

A Study To Assess The Effectiveness Of Pomegranate Juice (PJ) On BP Among Prehypertensive Individuals At Selected Villages Of Surat.

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Abstract

Introduction: Health as a multidimensional and dynamic concept encompassing physical, psychological, social, and emotional well-being. Prehypertension is a state of transition between normal blood pressure and hypertension. Adolescent prehypertension is a strong predictor of hypertension in adults and is now considered for cardiovascular intervention or risk reduction. Prehypertension is very common. An estimated 1 in 3 people have prehypertension. The recommended treatment methods to reduce risk to develop hypertension include the Life style modification, Yoga, meditation, relaxation technique, dietary supplements, exercise and massage. Pomegranate juice is rich in tannins, possesses anti-atherosclerotic properties, has anti-aging effects, and potent anti-oxidative characteristics. **Aim:-** : To find out the effectiveness of PMJ on blood pressure among pre-hypertensive clients. **Materials and Methods:** In the present study, quantitative approach, a Quasi experimental research design was adopted. Non-probability purposive techniques was used to select 30 prehypertensive individuals in selected villages of Surat. The data-collection tool consisted of a personal profile, medical history and BP measurements. The data were analyzed and interpreted using descriptive and inferential statistics. **Results:** The present data revealed that the mean post-test systolic blood pressure mean difference is 12.07 and Mean post-test diastolic blood pressure mean difference is 4.32 which showing improvement in pre and post intervention. Mean systolic calculated 't' value 5.93 and mean diastolic calculated 't' value 5.93 was greater than tabulated 't' value between the group which showing effectiveness of PMJ on BP level. **Conclusion:** The above findings supported that PMJ was effective in reducing the blood pressure level among the pre-hypertensive clients.

KEY WORDS: Surya Namaskar, Pre-hypertensive, BP

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Introduction

Good health is a fundamental prerequisite for human productivity and overall development. It enables individuals to actively participate in social, economic, and personal activities, thereby contributing to the progress of society as a whole. Traditionally, both individuals and communities perceived health merely as the absence of illness or disease. However, contemporary understanding recognizes health as a **multidimensional and dynamic concept** encompassing physical, psychological, social, and emotional well-being.

From this broader perspective, health extends beyond freedom from pathology and includes the ability to adapt, function effectively, and maintain balance in various aspects of life. In nursing practice, comprehensive assessment of an individual's health status is a vital responsibility, as it forms the

foundation for planning, implementing, and evaluating nursing care. A holistic appraisal of the client's health enables nurses to identify actual and potential health problems, promote wellness, and implement preventive strategies, thereby enhancing the quality of care and health outcomes.

Prehypertension is a clinical condition characterized by systolic blood pressure levels ranging from **120–139 mmHg** and/or diastolic blood pressure levels between **80–89 mmHg**, representing an intermediate stage between normotension and established hypertension. Although individuals with prehypertension may be asymptomatic, this condition is associated with a significantly increased risk of progression to hypertension and the subsequent development of cardiovascular diseases, including coronary artery disease, stroke, and renal complications.

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Globally, the prevalence of prehypertension has shown a rising trend, particularly in low- and middle-income countries, due to rapid urbanization, lifestyle transitions, increased consumption of unhealthy diets, physical inactivity, stress, and obesity. In India, recent national surveys have demonstrated that a substantial proportion of adults, including young and middle-aged populations, fall within the prehypertensive category. This trend poses a major public health challenge, as prehypertension often remains undiagnosed and untreated until it progresses to overt hypertension.

Evidence suggests that timely identification and early interventions—such as lifestyle modification, dietary regulation, physical activity, and behavioral changes—can effectively prevent or delay the progression of prehypertension to hypertension. Therefore, understanding the magnitude, associated risk factors, and preventive strategies related to prehypertension is essential for developing effective community-based and institutional health promotion programs.

Recent population-based surveys indicate that prehypertension affects a considerable proportion of adults worldwide. In India, findings from the **National Family Health Survey-5 (NFHS-5)** reveal that nearly one-third of adults aged 18–54 years fall within the prehypertensive range, with marked variations across different regions. These patterns reflect global trends driven by rapid urbanization, sedentary lifestyles, unhealthy dietary practices, and rising obesity rates.

