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RESEARCH ARTICLE

A STUDY TO ASSESS THE EFFECTIVENESS OF POMEGRANATE JUICE ON BLOOD PRESSURE AMONG HYPERTENSIVE PATIENTS ADMITTED IN SELECTED HOSPITALS

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Abstract

This study aimed to evaluate the effectiveness of pomegranate juice in reducing blood pressure among hypertensive patients admitted to selected hospitals. The objectives were to assess existing blood pressure levels, evaluate the effectiveness of pomegranate juice, and compare pre-test and post-test scores among experimental groups. The hypothesis tested whether pomegranate juice significantly affects blood pressure. A quantitative evaluative approach with a two-group pre-test post-test design was employed, involving 40 hypertensive patients selected through non-probability purposive sampling. The experimental group received 200ml of pomegranate juice daily for 5 days, while the control group received routine treatment. Blood pressure was measured using a sphygmomanometer and stethoscope. Results showed a significant reduction in both systolic and diastolic blood pressure in the experimental group, with mean systolic pressure decreasing from 169 mmHg to 118 mmHg and mean diastolic pressure from 99.5 mmHg to 79.5 mmHg. The control group showed no significant changes. The study concluded that pomegranate juice is an effective, cost-efficient, and palatable alternative treatment for reducing blood pressure in hypertensive patients, complementing pharmacological therapy. Further studies with larger sample sizes and longer durations are recommended to validate these findings and explore comparisons with other complementary therapies.

Introduction:-

Today, the uncontrolled way of life is the root cause of all sorts of miseries and many ill-fated diseases to mankind. There are many diseases occurring because of changes in lifestyle pattern and one among them is hypertension. Hypertension is important risk factors for cardiovascular disease. The prevalence of hypertension is 1.5-2.0 times more in those with diabetes, whereas almost one-third of the patients with hypertension develop diabetes later. This coexistence presents an increased risk and can accelerate vascular complications. Hypertension is manageable health condition and can be controlled by medicinal interventions, exercises, and balanced diet. Blood pressure is defined as the pressure exerted on the walls of the arteries during ventricular systole and diastole. It is affected by factors such as cardiac output; distension of the arteries; and the volume, velocity and viscosity of the blood.[1]

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The table below shows classification of blood pressure established by WHO recommend blood pressure category.[2]

Categories Of Blood Pressure	Systolic (mmHg)	Diastolic (mmHg)
Normal Blood Pressure	120-139	80-89
Mild Hypertension	140 – 159	90-99
Moderate Blood Pressure	160-179	100-109
Severe Hypertension	>180mmHg	>110mmHg

Objectives:-

1. To assess the existing blood pressure levels among hypertensive patients in control and experimental group admitted in selected hospitals.
2. To evaluate effectiveness of pomegranate juice on blood pressure levels admitted in selected hospitals.
3. To compare the pre-test and post-test scores of intervention on blood pressure among experimental groups.

HYPOTHESIS

H0: There will be no significant effect of pomegranate juice on blood pressure among hypertensive patients of experimental group admitted in selected hospitals.

H1: There will be significant effect of pomegranate juice on blood pressure among hypertensive patients of experimental group admitted in selected hospitals.

Methodology:-

Research Approach:

Quantitative evaluative approach

Research Design

Two group pre-test Post-test design

Research Variables

Dependent variable:

In this study blood pressure was dependent variable

Independent variable:

In this study pomegranate juice was independent variable

Target population

The target population comprised of hypertensive patients.

Accessible population
The accessible population comprised of hypertensive patients admitted in selected hospitals.

Sample Size
In the present study the samples were hypertensive patients and who fulfilled the inclusion criteria.

Sampling Technique
Purposive sampling technique was adopted to select the subjects. Purposive sampling is a non-probability sampling where subjects are selected because of investigator's study purpose.

Sample Size
Study samples in control group and experimental group comprises of 20 hypertensive patients admitted in the selected hospitals.

Criteria For Samples Selection
Inclusion Criteria:
• All hypertensive patients admitted in selected hospitals.
• Those who were willing to participate in the study.
• Duration of Illness (below 5years).

Exclusion criteria
• Patients with Diabetes.
• Unconscious patients.
• Patients with Chronic Renal Failure.

