

A Study to Assess the Effectiveness of Hibiscus Sabdariffa on Hypertensive Patients in Rural Area

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ABSTRACT

The present study aim was the assess the effectiveness of hibiscus sabdariffa on hypertensive patients in rural area. A Quantitative research approach and Quasi experimental pre-test and post-test control group design have adopted for the present study. 60 participants were selected who are satisfied with inclusion criteria whereas 30 samples in experimental group other 30 sample were in control group, they were selected by convenient sampling technique. A structured questionnaire method to collect the demographic variables and clinical variables, blood pressure is assessed by the sphygmomanometer. Among 60 patient, 30 hypertensive patient participated in the reveals the pretest mean score was 1.83 ± 0.36 and the post-test mean score was 1.23 ± 0.66 in systolic blood pressure and the pretest mean score was 1.4 ± 0.48 and post-test mean score was 0.5 ± 0.40 in diastolic blood pressure. Paired t test to compare the pre and posttest level of blood pressure among experimental group. The present study regard to the pre and post-test level of systolic blood pressure among experimental group it was found that the t value was 5.86, With regard to the pre and post-test level of diastolic blood pressure among experimental group it was found that the t value was 12.3, indicating that the rewash a highly significant reduction in post-test level of blood pressure among the experimental group at $p < 0.05$ level. The present study reveals the pretest mean score was 1.83 ± 0.53 and the post-test mean score was 1.96 ± 1.6 in systolic blood pressure and the pretest mean score was 1.26 ± 0.49 and post-test mean score was 0.22 ± 0.71 in diastolic blood pressure. paired t test to compare the pre and post-test level of blood pressure among control group. With regard to the pre and post-test level of systolic blood pressure among control group it was found that the t value was 2.35, With regard to the pre and post-test level of diastolic blood pressure among control group it was found that the t value was 2.48, indicating that there was no significant reduction in post-test level of blood pressure among the control group at $p < 0.05$ level.

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KEYWORDS: Hibiscussabdariffa, hypertension, blood pressure, sphygmomanometer

INTRODUCTION

The heart is the critical organ of the cardiovascular framework - the body's vehicle framework for blood. A complex interaction exists between the nervous and cardiovascular systems (1) A muscle that agreements musically and independently, it works related to a broad organization of veins running all through the body. The heart has a center solid layer, the myocardium, comprised of cardiovascular muscle cells, and an internal

covering called the endocardium. Within the heart (heart depression) is partitioned into four chambers - two atria and two ventricles - isolated via cardiovascular valves that control the entry of blood. Cardiac output (CO) is the amount of blood pumped by the heart minute and is the mechanism whereby blood flows around the body, especially providing blood flow to the brain and other vital organs (9). Cardiac dynamics are traditionally linked to a

left ventricle, right ventricle, and septum morphology, a topography that differs from the heart's five-century-old anatomic description of containing a helix and circumferential (10). Hypertension, a chronic illness is a growing condition in our society, due to lifestyle changes once it is diagnosed its control basically depends on adapting a healthy lifestyle and therapeutic compliance (2). Hypertension (or HTN) or hypertension is characterized as unusually high blood vessel circulatory strain. Hypertension is a major public health problem and important area of research due to its high prevalence and being major risk factor for cardiovascular diseases and other complications (3). It presents the latest on a range of major clinical heart and circulatory disease conditions including stroke, congenital heart disease, rhythm disorders, subclinical atherosclerosis, coronary heart disease, heart failure (7). The prevalence of hypertension (HTN) is increasing in the middle-aged population (4). As per the Joint National Committee 7 (JNC7), ordinary circulatory strain is a systolic BP < 120 mmHg and diastolic BP < 80 mm Hg. Hypertension is characterized as systolic BP level of ≥ 140 mmHg as well as diastolic BP level ≥ 90 mmHg. The hazy situation falling between 120-139 mmHg systolic BP and 80-89 mmHg diastolic BP is characterized as "prehypertension". It is anticipated to be expanded to 1.56 billion grown-ups with hypertension in 2025. hypertension is strongly correlated with adverse outcomes such as stroke, ischemic heart disease, heart failure, and end stage renal disease (5). Hypertension is among the first five causes of mortality, globally contributing more than 40% to cardiac related deaths worldwide (6). Hibiscus sabdariffa is a plant known in many countries and is consumed. In addition to its use in folk medicine (12). Hibiscussabdariffa decreases oxidative stress, atherosclerosis, lipid profile, and blood pressure (11). Hibiscus sabdariffa Linn. is a bush having a place with the is considered local family — Malvaceae. Fluid concentrate of petals shown antihypertensive and cardio protective impacts . Imbuement is likewise found to bring down both systolic and diastolic tension altogether in unexpectedly hypertensive and normotensive. The experimental agent, is a plant containing carbohydrates, proteins, fatty acids, flavonoid, minerals, and vitamin (8). Anthocyanins and hibiscus acid appear as the active compounds responsible for the antihypertensive effect of the HS calyx (13). the acute impact of HSC extract consumption on blood pressure (BP), vascular function and other cardiometabolic risk markers