Atma Prakash Naik, Anil K Wanjari et al (2024) conducted a cross-sectional study to assess the prevalence of prehypertension and associated risk factors among resident doctors at Jawaharlal Nehru Medical College, Wardha. The study included 155 participants and was carried out between June 2017 and June 2020. Results revealed that **44.5%** of the respondents were prehypertensive, while **55.5%** had normal blood pressure. Male participants constituted **58.1%** of the sample. Lifestyle risk factors such as junk food consumption (54.2%), alcohol use (36.1%), and extra salt intake (30.4%) were commonly reported. The mean age of participants was **26.59 years**, with an average BMI of **23.8 kg/m²**. The study highlighted a high prevalence of prehypertension among young medical professionals and emphasized the need for early identification and lifestyle-based interventions to prevent progression to hypertension and reduce future health-care burden.

Research Methodology

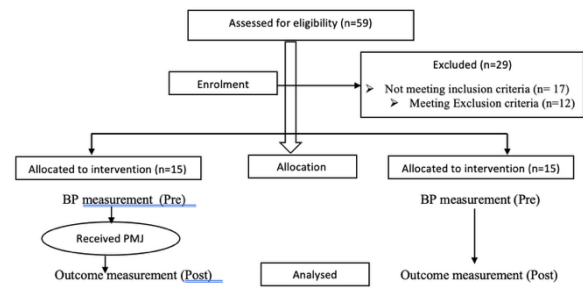


Figure 1: Schematic representation of research methodology

Results

Section I: Findings related to pre and postintervention level of Blood pressure

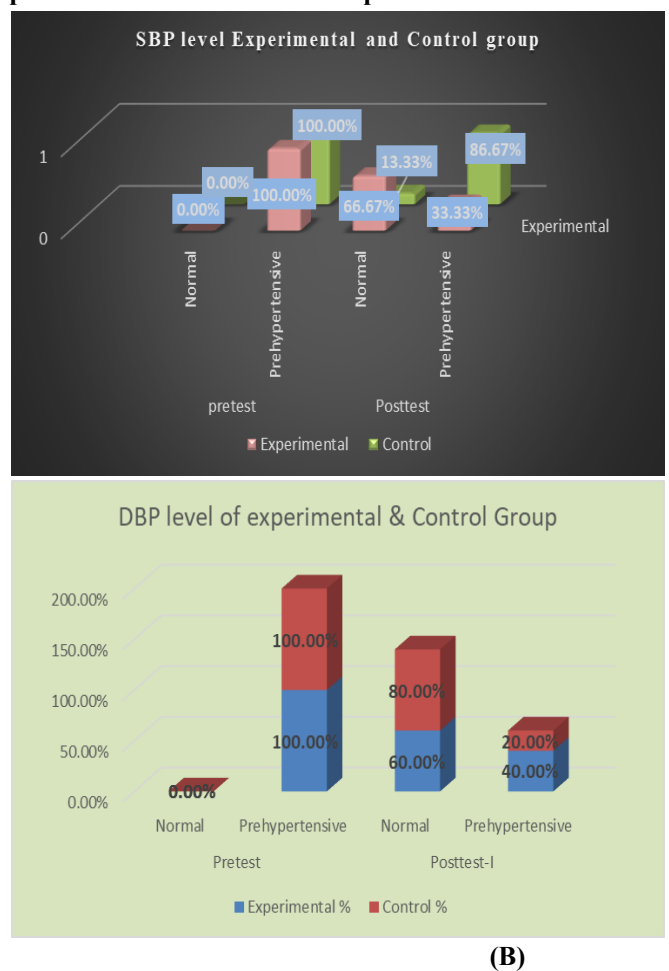


Figure 2: - (A) Bar Graph Showing percentage wise distribution of samples based on Pre & Post intervention level of Systolic Blood Pressure (B) Diastolic Blood Pressure in experimental group and control group.

Section II: findings related to effectiveness of PJ on post-intervention level of blood pressure among pre-hypertensive individuals in experimental group and control group.

