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## Effectiveness of steam inhalation with Tulsi leaves among children with upper respiratory tract infection

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### Abstract

**Introduction:** Upper respiratory tract infection are very often found especially in school aged children. Steam inhalation with tulsi leaves is non-invasive, cost effective and home management procedures in community areas. Hence the study "An experimental study to assess the effectiveness of steam inhalation with tulsi leaves among children with upper respiratory tract infection in selected community areas of Pune city" was undertaken by the researcher.

**Objectives of the problem:** To compare the effectiveness of steam inhalation with tulsi leaves on sign/symptom of upper respiratory tract infection in both experimental and control group.

**Material & Methods:** The study was approved by ethical & Institutional research committee. The quantitative research approach with pre test-post test control group design was adopted for the study. The study was conducted in selected community areas of Pune city. The data was collected from 60 samples suffering from sign/symptoms of upper respiratory tract infection. Informed consent was taken prior to data collection. The data was analyzed by using descriptive statistics (Mean, SD) & Inferential statistics (paired & unpaired "t" test).

**Results:** Finding of the study depicts significant change the status of upper respiratory tract infection after the administration the steam inhalation with tulsi leaves and steam inhalation. The mean post test score of the experimental group was 3.43 (SD 1.251) and in control group the mean post test score was 5.80 (SD 1.919) of the 02 groups clearly indicates that administration of tulsi leaves were more effective in reducing the sign & symptoms of upper respiratory tract infection.

**Conclusion:** The study concludes that, on the basis of findings that steam inhalation with tulsi leaves helps faster in reliving the sign and symptoms of upper respiratory tract infection.

**Keywords:** steam inhalation, tulsi leaves, upper respiratory tract infection

### Introduction

Children's health reflects the national health and wealth. Respiratory diseases are very often found in children's especially in school-age children's. It is one of the driving reason of mortality and mortality in young children. India has 440 million children and around twenty-seven million youngsters are conceived in India every year. However almost 2 million of them don't live to the age of 5 years. Respiratory infections are driving cause of child mortality (30%) in India. The existing evidences on acute respiratory infections are centered around urban slums with the burden of illness <sup>[1]</sup>.

Among children less than aged of 5 years are mainly affected to respiratory tract infections with 20% mortality around the world. Included with the pneumonia for neonatal likewise in pool, the troubles comes approximately to be 35-40% death among youngsters matured under 5 years representing 2.04 million deaths in a year. Southeast Asia have most elevated number for respiratory diseases occurrence, representing over 80% of all frequencies together among sub-Saharan African nations. More than 4 lakh deaths in India consistently because of pneumonia representing 13%-16% of all deaths in the paediatric healing center confirmations <sup>[1]</sup>.

Child is an important group of existence, growth, and development. Respiratory diseases, especially bring down respiratory tract contaminations, an expected pretty much two million youth deaths universally and the main source of under-five morbidity. Respiratory contaminations adds to one-fifths of all under-five deaths in creating nations which is around 12 million consistently. It is evaluated that Bangladesh, Nepal, Indonesia, and India together record for 40% around the world respiratory contaminations mortality.

In Indian slums, respiratory contaminations constitutes more than two-third of all childhood sickness [2].

Major child health problems in India is respiratory infections and children less than five years are cause from respiratory diseases, consequential is 1.9 million children deaths in a year, approximately 20% take place in India. Respiratory infection is universally about 85-88%. Mainly modern determine of ALRI related death in India, pneumonia was considered in charge of 369,000 deaths between the age of 1-59 months, creation it the absolute mainly imperative executioner in this age gathering. ARIs also require a important financial burden on wellbeing systems and person families in developing countries. As of late evaluated that among youngsters aged less than 5 years, the middle coordinate cost of ARI was US\$135 in private and US\$54 out in the open establishments [3].

The rhinitis is occurs due to affecting the nose, throat and sinuses. Children get lots of colds, around 8 to 10 each year before they turn two years old. Colds have a tendency to be more typical in winter when youngsters are inside and in nearer contact with each other, so it might appear like your kid has frosty for once in entire winter season. Smaller children tends to have frequent colds compare to older children and adults due to underdeveloped immunity. Children can transmits colds from family, guardians, other relatives, mates or parental figures. Children with more seasoned kin and the individuals who go to day mind have more colds. Once you've had a cool infection, you end up plainly unsusceptible to that infection, so youngsters get less colds as they get more established. When they begin school, children who went to day care will have less colds than other children. On the off chance that child have created colds, it implies he/she was presented to numerous infections. It isn't an indication of powerless invulnerable framework [4].