(14). Tea of calyces showed 11.2% decrease in the systolic pulse what's more, 10.7% diminishing in diastolic pressure. The main uses of HS calyces are culinary, as a source of pigments for cosmetics and food applications, and medicinal in folk medicine to treat many ailments (15). A standardized extract has effective blood pressure lowering activity in hypertensive humans. A recent double blind, reference-controlled trial demonstrated significant reduction in blood pressure in the hibiscus group.

Methods and materials:

The study was quantitative research approach and quasi experimental pre - test and post- test control group research design with sample size of 60 hypertensive patient who are selected by convenient sampling technique and who fulfilled the inclusion criteria. The inclusion criteria where who attained Hypertensive patients of both sexes between 35 to 64 years of age. Hypertensive patients who have the pre and stage I hypertension (systolic blood pressure level between 121mm Hg to 160mm Hg and diastolic blood pressure level between 81mm of hg to 100mm of Hg). Hypertensive patients who are able to understand Tamil and English. Exclusive Criteria was Hypertensive patients whose blood pressure above 160/100mm of Hg. Hypertension associated with other systemic illness. Hypertensive patients with Complications. Hypertensive patients who are not willing to participate. Hypertensive patients who have regular medications. Hypertensive patients who have other herbal treatment. The study was conducted in rural area. Structured questionnaire was used to collect the demographic variables, clinical variable, scoring and interpretation to assess the blood pressure level of hypertensive patient. . Hibiscus sabdariffa was prepared by the method of hibiscus flower mixed boiled with water and is given to the clients for 7 consecutive days at three times per day to the experimental group. The control group was not received any intervention. After seven days of intervention the blood pressure level was checked in experimental and control group.

RESULT AND DISCUSSION:

SECTION A: DESCRIPTION OF demographic variables of patient with hypertension

In the present study, the frequency and percentage distribution of the samples based on demographic variables 1 shows that most of the older people aged between 35-44 years 15(50%) in the experimental group, where as in control group 55-64 years of old age people were 11(37%) are the major. While considering the sex in experimental group 17(57%) females were the majority people

whereas in the control group 19(63%) were majority.

Religion Christian are major 10(33%) in the experimental group, muslim 20(67%) are major in the control group. While considering education illiterate 10(33%) are major in experimental group whereas in control group 11(37%) are higher education are major. Occupation sedentary workers are major 13(43%) in both experimental and control group 16(53%). Dietary habits non vegetarian in experimental group 19(63%) where as in control group non vegetarians are major 16 (53%). Based on the income in experimental group above rupees 5000 17 (57%) in control group above rupees 5000 are major 17(57%). In the family history of hypertention has absent 18 (60%) in the experimental group where as in control group 20 (67%) is absent where major. Body build is major thin body and thin body weight is major 12 (40%) in experimental group in the control group moderate body weight is major 15(50%). Life style practice smoking of the are major 11 (37%) in experimental

where as in control group alcoholism and smoking is major 9(30%).