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Table 1: Distribution of level of SBP score between Experimental and Control group

N = 30(15+15)

	Level of SBP	Experimental (n=15)		Control (n=15)		Chi square test	P-value
		N	%	N	%		
		o	.	o	.		
Pretest	Normal	0	0.00%	0	0.00%	0.00 (NS)	1.00 (NS)
	Prehypertensive	15	100.00%	15	100.00%		
Posttest-I	Normal	10	66.67%	2	13.33%	8.83 (S)	0.01 (S)
	Prehypertensive	5	33.33%	13	86.67%		

DF= Degrees of freedom S= significant NS= not significant
 P>0.05 not significant P<0.05 significant
 ***significant at p<0.001 level

Table 2: SBP SCORE BETWEEN EXPERIMENTAL AND CONTROL GROUP

	Group				MD	Prehypertensive independent t-test
	Experimental		Control			
	Mean	SD	Mean	SD		
Pretest	137.13	4.64	135.13	5.33	2.00	t=1.10 p=0.28 (NS)
Post-test	122.73	6.31	134.80	4.72	12.07	t=5.93 p=0.001*** (S)

Table 3: SBP SCORE BETWEEN PRETEST AND POSTTEST

	Group				MD	Prehypertensive paired t-test
	Pretest		Post-test			
	Mean	SD	Mean	SD		
Experimental group	137.13	4.64	122.73	6.31	14.40	t=11.27 p=0.001*** (S)
Control group	135.13	5.33	134.80	4.72	0.33	t=1.54 p=0.10 (NS)

Table4 : Distribution of level of DBP score between Experimental and Control group

N = 30(15+15)

	Level of DBP	Experimental (n=15)		Control (n=15)		Chi square test	P-value
		N	%	N	%		
		o	.	o	.		
Pretest	Normal	0	0.00%	0	0.00%	0.00 (NS)	1.00 (NS)
	Prehypertensive	15	100.00%	15	100.00%		
Posttest-I	Normal	9	60.00%	12	80.00%	5.00 (S)	0.05 (S)
	Prehypertensive	6	40.00%	3	20.00%		

DF= Degrees of freedom S= significant NS= not significant
 P>0.05 not significant P<0.05 significant
 ***significant at p<0.001 level

Table 5: DBP SCORE BETWEEN EXPERIMENTAL AND CONTROL GROUP

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	Group				MD	Prehypertensive independent t-test
	Experimental		Control			
	Mean	SD	Mean	SD		
Pretest	89.60	4.27	89.80	3.53	0.05	t=1.10 p=0.28 (NS)
Post-test	78.80	9.22	89.27	3.35	4.97	t=5.93 p=0.001*** (S)

Table 06: DBP SCORE BETWEEN PRETEST AND POSTTEST

	Group				MD	Student paired t-test
	Pretest		Post-test			
	Mean	SD	Mean	SD		
Experimental group	89.60	4.27	78.80	9.22	10.80	t=3.40 p=0.001** (S)
Control group	89.80	3.53	89.27	3.35	0.53	t=1.07 p=0.30 (NS)

Section III: Association Findings with selected Sociodemographic variables

Table 07: POSTTEST LEVEL OF DBP SCORE AND PREHYPERTENSIVES DEMOGRAPHIC VARIABLES (Experiment)

Demographic variables		Posttest level of DBP score				Chi square test
		Normal		Pre-hypertensive		
		n	%	n	%	
Age in years	20-30 years	1	33.33%	2	66.67%	χ²=6.00 p=0.05*(S)
	31-40 years	4	66.67%	2	33.33%	
	41-50 years	4	66.67%	2	33.33%	
Gender	Male	5	62.50%	3	37.50%	χ ² =0.13 p=0.71 (NS)
	Female	4	57.14%	3	42.86%	
Type of family	Nuclear family	8	66.67%	4	33.33%	χ²=7.50 p=0.01* (S)
	Joint family	1	33.33%	2	66.67%	
	Others	0	0.00%	0	0.00%	
Occupation	Unemployed	2	66.67%	1	33.33%	

