



RESEARCH ARTICLE

A STUDY TO ASSESS THE EFFECTIVENESS OF BEETROOT JUICE ON BLOOD PRESSURE AMONG PATIENTS WITH HYPERTENSION

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ABSTRACT

Introduction: Joyce M. Black (2005) stated that hypertension or high blood pressure (HBP) means high pressure (tension) in the arteries. Normal blood pressure is below 120/80; blood pressure between 120/80 and 139/89 is called "pre-hypertension", and a blood pressure of 140/90 or above is considered hypertension. Hence an attempt is being made to assess the effectiveness of beetroot juice on reducing blood pressure among patients with hypertension.

Objective: - To assess the effectiveness of beetroot juice on blood pressure among the patients with hypertension.

- To associate the post interventional blood pressure with their selected socio demographic variables among the patients with hypertension.

Material and methods: The present community based quasi experimental study was conducted in Venkatachalam at Nellore, A.P (India). In present study 30patients with hypertension were selected by simple random sampling technique.

Results and discussion: Among 30 hypertension patients, the pre test Systolic blood pressure(SBP) results shows that 15(50%) in stage I hypertension(140-159 mm of Hg), in post test SBP after experimenting with the beetroot juice 6(20%) in stage I hypertension(140-159 mm of Hg). The pre test Diastolic blood pressure(DBP) results shows that 5(16.6%) in stage III hypertension(\geq 110mm of Hg) Where as post test DBP after experimenting with the beetroot juice no one in stage III hypertension

Conclusion: So there is a significant improvement in reduction of blood pressure after consumption of beetroot juice.

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INTRODUCTION

The human heart through the rhythmic contraction provides the pressure necessary to propel blood through the body. Blood flow is essential to deliver nutrients to the tissues of the body and to transport metabolic wastes including heat. The presence of an arterial pulse, caused by the beating of the heart is approximately designated as vital sign.

World Health Organization (2009) Estimated that in India 196million adults are affected with hypertension. Globally 32 million people died due to non-communicable diseases and over half of these (16.7 million) died due to CVD.

Need For The Study

Leoper and DeBray (2003) Stated that High blood pressure (BP) is a major risk factor and better control can lead to prevention of 300,000 of the 1.5 million annual deaths from cardiovascular diseases in India. Moreover, in India about 70%

of coronary heart disease-related deaths occur in people younger than 70 years compared with 22% in the West and 94% stroke deaths occurs in people less than 70 years in contrast to 6% in developed countries.

Dietary factors play a key role in the development of various human diseases; including cardiovascular disease, epidemiological studies have shown that diets rich in fruits, herbs and spices are associated with a low risk of cardiovascular disease.

Leah T Coles (2012) Conducted a randomized controlled trial with free-living adults to investigate if consuming beetroot juice produces reduction in BP. Fifteen women and fifteen men participated in a double-blind, randomized, placebo-controlled, crossover study. Volunteers were randomized to receive 500 g of beetroot and apple juice (BJ) or a placebo juice (PL). The results show that there was a trend ($P=0.064$) to lower systolic blood pressure (SBP) at 6-h after drinking BJ relative to PL. Analysis in men only ($n=13$) after adjustment for baseline

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differences demonstrated a significant ($P<0.05$) reduction in SBP of 4 – 5 mmHg at 6-h after drinking Beet root Juice. Hence the researcher as a health care provider has identified it her responsibility to manage hypertension with minimum cost and more effectively and selected the present study.

MATERIALS AND METHODS

Research approach: Quantitative research approach.

Research design: Quasi experimental one group pre and post test design.

Setting of the study: Venkatachalam is a rural community located in Nellore, A.P (India).

Population: All the patients with hypertension residing at venkatachalam, Nellore.

Sample: The Patients with Hypertension who were residing in venkatachalam and who fulfill inclusion criteria

Sample size: 30 patients with hypertension.

Sampling technique: Simple random sampling technique

Criteria for sample selection

Inclusion criteria

Both female and male hypertension patients
Hypertension patients who were taking anti hypertensive treatment

Exclusion criteria

Hypertensive patients who were not willing to participate
Hypertensive patients who were not present at the time of intervention

Development and description of the tool

With the help of extensive review from various textbooks, Journals and websites the tool was developed.

Part- I

Deals with socio demographic variables such as age, sex, marital status, educational qualification, occupation, Income per month, Religion, Type of family, dietary pattern, Family history of hypertension.

Table 1 According to the National High blood pressure education programme the blood pressure categorized and scored.

Systolic blood p pressure	Diastolic blood pressure	Category
<120	<80	Optimal
<130	<85	Normal
130-139	85-89	High normal
140-159	90-99	Stage-I hypertension
160-179	100-109	Stage-II hypertension
>180	>110	Stage-III Hypertension

Part-II Instrument to assess Blood pressure (Sphygmomanometer)

Pilot study

After getting the permission from ethical committee the pilot study was conducted. The data has been analyzed by using descriptive and inferential statistics. The r value was 0.89. During pilot study practicability and feasibility has been checked.

