

# Effect of topical bay leaf oil application on varicose veins: A Quasi-Experimental Study

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## ABSTRACT

### Introduction:

Varicose veins are a common chronic venous disorder affecting a significant portion of the adult population, particularly individuals with prolonged standing occupations. Complementary therapies such as herbal oils are increasingly explored for symptom management.

### Methods:

A quantitative quasi-experimental pre-test–post-test control group design was adopted. Sixty patients diagnosed with varicose veins were selected using purposive sampling and divided into experimental (n=30) and control (n=30) groups. The experimental group received topical application of bay leaf oil twice daily for 14 days, while the control group received routine care. The Venous Clinical Severity Score (VCSS) was used for assessment. Data were analyzed using descriptive and inferential statistics including paired t-test.

### Results:

Post-test findings showed significant improvement in the experimental group, with 70% of participants exhibiting mild symptoms compared to 40% in the control group. The mean post-test score in the experimental group ( $1.37 \pm 0.61$ ) was significantly lower than the control group ( $1.77 \pm 0.73$ ) ( $t = -2.30, p < 0.05$ ).

### Discussion:

The study demonstrates that bay leaf oil application is an effective, safe, and economical complementary therapy for reducing symptoms of varicose veins.

### Keywords:

Effect, Topical, Application, Varicose veins, Bay leaf oil

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## INTRODUCTION

Varicose veins are dilated, tortuous superficial veins primarily affecting the lower extremities and are associated with venous valve incompetence and impaired blood circulation. They are highly prevalent, affecting approximately 15–30% of the adult population, with higher incidence among women and individuals engaged in prolonged standing occupations. The condition leads to symptoms such as pain, heaviness, swelling, cramps, and skin changes, significantly impairing quality of life. Conventional treatments such as surgery and sclerotherapy are effective but often costly and associated with recurrence and complications. In recent years, there has been growing interest in complementary and alternative therapies. Herbal remedies, particularly bay leaf (*Laurus nobilis*), possess anti-inflammatory, analgesic, and circulation-enhancing properties, making them a potential non-invasive treatment option. This study was conducted to evaluate the effectiveness of bay leaf oil application in reducing symptoms of varicose veins among patients in selected hospitals.

## MATERIALS AND METHODS

### Research Design

A quantitative quasi-experimental pre-test–post-test control group design was used.

### Setting and Population

The study was conducted in selected hospitals of Sangli, Miraj, and Kupwad. Corporation area. The population included patients diagnosed with varicose veins.

### Sample and Sampling Technique

A total of 60 participants were selected using purposive sampling: Experimental group: 30, Control group: 30

### Inclusion Criteria

- Patients aged 30–60 years diagnosed with varicose veins.
- Individuals with visible veins and associated pain.
- Who are able to understand Marathi, English and Hindi.

### Exclusion Criteria

- Patients with very severe impact of varicose veins.

- Not willing to participate and provide informed written consent.

**Intervention**

Bay leaf oil was prepared using dried leaves and coconut oil. It was applied twice daily for 14 days to the experimental group. The control group received routine care .

**Data Collection Tool**

The Venous Clinical Severity Score (VCSS) was used to assess the severity of symptoms among participants with varicose veins.

**Validity and Reliability**

Content validity of the tool was established by experts in the field. The reliability coefficient of the tool was  $r = 0.86$ , indicating good reliability.

**Ethical Considerations**

Ethical approval was obtained from the concerned authority before data collection. Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the study.

**Data Analysis**

Data were analyzed using descriptive and inferential statistics. Frequency, mean, and standard deviation were used for descriptive analysis, while the paired *t*-test was used to assess the effectiveness of the intervention.