SECTION B: TO COMPARE THE PRE TEST AND POST-TEST LEVEL OF BLOOD PRESSURE AMONG HYPERTENSIVE IN EXPERIMENTAL AND CONTROL GROUP
Comparison of the pre and post-test level of blood pressure among experimental group.

In the present study, the reveals the pretest mean score was 1.83 ± 0.36 and the post-test mean score was 1.23 ± 0.66 in systolic blood pressure and the pretest mean score was 1.4 ± 0.48 and post-test mean score was 0.5 ± 0.40 in diastolic blood pressure. the paired t test to compare the pre and post-test level of blood pressure among experimental group. With regard to the pre and post-test level of systolic blood pressure among experimental group it was found that the t value was 5. 86, With regard to the pre and post-test level of diastolic blood pressure among experimental group it was found that the t value was 12. 3, indicating that there was a highly significant reduction in post-test level of blood pressure among the experimental group at $p < 0.05$ level.

S. No	Blood Pressure	Pre Test		Post Test		Paired Difference		T Value
		Mean	Standard Deviation	Mean	Standard Deviation			
1	Systolic	1.83	0.36	1.23	0.66	0.6	0.56	5.86 S
2	Diastolic	1.4	0.48	0.5	0.5	0.9	0.40	12.3 S

TABLE 1: Comparison of the pre and post-test level of blood pressure among experimental group.

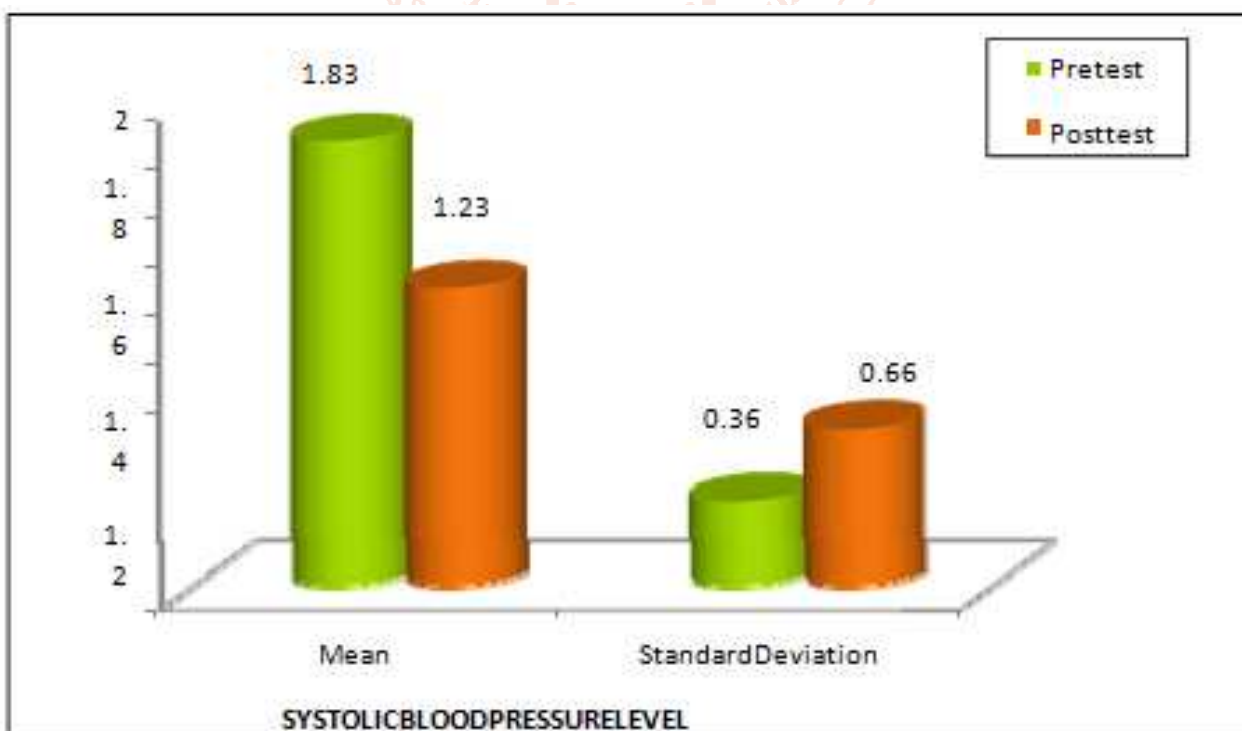


Figure1: Comparison of the pre and post-test level of Systolic blood pressure among experimental group.