Preparation Of The Tool
Section I- Demographic variable
It describes Age, Gender, Parent/s with History of hypertension, Type of Diet and Weight (in Kg)
Section ll- Observational checklist with the help of B.P Apparatus and Stethoscope
The higher the score the more severe the condition

Reliability
Reliability of an instrument is the degree of consistency with which it measures the attribute it is supposed to measure.

Biomedical instrument was calibrated by the specialist.

Conceptual Framework
For the present studyconceptual framework Based on Modified Widenbach's Helping Art Clinical Nursing Theory (1969)

Data Gathering Process
Data gathering means information that is systematically collected in the course of the study. Before the actual data collection, the investigator had completed the following formalities.
1. Requisition letter for conducting research study and brief details of study were sent to the selected hospitals under the study.
2. Before initiating the research, permission was obtained from the concerned authorities of the hospital.
3. The data collection was done. 40 subjects were selected using non-probability purposive sampling. These subjects were selected on the bases of inclusion and exclusion criteria and they were randomly assigned to the control group and experimental group.

The investigator explained the brief details of the study to the subjects and written informed consent were taken and confidentiality was assured to all the hypertensive subjects to get their cooperation throughout the process of data collection.

After sorting the subjects in both experimental group and control group respectively, demographic data was collected from both the groups. In the experimental group 200ml pomegranate juice was administered immediately after pre-test in the morning for 5 days.

Observation was done 5th day by using WHO recommended blood pressure category.

Routine treatment was administered to the subjects in control group.

Plan For Data Analysis

The data analysis is the systematic organization and synthesis of research data and the testing of the research hypothesis using that data.

The data obtained was be analyzed using both descriptive and inferential statistics

Result:-

The analysis of the demographic data of the study samples gave an idea about the general characteristics of the hypertensive patients admitted in selected hospitals.

The following are the major findings of the study.

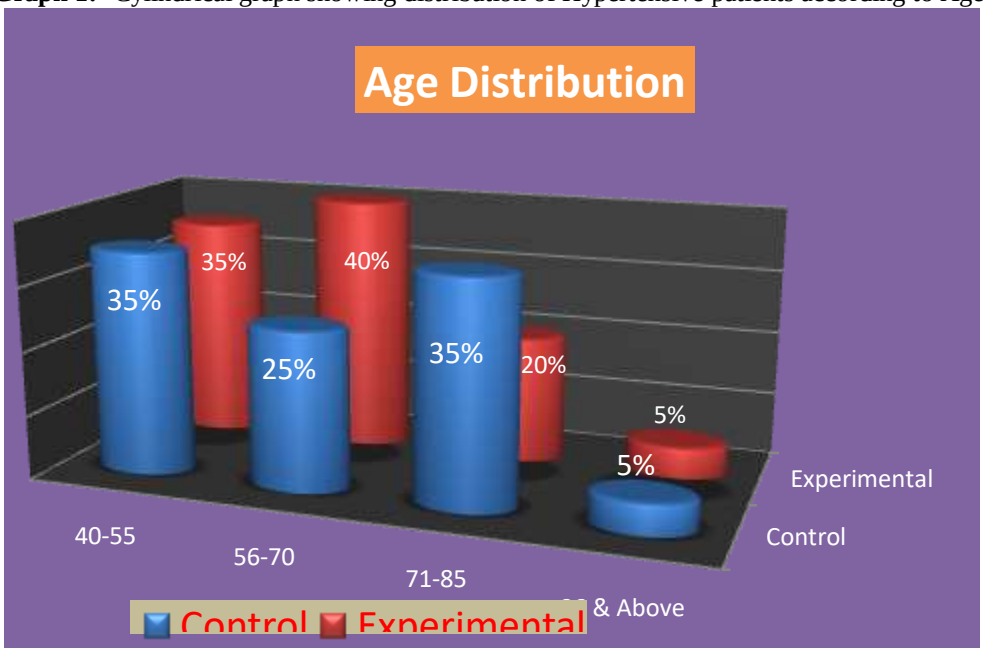
Section- I

Demographic Data – Hypertensive Patients

Table 1:- Distribution of the hypertensive patients according to demographic variables in terms of frequency and percentage. **n=40**

