	4	13.3	7	23.3	2	6.7	0.274
	(b) Female	7	23.3	6	20	4	13.3	NS
3	Education							
	(a) Illiterate	4	13.3	7	23.3	4	13.3	
	(b) Primary Education	5	16.7	4	13.3	1	3.33	0.898
	(c) Graduate	2	6.67	2	6.67	1	3.33	NS
4	Occupation							
	(a) Homemaker	4	13.3	2	6.67	3	10	
	(b) Coolie	2	6.67	7	23.3	2	6.67	

	(c)Government	0	0	0	0	0	0	2.318
	Employee							NS
	(d)Others	5	16.7	4	13.3	1	3.33	
5	Type of family							
	(a) Nuclear family	5	16.7	7	23.3	4	13.3	0.529
	(b) Joint family	5	16.7	4	13.3	2	6.67	NS
	(c) Extended family	1	3.33	2	6.67	0	0	
6	Type of occupation							
	(a)Sedentary worker	3	10	2	6.67	1	3.33	0.9074
	(b)Moderate worker	6	20	7	23.3	3	10	NS
	(c)Heavy worker	2	6.67	4	13.3	2	6.67	
7	Monthly income of the Family							
	(a) Less than 5000	5	16.7	7	23.3	3	10	0.6752
	(b) 5001-10,000	5	16.7	6	20	0	-	NS
	(c) More than 10,000	1	3.33	0	0	0	-	
8	Marital status							
	(a) Married	10	33.3	10	33.3	5	16.7	0.5358
	(b)Unmarried	-	-	-	-	-	-	NS
	(c) Widower	1	3.33	3	10	1	3.33	
9	Dietary pattern							
	(a) Vegetarian	3	10	2	6.67	1	3.33	32.38
	(b)Non-Vegetarian	6	20	11	36.7	5	16.7	S
	(c)Ova-Vegetarian	2	6.67	-	-	-	-	
10	Habit							
	(a)Smoking	1	3.33	1	3.33	-	-	
	(b)Alcohol	-	-	1	3.33	1	3.33	3.071
	(c)Betel Chewing	2	6.67	1	3.33	3	10	NS
	(d) No bad habits	8	26.7	10	33.3	2	6.67	
11	Residential Area							
	(a) Town	-						Not
	(b) Village	30						Applicable
	(c) City	-						
12.	Previous source of							
	Information							
	(a) Media	1	3.33	3	10	1	3.33	1.4022
	(b) Family Members	6	20	7	23.3	4	13.3	NS
	(c) Medical persons	4	13.3	3	10	1	3.33	

This shows that the dietary factor among the selected demographic variable had significant association with

the pre-test blood pressure level. The p-value 32.38 was significant at 0.05 level.

4. DISCUSSION:

The aim of the present study was to evaluate the effectiveness of *Piper betel* leaf juice consumption in control of blood pressure among hypertensive clients between 40-70 years. The research design was quasi experimental design and the sample size was 30. Samples were selected by convenient sampling technique. The pre-test and post-test blood pressure level was monitored using the observation checklist method. The responses were analyzed through descriptive statistics (mean, frequency, percentage and standard deviation) and inferential statistics. Discussions on the findings were analyzed based on the objectives of the study.

Objective-1 :

To assess the level of blood pressure among hypertensive clients, in selected villages

Findings - 1:

Among the total 30 newly identified hypertensive

clients 36.7 % were pre- hypertensive clients, 43.3% of them were with stage I hypertension and about 20 % of the samples were identified to have stage II hypertension.

Discussion-1

The National health and Nutrition Examination Survey (NHANES) identified that 39% of people at national level were suffering with untreated and undiagnosed hypertension. [2]

Objective -2:

To evaluate the effectiveness of *Piper betel* leaf juice consumption in reducing the blood pressure level among hypertensive clients.

Findings -2:

Revealed that the post test systolic blood pressure mean was 11.53 and the pre- test systolic BP mean was 12.35. The obtained p-value = 13.796 which was highly significant at 0.05 level.

The post-test diastolic BP mean was 86.83 and the pre-test blood pressure mean was 94.25. The obtained p-value = 5.492 which was significant at 0.05 level. Thus the *Piper betel* leaf juice consumption was found to be effective in control of blood pressure among hypertensive clients between 40-70 years.

Discussion-2

Found that the high concentrations of carvacrol,

chavicol and eugenol in *Piper betel* leaf juice increased levels of arginine in the blood of adult subjects who consumed three glasses of *Piper betel* leaf juice every day for three weeks. Thus the study supports the *Piper betel* leaf juice consumption in control of blood pressure. [3]

Objective- 3:

To determine the association between the level of blood pressure and the selected demographic variables

Findings- 3:

The association between the pre-test blood pressure and demographic variable of hypertensive like age, sex, education, occupation, type of family, type of occupation, monthly income, marital status, habit and previous source of information were not significant at 0.05 level. The dietary pattern was found to have significant association at level with the pre-test blood pressure level. The p-value was 32.38 and it was found to be significant at 0.05 level.

Discussion- 3:

Appel, Sacks, Carey et, al., in their studies showed that diets high in fruits, vegetables and low- fat dairy products could prevent the development of hypertension and lower elevated blood pressure. [4,5]

4.1. Limitations

- The study was focused only on age group between 40-70 years.
- The study was limited to 30 samples.

Recommendations

The following recommendations are given for further research,

- A similar study can be done with large number of samples.
- The study can be done for known hypertensive clients.
- A similar study can be done as a comparative study with other alternative therapies.

5. CONCLUSION:

The conclusion which was drawn from the present study was, there were numerous cases of undiagnosed hypertension who needs dietary modification through that there is a chance of preventing hypertension. After the consumption of *Piper betel* leaf juice, the blood pressure was reduced to some extent. Thus *Piper betel* leaf juice consumption was effective in controlling blood

pressure.

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