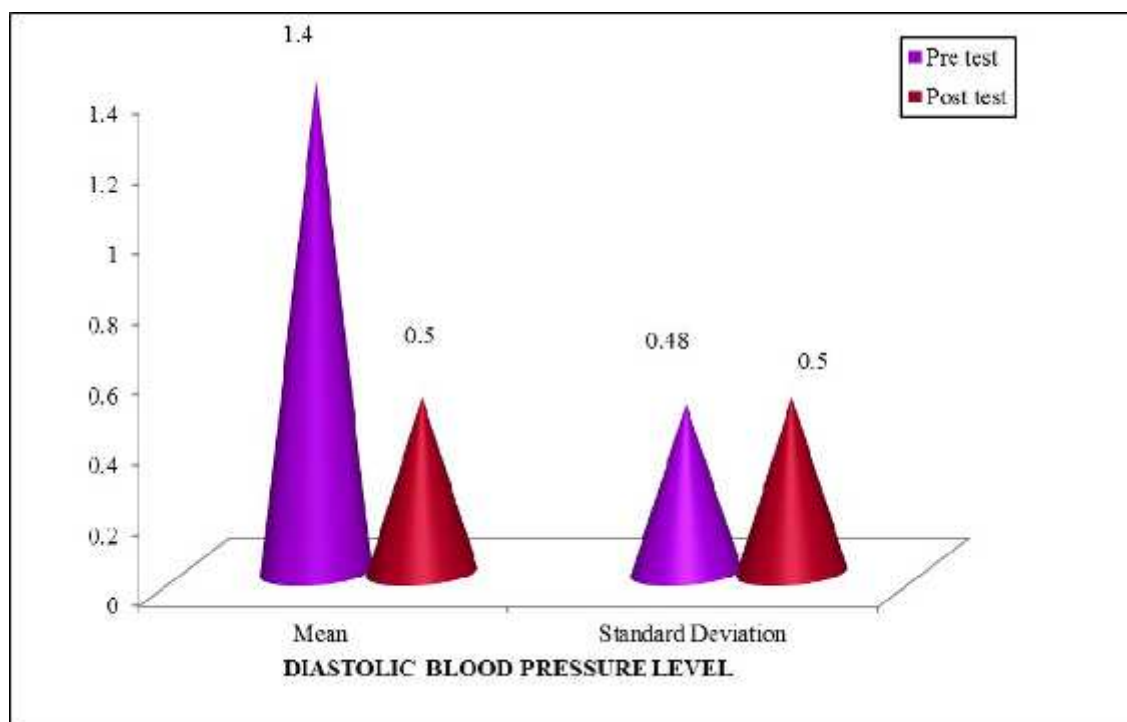


Figure2: Comparison of the pre and posttest level of Diastolic blood pressure among experimental group.

Comparison of the pre and post-test level of blood pressure among control group

In the present study, reveals the pre-test mean score was 1.83 ± 0.53 and the post-test mean score was 1.96 ± 1.6 in systolic blood pressure and the pre-test mean score was 1.26 ± 0.49 and post-test mean score was 0.22 ± 0.71 in diastolic blood pressure. Paired t test to compare the pre and post-test level of blood pressure among control group. With regard to the pre and post-test level of systolic blood pressure among control group it was found that the t value was 2.35, With regard to the pre and post-test level of diastolic blood pressure among control group it was found that the t value was 2.48, indicating that there was no significant reduction in post-test level of blood pressure among the control group at $p < 0.05$ level.

