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Research Article

Effectiveness of Tulsi Leaves and Turmeric in Steam Inhalation to Relieve Symptoms of Common Cold

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I N F O

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A B S T R A C T

Common cold is one of the frequently occurring illness and affects people of all ages. There are many home remedies being used to treat common cold. One such home remedy is the use of Tulsi leaves and turmeric in steam inhalation. The main aim of the study was to evaluate the effectiveness of steam inhalation with Tulsi leaves and turmeric versus steam inhalation with plain water. A quantitative approach with quasi-experimental non- equivalent groups design was used. Sample comprised of 60 patients who were having common cold for not more than 2 days selected through purposive sampling. Study subjects in the experimental group were given steam inhalation with Tulsi leaves and turmeric while in the control group with plain water twice a day for three days. Common cold was assessed before and after the intervention through a checklist and the scores were recorded. Study was conducted in a community setting in Delhi. Data were analysed using descriptive and inferential statistics. In the present study, there was difference between the pre-test and post-test scores of common cold in control as well as experimental groups. When the post-intervention scores of control and experimental group were compared, the t value was 4.14 at df (58) at 0.05 level of significance, which was found to be significant. This shows that steam inhalation with Tulsi leaves and turmeric is more effective than steam inhalation with plain water in relieving symptoms of common cold.

Keywords: Common Cold, Steam Inhalation, Tulsi Leaves, Turmeric, Effectiveness

Introduction

On average, adults experience 2 to 4 common cold episodes per year although some estimates are as high as 4 to 6 per year. Symptoms usually begin 10-16 hours following intranasal exposure, peak on days 2-3 of infection and decrease rapidly thereafter. During this peak period of illness, symptomatic relief is fundamental to improve patient's quality of life.[1]

One of the most widely used home remedies to soothe and to open the nasal passages to get relief from the symptoms of cold and the sinus infection is steam inhalation.[2]

Lakshmamma had conducted a study on home-based steam

inhalation for treating upper respiratory infection. It was found that the p value was 0.78 on the first day and the p value was 9.72 on the seventh day after intervention with steam inhalation. It was concluded that the steam inhalation is effective in the treatment of Acute Upper Respiratory Infection. It was observed that after administering steam inhalation, symptoms started improving from the 2nd day and full recovery was obtained at the end of 7th day.[3]

World Health Organization in 2012 estimated that 80% of people worldwide rely on herbal medicine for some aspect of primary health care needs. According to WHO, around 21,000 plants species have the potential to be used as medicinal plants.[4]

Treatment with medicinal plants is considered very safe as there is no or minimal side-effects. These remedies are in sync with nature, which is the biggest advantage. The golden fact is the use of herbal treatment is independent of any age group and sex. Medicinal plants such as Aloe, Tulsi, Neem, Turmeric and Ginger cure several common ailments.[5]

Choudhary et al conducted a study to evaluate the anti-inflammatory effect of Tulsi leaves and its phenolic compound and Eugenol (EUG) in human monocytic (THP-1) cells and validate its traditional use for treating cardiovascular disease. The result of the study validated traditional use of *Ocimum sanctum* for treating cardiovascular disease by testing anti-inflammatory activity of *Ocimum sanctum* in acute inflammatory model, Lipopolysaccharide (LPS) induced THP-1 cells. The plant extract showed significant anti-inflammatory activity.[6]

An experimental study was conducted on effect of lactoferrin and turmeric (curcumin) among preschool children in Italy. Oral supplementation was given to examine its effectiveness in healthy children with recurrent respiratory infections. Infection was reduced in children receiving lactoferrin and curcumin result shows that lactoferrin and curcumin supplementation results in immune modulation and could be clinically beneficial.[7]

According to Siddha, boiling herbs with water and inhaling its aroma or vapour is right way to treat nasal block. Herbs that can be used in steam inhalation are whole plant of Thumbai or Leucas aspera, leaves of Tulsi, leaves of Notchi (Vitex negundo). The whole plant of Thumbai or Leucas aspera is used by crushing it and boiling in water and inhaling the vapours. Leaves of Tulsi and half spoon of turmeric is boiled with water and can be used for steam inhalation. Boiled leaves of notchi can also be used for steam inhalation.[8]

Priyanka, Rawat HCL and Gupta H conducted a study to assess the effectiveness of steam inhalation with Tulsi leaves and turmeric versus steam inhalation with plain water to relieve respiratory symptoms of nasal congestion among children admitted in paediatric department GGSMH, Faridkot, Punjab. The result of the study revealed that there was significant reduction in the respiratory symptoms of nasal congestion at the end of 2nd day in the experimental group as compared to control group. Thus, steam inhalation with Tulsi leaves along with turmeric is an effective home remedy in relieving the respiratory symptoms of nasal congestion among children as compared to the steam inhalation with plain water.[9]

Objectives

- To identify the pre-intervention symptoms of common cold among study subjects in control group and experimental group.
- To evaluate the effectiveness of steam inhalation with Tulsi leaves and turmeric versus steam inhalation with plain water.
- To compare the post-test symptoms of common cold between experimental and control group.