Therapeutic benefit of steam inhalation is a strategy for presenting warm, wet air into the lungs through the nose and throat. Steam inhalation has been use as a simple and home remedy which is effective in various health issues. Steam inhalation fundamentally benefits the lungs and throat by acting like a viable normal expectorant, and furthermore rest muscles. Inhaling steam is also necessary for preventing the extremely dry of mucous membranes. Steam inhalation is not complicated or expensive. The major problem in steam lies with the fact that no one likes taking it [5].

Among respiratory infections, URTI are generally common in children, which include the infections of the nose, throat, sinuses, and ears. The main symptoms of URTI consist of sore throat, fever, cough, runny nose, sneezing, headache, body aches, and fatigue. Benjamin Franklin in 18<sup>th</sup> century proved that respiratory tract infections transmits from one person to another by droplet and hand contact with an infected person. Now more than hundred types of rhinoviruses were discovered which are responsible for URTI [6].

No demonstrated and proved medical treatments for URTI which have been conclusively shortened the duration of infection. It is a self-limited disease that can last for eight to ten days, but its symptoms can irritate the young infants and children mainly due to nasal congestion. As little kid nostrils are blocked, they are likely to have respiratory issues as every single kid are nose breather. URTI can be prevented by some precautions such as proper hygiene, avoiding air pollution, hand washing, nutritious diet, proper ventilation, sanitation and prevention from cold. It can be treated by taking some domiciliary management such as increased fluid intake, saline nasal drops, complete bed rest, keeping the child away from passive smoke and use of home remedies for cold and cough such as hot drinks, ginger, tulsi, honey, etc. The symptoms of URTI including inflammation and pain are likely to reduce with the help of warm steam inhalations that will provide moisture to the mucous membrane of the respiratory tract [7, 8].

### Materials and Methods

A quasi experimental pre-test and post-test control group design, non probability - purposive sampling technique was used to select 60 children – 30 children are in control group and 30 children are in experimental group from selected community area of Pune city. A Modified Wisconsin tool to assess the sign/symptom of upper respiratory tract infection among children in which 17 items related to sign and symptom of upper respiratory tract infection with scoring. The score awarded to the item are based on the assessment of positive sign of reducing the sign and symptom of upper respiratory tract infection present or not, if present then score is one and if it is not present the score is 0, and if the score is 1-5 it considered as mild sign and symptom of upper respiratory tract infection, 6-11 is considered as moderate sign and symptom of upper respiratory tract infection, 12-17 is considered as severe sign and symptom of upper respiratory tract infection. To collect the socio-demographic information there were 3 variables age, gender and duration of illness.

### Research Objectives

1. To assess the sign/symptom related to upper respiratory tract infection before giving steam inhalation with tulsi leaves in experimental group; and control group.
2. To assess the sign/symptom related to upper respiratory tract infection after giving steam inhalation with tulsi leaves in experimental group; and control group.
3. To compare the effectiveness of steam inhalation with tulsi leaves on sign/symptom of upper respiratory tract infection in both experimental and control group.
4. To associate the findings with selected demographic variables.

### Result

**Table 1:** Compare difference between average scoring for day 1 to day 3 of pre and post test in both groups. (n=60)

Day		Experimental Group (n=30)		Control Group(n=30)		df	t-calculated value	t-table value	P-value
		Mean	SD	Mean	SD				
1	Pre	8.77	2.096	8.47	2.113	29	0.552	2.05	0.583
	Post	7.27	1.911	7.80	2.124		-1.02		0.311
2	Pre	6.73	1.799	7.43	2.046		-1.04	2.05	0.165
	Post	5.43	1.524	6.80	1.864		-3.1		0.003*
3	Pre	5.07	1.484	6.53	1.961		-3.26	2.05	0.002*
	Post	3.43	1.251	5.80	1.919		-5.65		<0.001*

Researcher applied unpaired t- test to compare difference between average scoring for day1 to day 3 of pre and post test for control and experimental group.\* Significant at 0.05

level of significance.  $df(29)$  't' = 2.05 at 0.05 level of significance.