Data collection Procedure

After getting the permission from the medical officer at PHC Venkatachalam. Blood Pressure checked with Sphygmomanometer by the researcher for all the Hypertensive patients aged 35-75years. A total number of 30 samples based on the inclusion criteria were selected. Established rapport. Informed consent taken from the participants. Explained the significance of the study. The investigator conducted Pretest by checking blood pressure with sphygmomanometer. Then the investigator given 400 ml of beetroot juice (50 grams beetroot mixed with 350 ml water) from the day of pre test up to 7days. After the beetroot juice supplementation on 8th day post test was conducted by checking blood pressure with the same sphygmomanometer.

RESULTS AND DISCUSSION

The data was organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics based on the objectives of the study.

Section -I

Frequency and percentage distribution of demographic variables among hypertension patients

Table2 Frequency and percentage distribution of hypertension patients based on age n=30

Demographic variable	Frequency(f)	Percentage(%)
AGE		
35 to 45 years	1	3.3
46 to 55 years	9	30
56 to 65 years	12	40
66 to 75 years	8	26.7
Total	30	100

The above table shows that with regard to age of hypertension patients 12(40%) were between 56-65 years, 9(30%) were between 46-55 years, 8(26.7%) were between 66-75 years and one (3.3%) hypertension patient was between 35-45 years.

The above table shows that with regard to educational qualification of hypertension patients 15(50%) were Illiterates, 10(33.3%) had primary education, 3(10%) had secondary education and 2(6.7%) had degree and above.

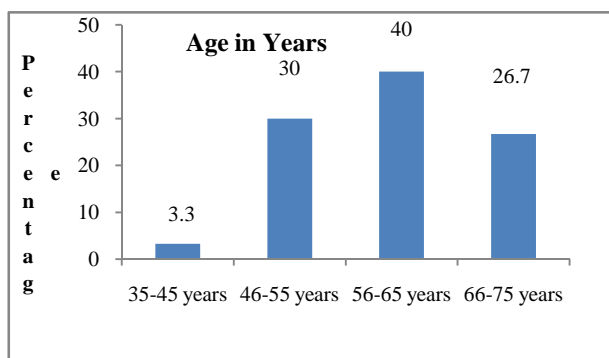


Fig1 Percentage distribution of based on age

Table-3 Frequency and percentage distribution of hypertension patients based on educational qualification n=30

Educational qualification	(f)	(%)
a. Illiterate	15	50
b. Primary education	10	33.3
c. Secondary education	3	10
d. Graduate & above	2	6.7
Total	30	100

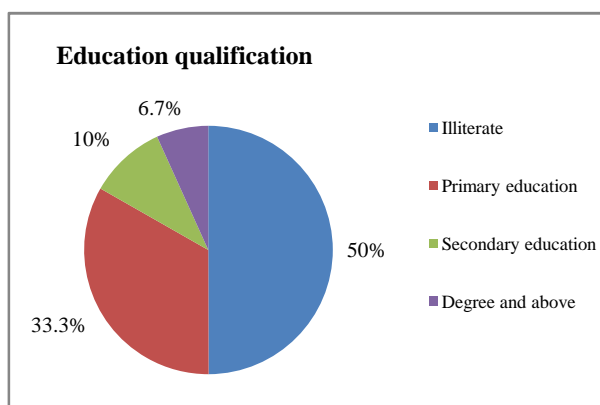


Fig2 Percentage distribution based on educational qualification.

Section-II Effectiveness of beetroot juice on blood pressure among the patients with hypertension

The above table shows that with regard to pre test SBP mean was 2.4 with standard deviation 0.76 and DBP mean was 2.3 with standard deviation 0.77. The post test SBP mean was 4.2 with standard deviation 2.7 and the DBP mean was 3.5 with standard deviation of 0.40. The independent t test value in SBP was 1.89 and DBP was 2.72. Hence the “table value was 0.671 at $p < 0.05$. So that the hypothesis was accepted and null hypothesis was rejected.

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Table 4 Mean and Standard deviation of Pre and post test blood pressure

Criteria	Blood pressure	Mean	Standard deviation	Independent t test value
Pre test scores of Bp among hypertension patients	SBP	2.4	0.76	SBP=1.89 P<0.05 (Significant) ‘t’ value=0.671
	DBP	2.3	0.77	
Post test scores of Bp among hypertension patients	SBP	4.2	2.7	DBP=2.72 P<0.05 (Significant) ‘t’ value=0.671
	DBP	3.5	0.40	

Hence there is a significant improvement in reduction of blood pressure level after consumption of beetroot juice.

Section-III Association of the post interventional blood pressure with their selected socio demographic variables among the patients with hypertension.

The Chi-square analysis indicates that there is no statistically significant association between the post test blood pressure scores with their selected socio demographic variables among the patients with hypertension.

CONCLUSION

The overall findings showed that beetroot juice was effective in reducing blood pressure the patients with among hypertension.

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