SR NO	Variables	Groups	Control		Experimental	
			Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Age in years	40-55	7	35	7	35
		56-70	5	25	8	40
		71-85	7	35	4	20
		86-above	1	5	1	5
2	Gender	Male	11	55	7	35
		Female	9	45	13	65
3	Parent/s with history of hypertension	Father	7	35	7	35
		Mother	5	25	7	35
		No any	8	40	6	30
4	Type of diet	Vegetarian	13	65	10	50
		Mixed	7	35	10	50
5	Weight in Kg	40-50	8	40	7	35
		51-60	4	20	6	30
		61-70	5	25	5	25
		71 & Above	3	15	2	10

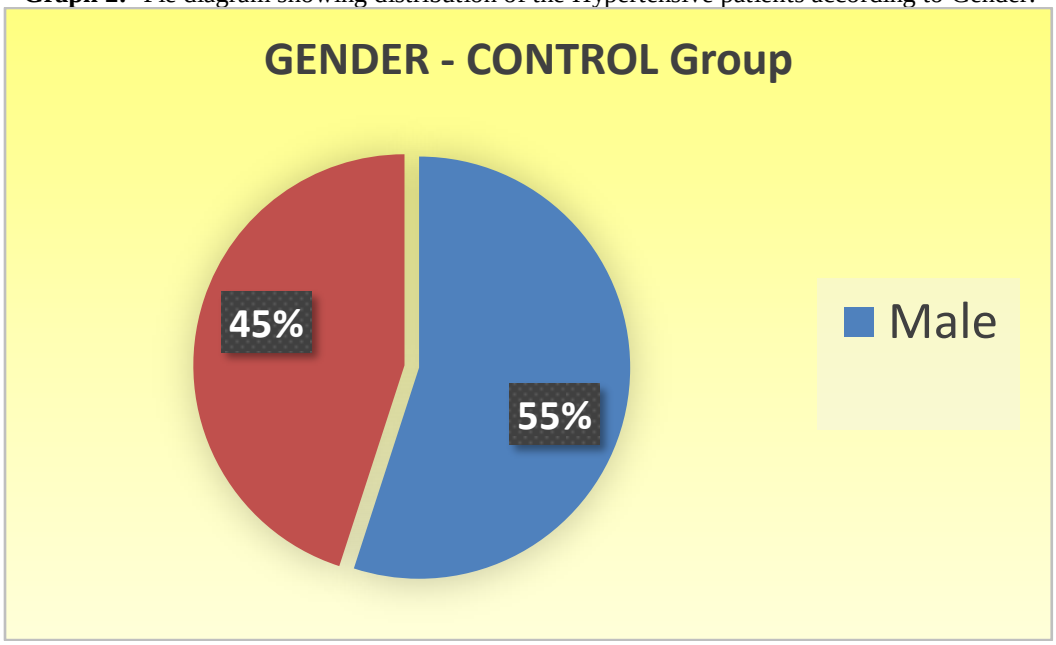
Graph 1:- Cylindrical graph showing distribution of Hypertensive patients according to Age.



The above diagramdepicts that, in control group, according to age majority of samples 7(35%) were between 40-50 & 71-85 years respectively and 5(25%) were between 56-70years and 1(5%) were between 85 years and Above.