In the present study findings supported by the comparative study by Majidjalalyazdi et al (2019) among 46 patients were divided into two experimental and control group, Twenty-three patients in experimental group received nonmedical treatment advices and two standard cup of sour tea (each cup with one sour tea bag containing 1.25 g H. sabdariffa (480 mL/d)) every day morning and night for 1 month. The manometer cuff was putted on brachial artery as its edge was 2 cm upper the elbow brachial artery pulse. Blood pressure was taken in sited position for three times with 5 min' intervals. The average of three attempts was recorded. A total of 46 patients participated in this study and there was no significant difference in terms of age and body mass index between groups. There was a

significant reduction in systolic blood pressure in both groups, but the mean reduction in systolic and diastolic blood pressure was significantly higher in the case group ($P = 0.004$ and $P < 0.001$, respectively). Using H. sabdariffa as sour tea two times a day can be effective in managing blood pressure in stage one hypertension along with lifestyle and dietary modification.

In the present study findings supported by the comparative study by Marwah Al-Anbaki et al (2021) the hibiscus sabdariffa, a treatment for uncontrolled hypertension, The feasibility of using Hibiscus sabdariffa (HS) decoction to curb hypertension was evaluated. A multicentric comparative pilot intervention for 121 participants with high blood pressure (BP) ($\geq 140/90$ mmHg) was conducted. Participants of the intervention group (with or without conventional medication) received HS decoction on a dose regimen starting from 10 grams per day. BP was measured five times over six weeks. The major active substances were chemically quantified. Results: After 6 weeks, 61.8% of participants from the intervention group ($n = 76$) reached the target BP $< 140/90$ mmHg, compared to 6.7% in the control group ($n = 45$). In the intervention group, a mean (\pm SD) reduction of 23.1 (± 11.8)

mmHg and 12.0 (± 11.2) for systolic and diastolic BP, respectively, was observed, while in the control group the reduction was 4.4 (± 10.2)/3.6 (± 8.7). The chemical analysis of the starting dose indicated a content of 36 mg of total anthocyanins and 2.13 g

of hibiscus acid. The study shows the feasibility of using HS decoction in IDP's problematic framework, as hibiscus is a safe, local, affordable, and culturally accepted food product.

SECTION C: ASSOCIATION OF POSTTEST LEVEL OF BLOOD PRESSURE IN EXPERIMENTAL AND CONTROL GROUP WITH DEMOGRAPHIC VARIABLES.

Association of post-test level of blood pressure in experimental group with demographic variables

In the present study, the chi-square test to associate the post-test level of blood pressure with the selected demographic variables like age, gender, educational studies, occupation, income, dietary habits, religion, family history of hypertension, body built, lifestyle practice in the experimental group. While analyzing the statistical significance at ($P < 0.05$) level it shows that there was significant association of the post-test level of blood pressure with the selected demographic variables at $P < 0.05$ level. Hence the research hypothesis was accepted.

Association of Post-test Level of Blood Pressure in Control Group with Demographic Variables.

The present study, reveals the chi-square test to associate the post-test level of blood pressure with the selected demographic variables like, age, sex, religion, education, Occupation, Dietary habits, Income, Family history of hypertension, Body build, life style practice in the control group. While analyzing the statistical significance at ($P < 0.05$) level it shows that there was significant association of the post-test level of blood pressure with the selected demographic variables which was significance at $P < 0.05$ level.

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AUTHOR'S CONTRIBUTION:

All the authors actively participated in the work of the study. All authors read and approved the final manuscript.

CONCLUSION:

In the present study, This study assessed the effectiveness of Hibiscus sabdariffa in terms of blood pressure reduction among the hypertensive patients. The study findings revealed that there is a significant association on the level of blood pressure after administration of hibiscus sabdariffa in the experimental group. On the basis of the study, the researcher concluded that administration of hibiscus sabdariffa has a significant effect on reduction of

blood pressure. Hibiscus sabdariffa is an effective, natural, easily available, easy to use and potentially risk free intervention.

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