Materials and Methods

A quasi-experimental non-equivalent groups design was selected for the study. Sample comprised of 60 patients having common cold residing at Badarpur, New Delhi selected using purposive sampling. Samples were alternatively assigned to experimental and control group. After obtaining ethical permission from the Institutional Ethical Committee of Jamia Hamdard, New Delhi, to conduct the research study, a formal permission for conducting research was obtained from the MLA of the area and the health centre at Badarpur, New Delhi. Study was conducted in November, 2018 for four weeks. Samples in the experimental group and control group were first screened according to the inclusion and exclusion criteria. The study included patients above 18 years of age, having at least one of the following symptoms-nasal discharge, nasal obstruction, and sore throat and sneezing. The study subjects were selected based on the criteria that they had these symptoms for 2 days only. The patients with other respiratory problem such as pneumonia, tuberculosis, COPD, and asthma and those taking medication for common cold were excluded from the study. Samples in the experimental group were given steam inhalation with Tulsi leaves and turmeric and in the control, group were given steam inhalation with plain water twice a day for three days. Demographic profile sheet was developed by the investigator in order to collect the background information of patients with common cold. The tool comprises of 3 items of personal data, these are- age, gender and occupation.

Common cold assessment checklist was prepared which comprised of 13 commonly occurring symptoms with two options against each i.e. 'Yes' and 'No' and study subjects were assessed for symptoms of common cold before and after the intervention and the scores were recorded. Few of the items was taken from Wisconsin Upper Respiratory Symptom Survey. The maximum score was 13 and score '0'

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was for no cold, score 1-5 indicates mild cold, 6-9 indicates moderate cold and 10- 13 indicates severe cold. The items included in the common cold assessment checklist were; nasal discharge, nasal obstruction, sneezing, headache, fatigue, chills, fever, cough, chest congestion, sore throat, watery eyes, hoarseness of voice and body ache. Data were analysed using descriptive and inferential statistics.

Result

Findings Related to the Demographic Characteristics of Sample Subjects

Findings of table 1, reveal that both experimental and control group were comparable with regard to their demographic characteristics i.e. age, gender and occupation with p>0.05.

Table 1.Frequency and percentage distribution of demographic characteristics of sample subjects in experimental and control group

(n_1+n_2=60)

S. No.	Demographic sample characteristics	Experimental group (n_1)		Control group (n_2)		Test applied	p-value
		F	%	f	%		
1.	**Age in years**						
1.1	18-37	16	53.3%	8	26.67%	Fisher exact test	0.09
1.2	38-57	12	40%	18	60%		
1.3	58-77	2	6.67%	4	13.3%		
2.	**Gender**						
2.1	Male	11	36.6%	12	40%	Chi square test	0.05
2.2	Female	19	63.34%	18	60%		
3.	**Occupation**						
3.1	House wife	15	50%	13	43.3%	Fisher exact test	0.05
3.2	Private job	2	6.67%	8	26.67%		
3.3	Unemployed	12	40%	5	16.67%		
3.4	Government job	0	0	1	3.34%		
3.5	Self employed	1	3.34%	3	10%		

Non-significant at 0.05 level of significance, p>= 0.05

Table 2.Frequency and percentage distribution of pre-assessment symptoms of common cold in experimental and control group

(n_1+n_2=60)

S. No.	Symptoms	Experimental (n_1=30)		Control (n_2=30)	
		Frequency	Percentage	Frequency	Percentage
1.	Nasal discharge	16	53.3%	25	83.3%
2.	Nasal obstruction	18	60%	10	33.3%
3.	Sneezing	14	46.67%	21	70%
4.	Headache	21	70%	25	83.3%
5.	Fatigue	11	36.67%	12	40%
6.	Chills	9	30%	7	23.3%
7.	Fever	13	43.3%	7	23.3%
8.	Cough	15	50%	16	53.3%
9.	Chest congestion	15	50%	18	60%
10.	Sore throat	17	56.67%	13	43.3%
11.	Watery eyes	10	33.3%	10	33.3%
12.	Hoarseness	13	43.3%	7	23.3%
13.	Body ache	13	43.3%	13	43.3%