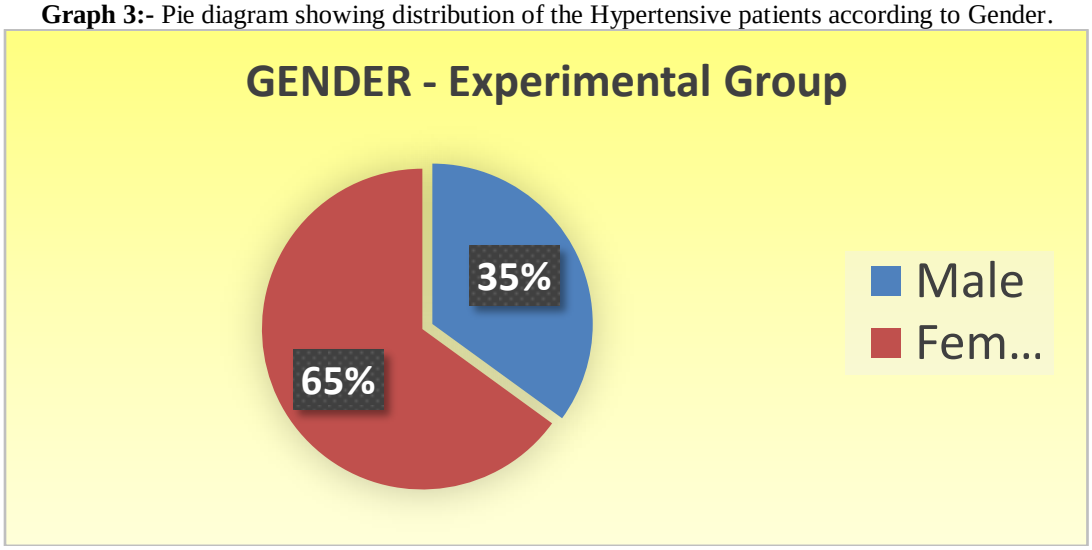
In the experimental group majority of samples 8(40%) were between 56-70 years, 7(35%) were between 40-55years, 4(20%) were between 71-85years and 1(5%) were between 85 years and above.

Graph 2:- Pie diagram showing distribution of the Hypertensive patients according to Gender.



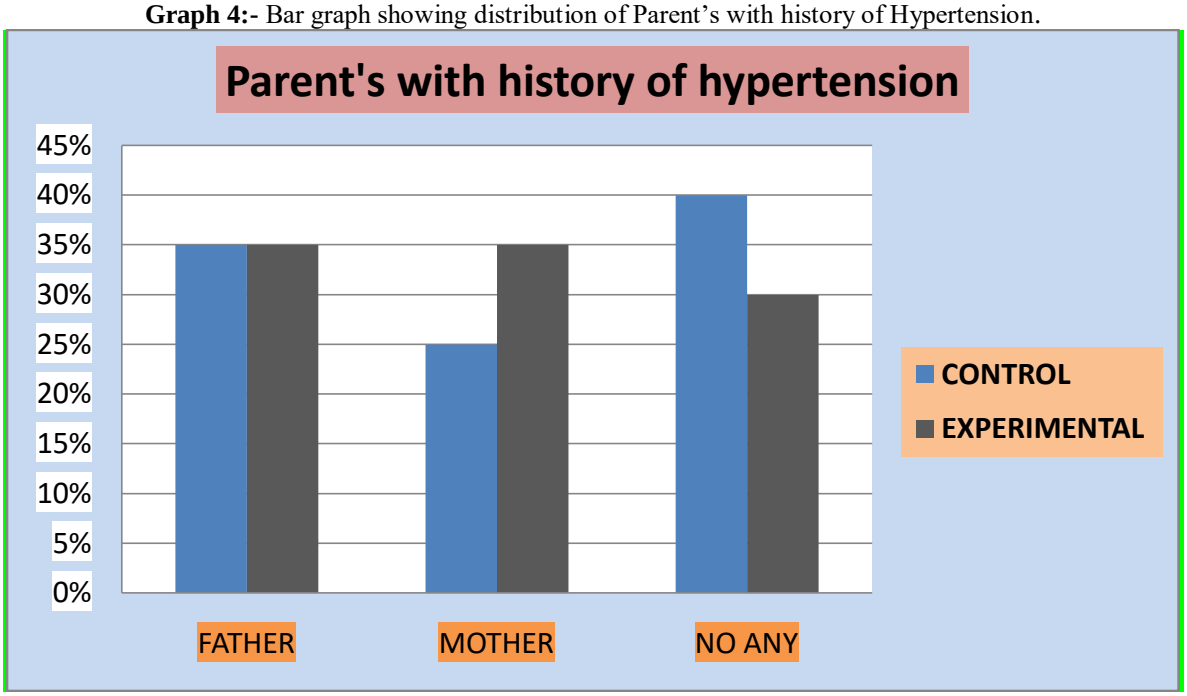
The above diagram depicts that, in control group 11 (55%) were Males and 9 (45 %) were Females.