	Homemaker	1	25.00%	3	75.00%	χ ² =4.12 p=0.25 (NS)
	Employed	3	75.00%	1	25.00%	
	Self employed	3	75.00%	1	25.00%	
	Daily wager	0	0.00%	0	0.00%	
Currently employed	Yes	7	63.64%	4	36.36%	χ ² =3.25 p=0.09 (NS)
	No	2	50.00%	2	50.00%	
Dietary Pattern	Vegetarian	3	50.00%	3	50.00%	χ ² =1.22 p=0.28 (NS)
	NonVegetarian	6	66.67%	3	33.33%	
Personal habits	No bad habits	5	83.33%	1	16.67%	χ ² =1.25 p=0.27 (NS)
	Yes	4	44.44%	5	55.56%	
Family history of DM, HTN or any heart disease?	Yes	5	55.56%	4	44.44%	χ ² =1.25 p=0.275 (NS)
	No	4	66.67%	2	33.33%	

Table 08: POSTTEST LEVEL OF SBP SCORE AND PREHYPERTENSIVES DEMOGRAPHIC VARIABLES (Experimental)

Demographic variables		Posttest level of SBP score				Chi square test
		Normal		Pre-hypertensive		
		n	%	n	%	
Age in years	20-30 years	2	66.67%	1	33.33%	χ ² =1.11 p=0.57 (NS)
	31-40 years	2	33.33%	4	66.67%	
	41-50 years	6	100.00%	0	0.00%	
Gender	Male	5	62.50%	3	37.50%	χ ² =0.05 p=0.83 (NS)
	Female	5	71.43%	2	28.57%	
Type of family	Nuclear family	1	83.33%	2	16.67%	χ ² =1.11
	Joint family	0	0.00%	3	100.00%	

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	Others	0	0.00%	0	0.00%	0	p=0.29(NS)
Occupation	Unemployed	1	33.33%	2	66.67%	3	$\chi^2=2.84$
	Homemaker	3	75.00%	1	25.00%	4	p=0.42(NS)
	Employed	2	50.00%	2	50.00%	4	
	Self employed	4	100.00%	0	0.00%	4	
	Daily wager	0	0.00%	0	0.00%	0	
Currently employed	Yes	9	81.82%	2	18.18%	11	$\chi^2=4.26$
	No	1	25.00%	3	75.00%	4	p=0.05*(S)
Dietary Pattern	Vegetarian	5	83.33%	1	16.67%	6	$\chi^2=2.64$
	NonVegetarian	5	55.56%	4	44.44%	9	p=0.45(NS)
Personal habits	No bad habits	5	83.33%	1	16.67%	6	$\chi^2=2.26$
	Yes	5	55.56%	4	44.44%	9	p=0.13(NS)
Family history of DM, HTN or any heart disease?	Yes	7	77.78%	2	22.22%	9	$\chi^2=0.18$
	No	3	50.00%	3	50.00%	6	p=0.67(NS)

Discussion

The result was supported by Amirhossein Sahebkar et. al (2017) has conducted A systematic review and meta-analysis of randomized controlled trials on Effects of pomegranate juice on blood pressure. Pomegranate juice is a polyphenol-rich fruit juice with high antioxidant capacity. Several studies suggested that pomegranate juice can exert antiatherogenic, antioxidant, antihypertensive, and anti-inflammatory effects. To systematically review and meta-analyze available evidence from randomized placebo-controlled trials (RCTs) investigating the effects of pomegranate juice consumption and blood pressure (BP). A comprehensive literature search in Medline and Scopus was carried out to identify eligible RCTs. A meta-analysis of eligible studies was performed using a random-effects model. Quality assessment, sensitivity analysis and publication bias evaluations were conducted using standard methods.

Recommendation:

On the basis of the study findings the following recommendations were made for further research.

1. A similar study can be conducted with increased in the sample size.
2. A similar study can be conducted among another hypertensive client.
3. A similar study can be conducted in various community settings.

CONCLUSION

The present study findings that the mean post-test blood pressure level of experimental group is significantly less than the mean post-test blood pressure level of control group with the mean difference of 12.07 in SBP. The calculated unpaired 't' value (t 5.93) was greater than tabulated 't' value which was statistically proved at 0.05 level of significance. Mean post-test blood pressure level of experimental group is significantly less than the mean post-test blood pressure level of control group with the mean difference of 4.07 and the calculated unpaired 't' value (t= 5.93) was greater than tabulated 't' value which was statistically proved at 0.05 level of significance. From the result of the study it was concluded that PMJ Consumption was effective in reducing the blood pressure level among clients with pre-hypertension.

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Conflict of interest: None

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