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Findings Related to Pre-intervention Symptoms of Common Cold (Table 2)

Most of the patients in experimental group had headache i.e. 21 (70%), followed by nasal obstruction 18 (60%), sore throat 17 (56.67%), nasal discharge 16 (53.3%), cough 15 (50%), chest congestion 15 (50%), sneezing 14 (46.67%), fever 13 (43.3%), hoarseness 13(43.3%), body ache 13 (43.3%), fatigue 11 (36.67%), watery eyes 10 (33.3%), chills 9 (30%). Most of the patients in the control group had nasal discharge and headache i.e. 25 (83.3%), followed by sneezing 21(70 %), chest congestion 18 (60%), cough 16 (53.3%), sore throat 13 (43.3%), body ache 13 (43.3%), fatigue 12 (40%), nasal obstruction 10 (33.3%), watery eyes 10 (33.3%), chills 7 (23.3%), fever 7 (23%), hoarseness 7 (23%).

Findings Related to the Severity of Symptoms

This section describes the findings related to the severity of symptoms in the experimental and control group before and after intervention. The symptoms are divided into mild (1-5), moderate (6-9) and severe (10-13) and the data obtained are described in the frequency and percentage distribution.

In the experimental group, 13 (43.33%) participants showed mild symptoms, 15 (50%) participants showed moderate symptoms and 2 (6.66%) participants showed severe symptoms before administration of steam inhalation with Tulsi leaves and turmeric.

In the control group, 14 (46.66%) participants showed mild symptoms, 16 (53.3%) participants showed moderate symptoms and none of the participants had severe symptoms before administration of steam inhalation with plain water.

In the experimental group, 1 (3.33%) participant showed no symptoms, 29(96.6%) participants showed mild symptoms, no participants showed moderate and severe symptoms after administration of steam inhalation with Tulsi leaves and turmeric. In the control group, 25(83.3%) participants had mild symptoms and 5 (16.6%) participants had moderate symptoms and no participants had severe symptoms after administration of steam inhalation with plain water.

Table 3.Frequency and percentage distribution of subjects by the level of acuity of symptoms presentation in the experimental and control group before intervention

($n_1+n_2=60$)

	Pre-test					
	Mild (1-5)		Moderate (6-9)		Severe (10-13)	
	Frequency	%	Frequency	%	Frequency	%
Experimental Group (n_1)	13	43.33	15	50	2	6.66
Control Group (n_2)	14	46.66	16	53.3	0	0

Table 4.Frequency and percentage distribution of subjects by the level of acuity of symptoms presentation in experimental and control group after intervention

($n_1+n_2=60$)

Post-test								
	No cold (0)		Mild (1-5)		Moderate (6-9)		Severe (10-13)	
	F	%	F	%	F	%	F	%
Experimental group (n_1)	1	3.33%	29	96.6%	0	0	0	0
Control group (n_2)	0	0	25	83.3%	5	16.6%	0	0

Findings Related to the Effectiveness of Tulsi Leaves and Turmeric in Steam Inhalation to Relieve Symptoms of Common Cold

1. Comparison Between the Pre-test Scores on Symptoms of Common Cold in the Experimental Versus Control Group

Table 5.Comparison between the pre-test scores on symptoms of common cold in the experimental versus control group

($n_1+n_2=60$)

Groups		Mean	SD	MD	SE	t-value	p-value
Experimental (n_1= 30)	Pre-intervention	6.166	1.93	0.033	0.439	0.0759	0.9403
Control (n_2=30)	Pre-intervention	6.133	1.43				

t (58)= 2.00, p > 0.05, non-significant at 0.05 level.

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Data presented in Table 5, shows that the mean pre-test score on symptoms of common cold in experimental group is 6.166 and in control group is 6.133 with a mean difference of 0.033. the standard deviation of mean in experimental group is 1.93 and in control group is 1.43. The t value was found to be 0.0759 which is less than the table value of 2.00 at 0.05 level of significance. This shows that the experimental and control group did not differ initially in terms of pre-test scores.

2. Findings Related to Mean Pre-test and Post-test Scores on the Symptoms of Common Cold in the Experimental Group

The data presented in table 6 and figure 1, indicates that the mean pre-test score on the symptoms of common cold in experimental group was 6.166 and the post test score on symptoms of common cold in experimental group was 2.53 with mean difference as 3.63 and standard deviation as 0.0206. t value was found to be 17.62 which is more than the table value of 2.05 at df (29) at 0.05 level of significance. This shows that the obtained mean difference between pre-test and post-test scores on symptoms of common cold was statistically significant and not by chance. Hence it indicates that the steam inhalation with Tulsi leaves and turmeric is effective in relieving symptoms of common cold.