Graph 3:- Pie diagram showing distribution of the Hypertensive patients according to Gender.



The above diagram depicts that, in experimental group 13 (65%) were Males and 7 (35%) were Females.

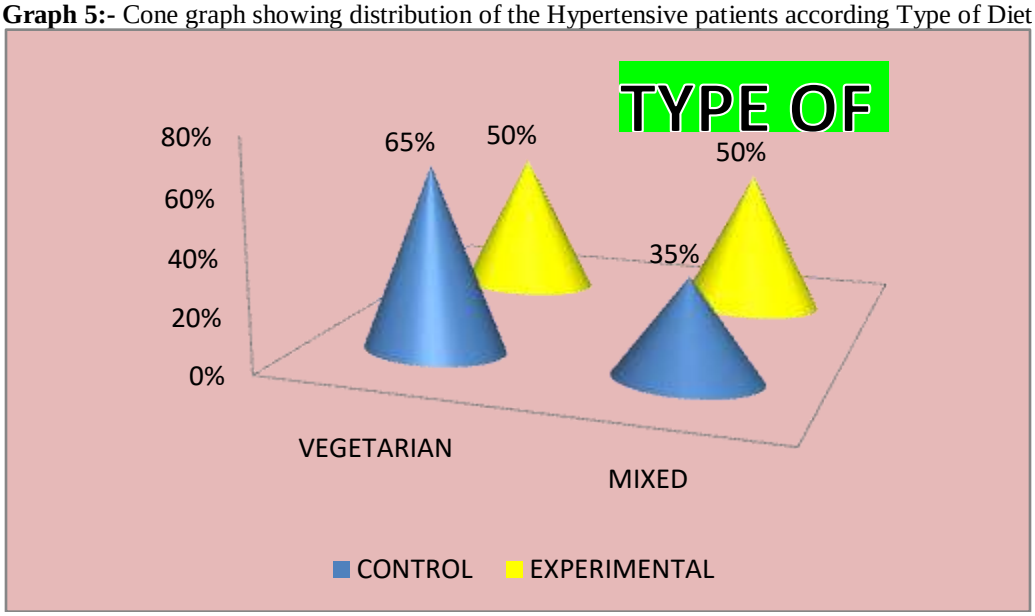
Graph 4:- Bar graph showing distribution of Parent's with history of Hypertension.



The above diagram depicts that, in control group majority of samples 8 (40%) did not have any family history of hypertension, 5 (25%) had maternal history of hypertension and 7 (35%) had paternal history of hypertension.

In experimental group, majority of samples 7 (35%) were having paternal & maternal history of hypertension respectively and 6 (30%) did not have any family history of hypertension.

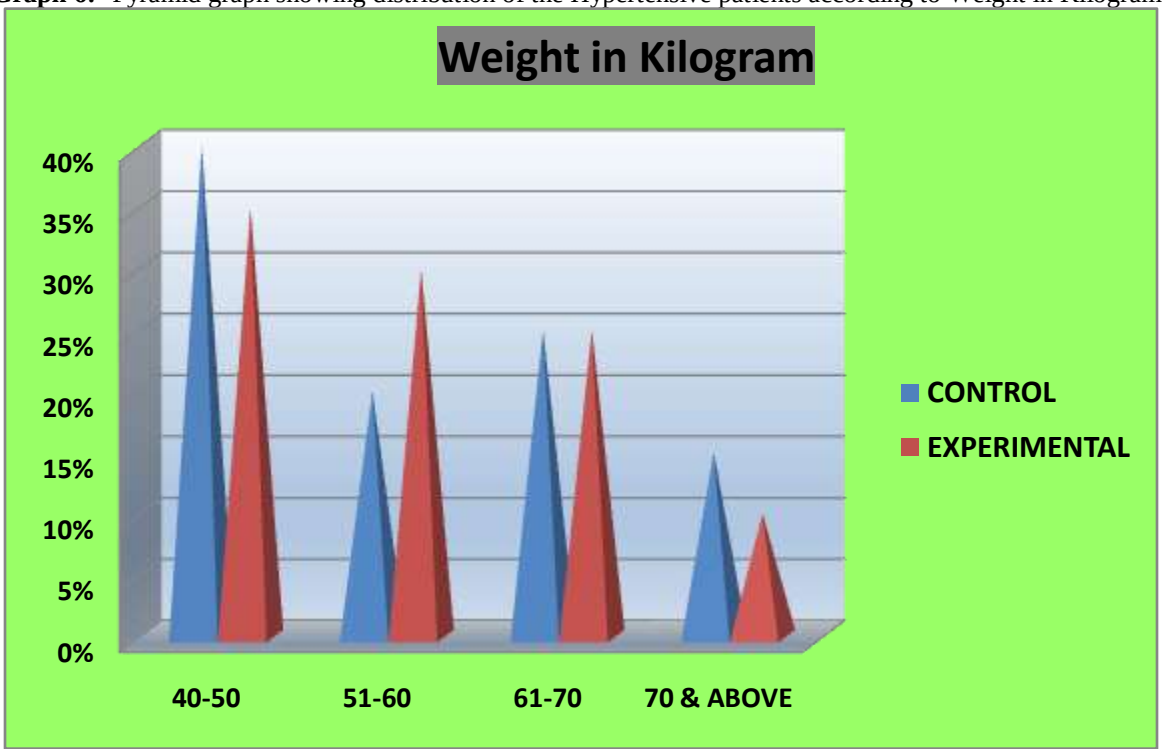
Graph 5:- Cone graph showing distribution of the Hypertensive patients according Type of Diet



