

Original Research Article

Effect of moringa powder on blood pressure among hypertensive patients

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ABSTRACT

Background: Hypertension, which is an increase in blood pressure, has a prevalence based on Riskesdas in 2018 at the age ≥ 18 years, which is around 34.1%. Various treatment methods have been developed because if hypertension is not treated it can cause symptoms and serious complications.

Methods: The study was conducted by using quantitative research approach and a Quasi experimental pre-test and post-test control research design was used. Total 40 participants (20 experimental and 20 control group) were selected by non-probability purposive sampling technique. Established the content validity of the tool from 22 experts of different areas. Corrections were made as per the suggestion and the final tool was prepared. The reliability coefficient was done by using test-retest method and 'r' value is "0.9" which is more than 0.7 so tool found that reliable.

Results: Experimental group mean was 143, standard deviation (SD) was 4.7016 and in control group mean was 172.5 and SD was 9.1046 and t-value Was 12.8748 and p value was $0.00001 < 0.05$ is the systolic blood pressure among hypertensive patients and diastolic blood pressure in experimental group mean was 91, SD was 3.0779 and in control group mean was 107.5 SD was 7.8639 and p value is $0.00001 < 0.05$.

Conclusions: This reveals the systolic and diastolic BP after giving moringa powder on blood pressure among hypertensive patients was effective according to post-test in experimental and control group.

Keywords: Hypertension, Moringa powder, Quasi experimental test

INTRODUCTION

Our health is a gift from God, but we often take it for granted until we become ill. We are concerned about the growing global burden of lifestyle-related diseases. Urbanization, industrialization, and cultural changes have had a significant impact on our way of life, causing us to deviate from the ideal of comfort. On the other hand, food preferences have evolved.¹ Eating artificially preserved and junk food, along with lifestyle changes and stress, can lead to health issues such as high blood pressure, diabetes, cardiac disease, and obesity. Early identification and treatment can prevent these disorders and improve

both physical and mental health. Hypertension affects approximately 15-37% of adults worldwide. Up to 50% of individuals over 60 may be hypertensive. Women with hypertension are 3.5 times more likely to develop chronic heart disease than those with normal blood pressure. According to Mukhopadhyay et al (2008), non-communicable diseases are expected to account for over 75% of deaths. According to Potter et al (2009), pressure changes in the circulatory system facilitate the movement of blood from high to low pressure areas.²⁻³

One of the alternative medicines that has been proven to lower blood pressure comes from the plant, namely

Moringa. The efficacy of Moringa leaves as an antihypertensive has been proven in several studies so a literature study using a systematic review method is needed to evaluate the results of various relevant studies related to the compounds, effectiveness, and mechanism of action of Moringa leaves as an alternative treatment for treating hypertension.⁴

METHODS

Study design

The present study was conducted by using quantitative research approach and a Quasi experimental pre-test and post-test control group research design.

Place of study

The study was conducted in Vijaynagar, Vishrambag and Sangalwadi area of Sangli city, Maharashtra, India.

Study period

The study was conducted between 13th April 2026 to 6th May 2026.

Sampling technique

Non-probability purposive sampling technique was used to collect data.

Target population

The target population of the study comprises all hypertensive patients residing in the selected community/area.

Accessible population

The accessible population comprises hypertensive patients available in the selected community/health-care setting who fulfil the eligibility criteria during the period of data collection.

Inclusion criteria

The study participants should be diagnosed with hypertension; willing to participate in the study; available during the period of data collection; able to understand English or Marathi; willing to provide written informed consent.

Exclusion criteria

Participants will be excluded if they have other significant comorbidities that may affect blood pressure or the study intervention; unavailable for the complete intervention and post-test assessment; condition requiring immediate medical/emergency management.

Sample size

Total 40 samples with (20 experimental and 20 control group) were selected.