3. Findings Related to the Mean Pre-test and Post-test Scores on the symptoms of Common Cold in the Control Group

The data presented in table 7 and figure 2, indicates that the mean pre-test score and post-test score on symptoms of common cold in control group are 6.13 and 3.93 respectively with mean difference of 2.20. the t value was found to be 19.7456 which is more than the table value of 2.04 at df (29) at 0.05 level of significance. This shows that the mean difference between the pre-test and post-test score on symptoms of common cold was statistically significant. Hence it indicates that the steam inhalation with plain water is effective in relieving symptoms of common cold.

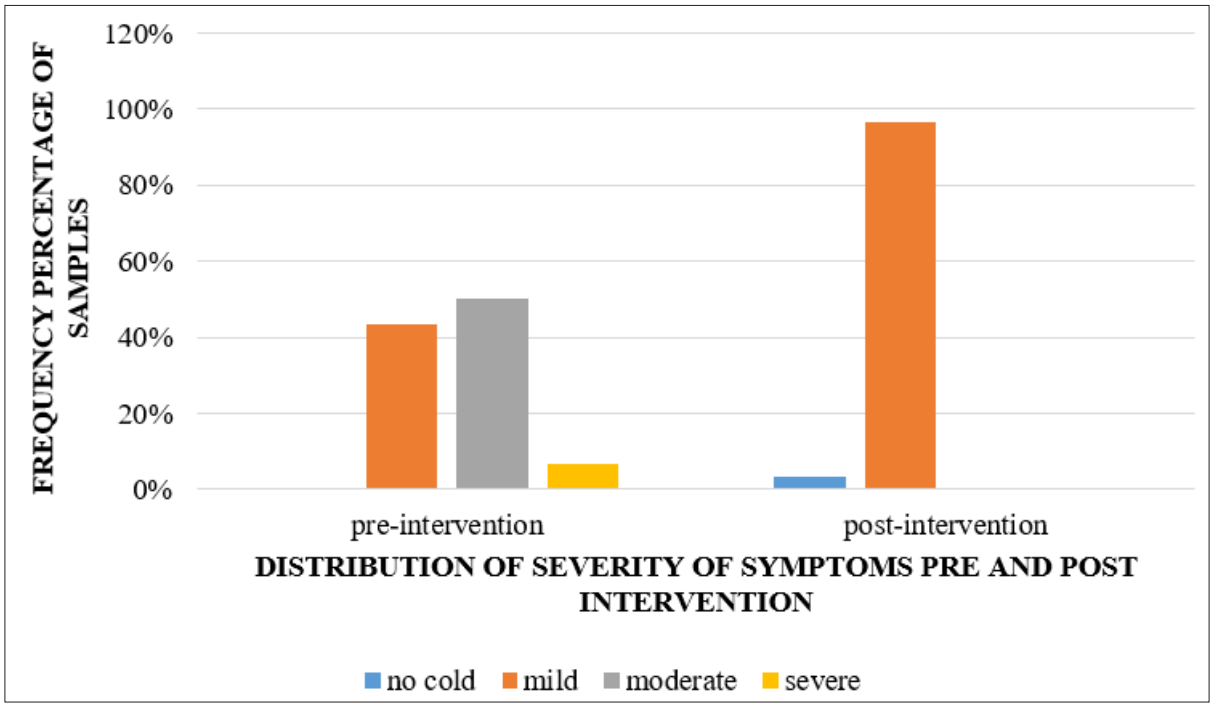

Figure 1.A bar graph showing distribution of subjects by the level of acuity of symptoms presentation in experimental group before and after intervention

Table 6.Comparison between pre-test and post-test scores on symptoms of common cold in the experimental group

(n_1=30)

Groups		Mean	SD	MD	SE	t-value	p-value
Experimental group (N_1=30)	Pre-intervention	6.166	1.93	3.63	0.206	17.62	<0.0001*
	Post-intervention	2.53	1.33				

t (29) = 2.05, *Significant at 0.05 level.