The above diagram depicts that, in control group 13(65%) were vegetarian and 7(35%) were mixed diet.

In experimental group, 10(50%) were vegetarian and 10(50%) were mixed diet.

Graph 6:- Pyramid graph showing distribution of the Hypertensive patients according to Weight in Kilogram.



The above diagram depicts that, in control group majority of samples 8(40%) weight between 40-50kg, 4(20%) weight between 51-60 kg, 5(25%) weight between 61-70kg and 3(15%) weight 70kg & above.

In experimental group, according to weight in Kg majority, 7 (35%) had weighed between 40-50 kg, 6 (30%) were in 51-60kg weighed group, 5 (25%) were in 61-70kg weighed group and 2 (10%) had weighed between 70 & above.

Analysis of data findings related to the effectiveness of pomegranate juice on blood pressure among hypertensive patients admitted in selected hospitals.

Section –II

Table 2:- Analysis of pre-test systolic and diastolic blood pressure in control and experimental group.

n=40

Day 5	Systolic					Diastolic				
	Mean	**S. D**	**S. E.**	**t-value**	**p-value**	**Mean**	**S. D.**	**S.E.**	**t- value**	**p- value**
CONTROL	170.5	9.44	2.11	0.545	0.588	98	8.33	1.86	0.595	0.555
EXPERIMENTAL	169	7.88	1.76			99.5	7.59	1.69		

The above table depicts that, in control group the mean pre-test Systolic Blood Pressure was 170.5 with standard deviation ±9.44 and the mean pre-test Systolic Blood Pressure of experimental group was 169 with standard deviation ±7.88.

The test statistics value of the unpaired t test was 0.5455 with p value 0.5886.

Here p value is more than 0.05, there was no significant difference in the Systolic Blood Pressure in control and experimental group.

Incontrol group, the mean pre-test Diastolic Blood Pressure was 98 with standard deviation ±8.33 and in experimental group the mean pre -test Diastolic Blood Pressure was 99.5 with standard deviation ±7.59.

The test statistics value of the unpaired t test was 0.5953 with p value 0.5552.

Here p value is more than 0.05, there was no significant difference in the Diastolic Blood Pressure in control and experimental group.

This concludes that there is no significant difference in blood pressure among control and experimental group. Hence, both the groups are homogeneous.

Table 3:- Comparison of pre- test and post- test of systolic and diastolic blood pressure in experimental group

n=20

BLOOD PRESSURE		**Experimental**				
		Mean	**S. D.**	**S.E.**	**t- value**	**p- value**
SYSTOLIC	**Pre- Test**	169	7.88	1.76	22.800	0.0001
	Post- Test	118	6.15	1.37		
DIASTOLIC	**Pre- Test**	99.5	7.59	1.69	11.255	0.0001
	Post- Test	79.5	6.04	1.35		

The above table depicts that, in experimental group the mean pre- test Systolic Blood Pressure was 169 with standard deviation ±7.88 and the mean post- test systolic blood pressure was 118 with standard deviation ±6.15.