Data collection technique

Permission will be obtained from the concerned authority and Institutional Ethics Committee before starting data collection. Eligible hypertensive patients will be identified according to the inclusion and exclusion criteria. Participants will be selected using non-probability purposive sampling. On day 1, baseline blood pressure will be assessed for both the experimental and control groups. The experimental group will receive 50 ml of prepared moringa powder water twice daily from day 1 to day 7, while the control group will receive routine care. The uploaded study describes preparation using 2 g moringa powder with 100 mL water, boiled and reduced to 50 ml. On day 8, blood pressure will be reassessed in both experimental and control groups.

RESULTS

Table 1 shows that, among 40 participants, majority of them 8 (40%) in experimental group and 7 (35%) in control group belongs to age group 56-60 yrs, most of 11 (55%) in experimental group and 12 (60%) in control group were female. Majority of them 10 (50%) in experimental group and 12 (60%) in control group had hypertension 1-5 yrs. long.

Table 1: Frequency and percentage distribution of demographical variables in experimental and control group.

Demographic variables		Experimental group		Control group	
		F	Percent	F	Percent
Age (in years)	40-45	3	15	5	25
	46-50	2	10	6	30
	51-55	7	35	2	10
	56-60	8	40	7	35
Gender	Male	9	45	8	40
	Female	11	55	12	60
Duration of hypertension in years	Below 1	0	0	0	0
	1-5	10	50	12	60
	6-10	8	40	6	30
	11-15	2	10	2	10
	16-20	0	0	0	0

F=Number of participants

Table 2 shows that, by observation systolic and diastolic BP range among hypertensive patients before giving moringa powder on blood pressure in experimental and control group following results were obtained. According to day 1, most of the patients 10 (50%) in experimental group and 13 (65%) in control group had moderate range of systolic BP. And most of the patients 15 (75%) in

experimental group and 13 (65%) in control group faces moderate level diastolic blood pressure.

Table 2: Assessment of moringa powder on blood pressure among hypertensive patients in experimental and control group before intervention.

Aspects	Pre- test											
	Systolic blood pressure						Diastolic blood pressure					
	140-159 (Stage 1)		160-179 (Stage 2)		>180 (hypertensive crisis)		90-99 (Stage 1)		100-119 (Stage 2)		>120 (hypertensive crisis)	
	F	Percent	F	Percent	F	Percent	F	Percent	F	Percent	F	Percent
Experimental group	0	0	10	50	10	50	0	0	15	75	5	25
Control group	0	0	13	65	7	35	1	5	13	65	6	30

F=Number of participants

Table 3 shows that, by observation systolic and diastolic BP range among hypertensive patients after giving moringa powder on blood pressure in experimental and control group following results are obtained that, According to day 8, all of the patients 20 (100%) in

experimental group had mild and most of the 13 (65%) in control group had moderate range of systolic BP and most of the patients 18 (90%) in experimental group faces mild and 16 (80%) in control group moderate range of diastolic BP.

Table 3: Assessment of moringa powder on blood pressure among hypertensive patients in experimental and control group after intervention.

Aspects	Post- test											
	Systolic blood pressure						Diastolic blood pressure					
	140-159 (Stage 1)		160-179 (Stage 2)		140-159 (Stage 1)		160-179 (Stage 2)		140-159 (Stage 1)		160-179 (Stage 2)	
	F	Percent	F	Percent	F	Percent	F	Percent	F	Percent	F	Percent
Experimental group	20	100	0	0	0	0	18	90	2	10	0	0
Control group	0	0	13	65	7	35	0	0	16	80	4	20

F=Number of participants

Table 4 shows that, according to day 8, after giving moringa powder on systolic blood pressure among hypertensive patients in experimental group mean was 143, S.D. was 4.7016 and in control group mean was 172.5, S.D. is 9.1046 and t- value was 12.8748 and p

value is 0.00001 <0.05. According to day 8, after giving moringa powder on diastolic blood pressure among hypertensive patients in experimental group mean was 91, S.D. was 3.0779 and in control group mean was 107.5, S.D. was 7.8639 and t-value is 8.7378 and p-value is 0.00001 <0.05.

Table 4: Comparison of post- test score of effectiveness of moringa powder among hypertensive patients in experimental and control group.