**Table 2:** Comparison of pre and post test in experimental group. (n=60)

Day	Pre (n=30)		Post (n=30)		df	t-calculated value	t-table value	p-value
	Mean	SD	Mean	SD				
1	8.77	2.77	7.27	1.91	29	14.35*	2.05	<0.001
2	6.73	1.80	5.43	1.52		11.94*	2.05	<0.001
3	5.07	1.48	3.43	1.25		11.69*	2.05	<0.001

Researcher applied Paired t-test for comparison of pre and post test of symptoms scores of the children having upper respiratory tract infection corresponding to p-value was <0.001, which are small (less <0.05), the null hypothesis ( $H_{01}$ ) is rejected. So steam inhalation with tulsi leaves is proved to be significantly effective, thereby reducing sign

and symptoms of upper respiratory tract infection among children.

#### **An analysis of data to associate the findings with selected demographic variables.**

**Table 3:** Experimental and control groups - age, gender and duration of illness (n=60)

Demographic variables	Group			Total	p-value	Chi-square value	$\chi^2$ Table value
	Experimental	Control					
Age	6-8	10	9	19	0.061 NS	5.600	7.82
	8-10	8	16	24			
	10-12	12	5	17			
	Total	30	30	60			
Gender	Male	15	21	36	0.187 NS	2.500	5.99
	Female	15	9	24			
	Total	30	30	60			
Duration of illness	1-3 days	14	22	36	0.064	4.440	5.99
	> 3	16	8	24			
	Total	30	30	60			

According to age group for experimental and control group, p-value is 0.061 and show not significant. As chi-square calculated value is lesser than the chi -square table value. So there is no association found between age and findings of the study.

According to gender (male and female) for experimental and control group, p-value is 0.187 and show not significant. As chi-square calculated value is lesser than the chi-square table value. So there is no association found between gender and findings of the study.

According to duration of illness for experimental and control group, p-value is 0.064 and show not significant. As chi-square calculated value is lesser than the chi -square table value. So there is no association found between duration of illness and findings of the study.

#### **Discussion**

The present study was undertaken to compare the effectiveness of steam inhalation with tulsi leaves on sign/symptom of upper respiratory tract infection in selected community area of Pune city. The sample size is 60 children. The researcher used mean & standard deviation for the compare the effectiveness of steam inhalation with tulsi leaves on sign/symptom of upper respiratory tract infection.

The results shows that the post-test level of sign/symptom of upper respiratory tract infection among experimental and control group. On the day 1 mean post test score was 7.27 (SD 1.91) in experimental group whereas mean post test score was 7.80 (SD 2.12) in control group for day 1. On the day 2 mean post test score was 5.43 (SD 1.52) in experimental group whereas mean post test score was 6.80 (SD 1.86) in control group. When reaches to the day 3 mean

post test score was 3.43(SD 1.25) in experimental group whereas mean post test score was 5.80 (SD 1.91) in control group. The obtain Paired t-test for comparison of pre and post test of symptoms scores of the children having upper respiratory tract infection corresponding to p-value was <0.001, which are small (less <0.05), hence the null hypothesis ( $H_{01}$ ) is rejected. So steam inhalation with tulsi leaves was proved to be significantly effective, thereby reducing sign and symptoms of upper respiratory tract infection among children.

Respiratory diseases are very often found especially in adult. It is one of leading cause of diseases and death in adult. Out of India's total population 440 million are constituted by children and around 27 million are conceived each. However, approximately 2 million doesn't live up to 5 years. Inhaling steam is one of the major treatments for respiratory problems & is suggested for managing rhinitis, sinusitis & allergies. Dry air entries are saturated, and mucus is loosened and by cleaning out the nose. The moist air additionally lightens difficulty breathing, throat irritation and inflammation. Hence, to assess the effectiveness of tulsi leaves inhalation v/s steam inhalation on the sign and symptoms of cold and cough in Pune city was undertaken<sup>[9]</sup>.

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