The test statistics value of the paired t test was 22.80 with p value 0.0001.

In control group the mean pre- test diastolic blood pressure was 99.5 with standard deviation ±7.59 and the mean post- test diastolic blood pressure was 79.5 with standard deviation ±6.04.

The test statistics value of the paired t test was 11.25 with p value 0.0001.

As p value is less than 0.05, Hence H_0 null hypothesis is rejected and alternative hypothesis (H_1) is accepted. Therefore, there was significant difference in blood pressure among hypertensive patients in experimental group.

Section -III

Analysis of data findings related to comparison of blood pressure among hypertensive patients of control and experimental group.

Table 4:- Comparison of post-test systolic and diastolic blood pressure of control and experimental group.

n=40

Day 5	Systolic					Diastolic				
	Mean	**S. D**	**S. E.**	**t-value**	**p-value**	**Mean**	**S. D.**	**S.E.**	**t-value**	**p- value**
CONTROL	143.5	7.45	1.66	11.79	0.0001	87	7.32	1.63	3.53	0.0011
EXPERIME-NTAL	118	6.156	1.376			79.5	6.04	1.35		

The above table depicts that, in control group the mean post-test Systolic Blood Pressure of was 143.5 with standard deviation ±7.45 and in experimental group the mean post-test Systolic Blood Pressure of was 118 with standard deviation ±6.15.

The test statistics value of the unpaired t test was 11.79 with p value 0.00.

Here p value is less than 0.05, hence H_0 null hypothesis is rejected and alternative hypothesis (H_1) is accepted. Therefore, there was significant difference in the Systolic Blood Pressure of the experimental group.

The mean post-test Diastolic Blood Pressure of control group was 87 with standard deviation ±7.32 whereas the mean post-test Diastolic Blood Pressure of experimental group was 79 with standard deviation ±6.04

The test statistics value of the unpaired t test was 3.53 with p value 0.00.

Here p value is less than 0.05, hence H_0 null hypothesis is rejected and alternative hypothesis (H_1) is accepted. Therefore, there was significant difference in the Diastolic Blood Pressure of the experimental group.

This concludes that pomegranate juice was effective in reducing blood pressure among hypertensive patients.

Discussion:-

The present study was design to assess the effectiveness of pomegranate juice in reducing blood pressure among hypertensive patients in selected hospitals.

The study design used was experimental in nature. Data was collected from 40 hypertensive patients.

The findings of the study are discussed with reference to the objectives and findings of the similar studies. Discussion of findings is presented as demographic variables, assessment of blood pressure and effectiveness of carrot juice among hypertensive patients.

In present study the mean post-test systolic blood pressure of experimental group 118 with standard deviation ± 6.15. The mean post-test Diastolic Blood Pressure of experimental group was 79 with standard deviation ±6.04.

Similar study was conducted to determine the effect of the breathing exercise on blood pressure among CRF patients. 60 samples were selected by non- probability purposive sampling technique. The study findings showed

that the obtained value was less than p <0.05 level. This concludes that the breathing exercise was effective in reducing the level of blood pressure among patients with Chronic Renal Failure[33].

Conclusion:-

The study concluded that the alternative treatment of hypertensive is to use non pharmacological therapy. Pomegranate is a fruit which has active and efficacious compounds to lower blood pressure. It is cost effective, easy, simple and palliative. The sample who consumed pomegranate juice felt it was tasty and made difference in blood pressure. The researcher suggests to health workers in health centres to improve non pharmacological management of pomegranate juice as complementary therapy in patients with hypertension. Thus, pomegranate juice was effective in reducing blood pressure in hypertensive patients.

Recommendations:-

On the basis of findings and the experiences while conducting the study the following recommendation are offered for further research

- The same study can be replicated using large sample.
- Effectiveness of pomegranate juice can be compared with other complementary therapies to find its effectiveness.
- A similar study can be conducted for longer duration.
- The same study can be conducted in different settings.

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