**RESULTS**

**Table 4.1: Frequency and Percentage Distribution of Demographic Variables**

(n = 30+30)

			Experimental Group		Control Group	
S. No	Demographic Variable	Category	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Age (in years)	30–40	10	33.3%	11	36.7%
		41–50	12	40.0%	13	43.3%
		51–60	8	26.7%	6	20.0%
2	Gender	Male	14	46.7%	13	43.3%
		Female	16	53.3%	17	56.7%
3	Occupation Type	Standing Jobs	18	60.0%	19	63.3%
		Sedentary Jobs	12	40.0%	11	36.7%
4	Duration of Symptoms	<6 months	9	30.0%	10	33.3%

			Experimental Group		Control Group	
S. No	Demographic Variable	Category	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
		6–12 months	13	43.3%	12	40.0%
		>1 year	8	26.7%	8	26.7%

- Most participants in both groups fall in the 41–50 years age range, with 40% in the experimental group and 43.3% in the control group.
- The next most common age group is 30–40 years, 33.3% of the experimental group and 36.7% of the control group.
- The 51–60 years, 26.7% in the experimental group and 20% in the control group.
- In the experimental group, just over half of the participants are female (53.3%), while 46.7% are male.
- Similarly, in the control group, 56.7% are female, and 43.3% are male.
- In the experimental group, 60% of the participants have standing jobs, while 40% have sedentary jobs.
- In the control group, 63.3% are involved in standing jobs, and 36.7% in sedentary jobs.
- In the experimental group, the highest number of participants (43.3%) had symptoms lasting between 6 to 12 months, followed by 30% with symptoms for less than 6 months, and 26.7% for more than a year.
- The control group shows a similar pattern, with 40% reporting symptoms for 6–12 months, 33.3% for less than 6 months, and 26.7% for over a year.

**Table II: Assessment of Pre-Test Scores of Varicose Veins in Both Groups**

Levels	PRE TEST SCORES			
	Experimental Group		Control Group	
	Frequency (f)	%	Frequency (f)	%
Mild	12	40%	11	36.6%
Moderate	13	43.3%	14	46.6%
Severe	5	16.7%	5	16.7%

(n=30+30)

The table shows the distribution of participants in both experimental and control groups based on

the severity of varicose veins before the intervention.

- In the Experimental Group, 40% had mild varicose veins, 43.3% had moderate varicose veins, 16.7% had severe varicose veins.
- In the Control Group, 36.6% had mild varicose veins, 46.6% had moderate varicose veins, 16.7% had severe varicose veins.

Both groups had a similar distribution in terms of severity levels before the intervention. The majority of participants in both groups had moderate-level varicose veins, followed by mild, and then severe cases. This indicates that both groups were comparable in terms of varicose vein severity at baseline, thus making them suitable for evaluating the effectiveness of the intervention.

**Table III: Assessment of Post-Test Scores of Varicose Veins in Both Group**

Levels	POST TEST SCORES			
	Experimental Group		Control Group	
	Frequency (f)	%	Frequency (f)	%
Mild	21	70%	12	40%
Moderate	7	23.3%	13	43.3%
Severe	2	6.7%	5	16.7%

The bar graph shows the post-test severity levels of varicose vein symptoms in both experimental and control groups:

- In the experimental group, a significant improvement is observed: 70% of participants had mild symptoms, 23.3% had moderate, and Only 6.7% had severe symptoms.
- In the control group, improvement was less pronounced: 40% were in the mild category, 43.3% remained moderate, and 16.7% were still severe.

**Table IV: Comparison of Post-Test Scores Between Experimental and Control Groups**

(n=30+30)					
Group	Mean Score	Standard Deviation	t-value	p-value	Level of Significance
Experimental Group	1.37	0.61	-2.30	0.025	p < 0.05 highly Significant
Control Group	1.77	0.73			

	Mean	SD	t	p	Significance
Experimental Group	1.37	0.61	-2.30	0.025	p < 0.05 highly Significant
Control Group	1.77	0.73			

These findings indicate a statistically significant improvement in the experimental group.

**DISCUSSION**

The findings demonstrate that bay leaf oil significantly reduces symptoms such as pain, swelling, and heaviness in patients with varicose veins. The improvement observed may be attributed to its anti-inflammatory and circulation-enhancing properties. The results are consistent with previous studies supporting the use of herbal remedies in managing venous disorders. Unlike invasive procedures, bay leaf oil offers a safe, cost-effective, and easily applicable alternative. The study also highlights the importance of integrating complementary therapies into nursing practice for holistic patient care.

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**DECLARATION OF INTEREST**

The authors declare no conflict of interest.

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