Blood pressure	Group	Mean	S.D.	t- value	P value	Significance
Systolic	Experimental	143	4.7016	12.8748	0.00001 < 0.05	Significant
	Control	172.5	9.1046			
Diastolic	Experimental	91	3.0779	8.7378	0.00001 < 0.05	Significant
	Control	107.5	7.8639			

DISCUSSION

The study was conducted with a small sample size of 40 hypertensive patients, with 20 participants in the experimental group and 20 in the control group; therefore, the findings may not be generalized to all hypertensive patients. Non-probability purposive sampling was used for participant selection, which may limit the generalizability of the findings. The study was conducted

for a short intervention period of seven days, with post-test assessment performed on the present study was conducted to assess the effectiveness of moringa powder on blood pressure among hypertensive patients. A quantitative research approach with a quasi-experimental pre-test and post-test control-group design was adopted. Forty hypertensive patients were selected, with 20 participants assigned to the experimental group and 20 to the control group.⁵

Discussion of demographic characteristics

The demographic findings showed that in the experimental group, the largest proportion of participants, 8 (40%), belonged to the 56-60 years age group, while in the control group, 7 (35%) belonged to the same age group. Females constituted 55% of the experimental group and 60% of the control group. Regarding duration of hypertension, 50% of participants in the experimental group and 60% in the control group had hypertension for 1-5 years. These findings indicate that a considerable proportion of participants were older adults and had been living with hypertension for several years.⁶⁻⁸

Discussion of pre-test blood pressure

Before the intervention, 10 (50%) participants in the experimental group and 13 (65%) in the control group had systolic blood pressure in the moderate range reported in the study. Regarding diastolic blood pressure, 15 (75%) participants in the experimental group and 13 (65%) in the control group were in the moderate range. These findings demonstrate that both groups had elevated blood pressure before the intervention, providing a baseline for comparison.⁹

Discussion of post-test blood pressure

Following the intervention, a considerable reduction in blood pressure was observed in the experimental group. On day 8, all 20 (100%) participants in the experimental group were reported to have systolic blood pressure in the mild range, whereas 13 (65%) participants in the control group remained in the moderate range. For diastolic blood pressure, 18 (90%) participants in the experimental group were in the mild range compared with 16 (80%) participants in the control group in the moderate range. The findings suggest that the administration of moringa powder was associated with improvement in blood pressure among participants in the experimental group.^{10,11}

Discussion of effectiveness

The post-test comparison demonstrated a statistically significant difference between the experimental and control groups. The mean systolic blood pressure was 143 mmHg in the experimental group compared with 172.5 mmHg in the control group. The obtained t value was 12.8748, with a p value of 0.00001, which was statistically significant at the 0.05 level.

Similarly, the mean diastolic blood pressure was 91 mmHg in the experimental group compared with 107.5 mmHg in the control group. The t value was 8.7378, with a p value of 0.00001, indicating a statistically significant difference.¹²⁻¹⁵

Overall, the present findings support the potential usefulness of moringa powder as a complementary

approach for blood pressure management. However, the findings should be interpreted cautiously because of the small sample size, purposive sampling, short intervention period, and selected study setting.

The study was limited to day 8 of follow-up; therefore, the long-term effectiveness of moringa powder in controlling blood pressure could not be established. Furthermore, patients with comorbidities were excluded, which may limit the generalizability of the findings to hypertensive patients with coexisting health conditions.

CONCLUSION

The present study was conducted to assess the effectiveness of moringa powder on blood pressure among hypertensive patients. The study used a quasi-experimental pre-test and post-test control-group design with 40 participants, comprising 20 participants in the experimental group and 20 in the control group. The findings demonstrated a significant difference in post-test systolic and diastolic blood pressure between the experimental and control groups. The experimental group had a lower mean systolic blood pressure (143 mmHg) and mean diastolic blood pressure (91 mmHg) compared with the control group, with statistically significant p values of 0.00001 (<0.05). Thus, the study concludes that moringa powder was effective in reducing systolic and diastolic blood pressure among the hypertensive patients included in the study. The findings suggest that moringa powder may have potential as a complementary measure in hypertension management. However, larger studies using probability sampling, longer follow-up periods, and more diverse populations are needed to establish its long-term effectiveness and generalizability.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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