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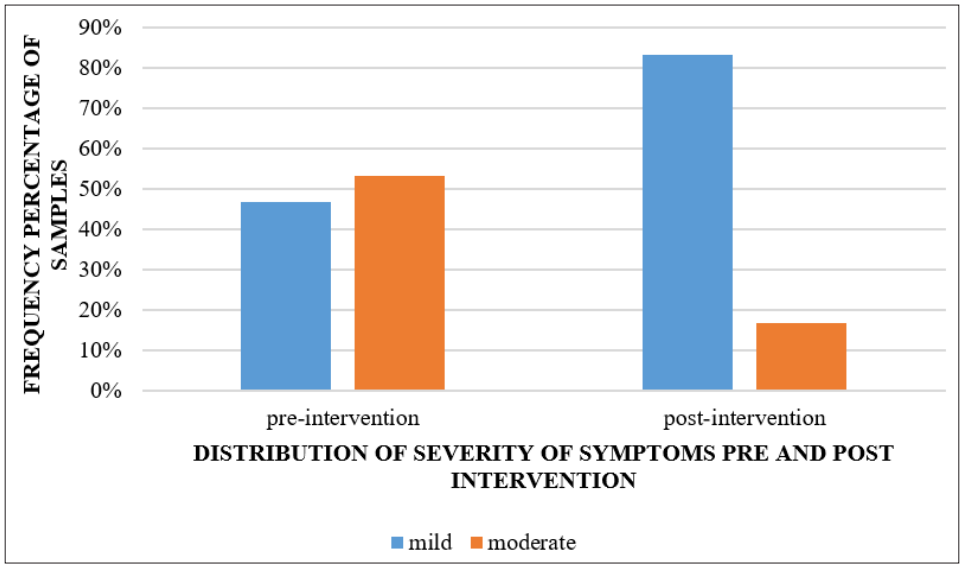

Figure 2.A bar graph showing distribution of subjects by the level of acuity of symptoms presentation in control group before and after intervention

Table 7.Comparison between pre-test and post-test scores on symptoms of common cold in the control group

(n_2=30)

Groups		Mean	SD	MD	SE	t-value	p-value
Control group (N_2=30)	Pre-intervention	6.13	1.43	2.20	0.11	19.7456	<0.0001*
	Post-intervention	3.93	1.28				

t(29) = 2.05, *significant at 0.05 level.

Table 8.Comparison between the post-test scores on symptoms of common cold in the experimental versus control group

(n_1+n_2=60)

Groups		Mean	SD	MD	SE	t-value	p-value
Experimental (n_1=30)	Post-intervention	2.53	1.33	-1.40	0.338	4.1432	0.0001*
Control (n_2=30)	Post-intervention	3.93	1.28				

t (58) = 2.00, *Significant at 0.05 level.

4. Comparison between the Post-test Scores on Symptoms of Common Cold in the Experimental Versus Control Group

The data presented in Table 8 shows that post-test mean scores on symptoms of common cold in the experimental and control group is 2.53 and 3.93 respectively with the mean difference of -1.40. The t value was found to be 4.1432 which is more that the table value of 2.00 at t (58) at 0.05 level of significance. Thus, there is statistical significant difference between the post-test scores on symptoms of common cold in the experimental and control group.

Discussion

The present study aimed at evaluating the effectiveness of steam inhalation with Tulsi leaves and turmeric versus steam inhalation with plain water to relieve symptoms of common cold. The results show that steam inhalation with Tulsi leaves and turmeric is more effective than steam inhalation with plain water in relieving symptoms of common cold. The findings of this study are similar to the study conducted by Antony P[10], who assessed the effectiveness of steam inhalation with Tulsi leaves and turmeric as a remedy to relieve coryza among children. The findings of the study show that the mean pre-test rank of experimental group on day 1was 4.00 and post-test mean rank was 3.00 and on day 2 the post-test mean rank was 2.00 and on day3 the post-test mean rank was decreased to 1.00. The obtained chi-square value to compare the post-test score among the experimental and control group was 21.24 (p<0.001).

The findings of the current study are also in accordance with another study conducted by Priyanka et al.[9] to assess the effectiveness of steam inhalation with Tulsi leaves and turmeric versus steam inhalation with plain water to relieve respiratory symptoms of nasal congestion among

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children admitted in paediatric department GGSMH, Faridkot, Punjab.

Conclusion

Plants have been used for medicinal purposes long before pre-historic period. Ancient Unani manuscript, Egyptian papyrus and Chinese writings describe the use of herbs for cure of minor ailments. The findings of the present study reveal that although steam inhalation with plain water is helpful but steam inhalation with Tulsi and turmeric is more effective in reliving symptoms of common cold and may be practiced for clients in hospital, home as well as community settings.

Conflict of Interest: None

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