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A Study to Assess the Effectiveness of Steam Inhalation with Tulsi Leaves and Turmeric Powder to Reduce Common Cold Among 5 to 15 Year Old School Going Children at Selected Urban Area at Bangalore

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A B S T R A C T

The present study was undertaken to determine the effectiveness of steam inhalation using tulsi leaves and turmeric powder in alleviating common cold symptoms among school-aged children between 5 and 15 years in a selected urban locality of Bangalore. A pre-experimental research approach with a one-group pre-test and post-test design was employed. The study included 30 children who were recruited through a non-probability convenience sampling method. Information was gathered using a structured demographic data questionnaire and a modified CARIF scale to evaluate the severity of common cold symptoms. Steam inhalation with tulsi leaves and turmeric powder was provided as the intervention, and the outcomes were analysed using descriptive and inferential statistical methods. The results demonstrated a highly significant improvement in common cold symptoms following the intervention, with a paired t test value of 12.99, which was statistically significant at the 5% level. Based on these findings, the study indicated that steam inhalation with tulsi leaves and turmeric powder may help in reducing common cold symptoms among the selected school-going children.

Keywords: Common cold, Steam inhalation, Tulsi leaves, Turmeric powder, School-going children, Effectiveness.

Introduction

A healthy and well-nurtured child plays an important role in the progress and prosperity of a nation. Children are regarded as valuable assets of society and represent the hopes, aspirations and future possibilities of the country. However, they are also among the most vulnerable sections of the population and require special attention, protection and care.[1]

According to Jawaharlal Nehru, children represent the future of the nation, as the citizens of tomorrow are shaped by the care and opportunities provided to them today. Ensuring their health, safety and overall development is essential for building a strong and progressive country capable of overcoming future challenges. Children in good health are considered one of the greatest strengths of a nation. Therefore, providing adequate attention and resources for child development is an important contribution towards the country's future growth and prosperity.[2]

Respiratory tract infections are among the frequently occurring health problems in childhood, particularly among school-going children. These infections contribute significantly to childhood illness and mortality, especially among younger age groups. According to the available statistics cited in the study, India has approximately 440 million children, with nearly 27 million births occurring annually. However, a considerable number of children do not survive beyond five years of age. Acute respiratory infections are identified as one of the major contributors to childhood deaths in India, accounting for approximately 30% of child mortality. Furthermore, respiratory tract infections contribute to a substantial proportion of childhood morbidity. These infections are particularly prevalent in developing countries, where they frequently require medical attention and hospitalization.[3]

A comparative study was conducted in Pune to evaluate the effectiveness of steam inhalation and tulsi leaf inhalation in reducing the signs and symptoms of common cold and cough among adults. The study highlighted respiratory tract infections as an important public health concern. Steam inhalation is commonly used as a supportive home-based measure for relieving respiratory discomfort associated with conditions such as common cold, bronchitis, sinusitis, bronchial asthma and certain allergic conditions. The inhalation of warm, moist air may provide temporary relief from nasal congestion and throat irritation by helping loosen accumulated mucus, which can subsequently be cleared through coughing or blowing the nose. The purpose of the study was to assess the symptoms of cold and cough before and after the administration of steam inhalation and tulsi leaf inhalation and to compare their effectiveness among adults. The findings indicated a significant reduction in mucosal irritation following the intervention. A statistically significant difference was observed between the study groups, with a calculated *t* value of 6.10 exceeding the table value of 2.01. The findings suggested that tulsi leaf inhalation was more effective than steam inhalation alone in reducing the symptoms of common cold.[4]

A study conducted in America focusing on childhood health statistics among underprivileged populations identified common cold, also known as coryza or acute nasopharyngitis, as one of the most frequently occurring respiratory infections in infants and children. The infection primarily affects the nasopharyngeal region and may also involve nearby structures, including the paranasal sinuses and middle ear. Various microorganisms are responsible for upper respiratory tract infections, with viruses being the predominant causative agents. Rhinoviruses account for approximately 30–50% of common cold infections, while coronaviruses contribute to around 10–15% of cases. These infections can spread easily among children and may affect their general health, comfort and daily activities.[5]

OBJECTIVES

1. To assess the symptoms of common cold among school-going children aged 5–15 years.
2. To administer steam inhalation using tulsi leaves and turmeric powder to children aged 5–15 years with the aim of alleviating common cold symptoms.
3. To determine the effectiveness of steam inhalation with tulsi leaves and turmeric powder in reducing the symptoms of common cold among school-going children.
4. To find out the association between the pre-test symptoms of common cold and selected demographic characteristics of the children.

HYPOTHESES

H1: There will be a statistically significant difference between the pre-test and post-test scores of common cold symptoms among school-going children following the administration of steam inhalation with tulsi leaves and turmeric powder.

H2: There will be a statistically significant association between the pre-test assessment scores of common cold symptoms and selected demographic variables among school-going children aged 5–15 years.

METHODS

A quantitative evaluative research approach was employed using a pre-experimental one-group pre-test and post-test design to determine the effectiveness of steam inhalation with tulsi leaves and turmeric powder in alleviating common cold symptoms among school-going children aged 5–15 years. The study was carried out among 30 children experiencing symptoms of coryza in Mahalakshmi Layout, Bangalore, who were recruited through a non-probability convenience sampling method.

Data were gathered using a structured demographic information schedule and a modified Canadian Acute Respiratory Infection and Flu Scale (CARIF) to measure the severity of common cold symptoms. The intervention involved administering steam inhalation prepared with 15–20 tulsi leaves and half a teaspoon of turmeric powder, twice daily for three successive days.

A pilot study was undertaken to determine the practicability and feasibility of the research procedure. The reliability of the research tool was assessed using the Spearman-Brown split-half method, which yielded a reliability coefficient of 0.98, indicating high reliability.

The collected information was organized, tabulated and analysed through descriptive and inferential statistical methods. Frequency and percentage distributions were used for descriptive analysis, while the paired *t*-test was applied to compare pre-test and post-test symptom scores. The Chi-square test was used to examine the relationship between pre-test symptom scores and selected demographic variables. These statistical procedures helped determine the effectiveness of the intervention and

identify associations between the initial symptom assessment and the demographic characteristics of the participants.

MAJOR FINDINGS OF THE STUDY

The important findings of the research undertaken to examine the effectiveness of steam inhalation using tulsi leaves and turmeric powder in alleviating common cold symptoms among school-going children aged 5–15 years in a selected urban locality of Bangalore are presented below.

1. Findings related to demographic characteristics

The distribution of participants according to age indicated that 43% were between 5 and 8 years, 37% belonged to the 9–12 years age group and the remaining 20% were aged 13–15 years. Regarding gender, females constituted 60% of the study population, whereas males accounted for 40%. All the selected children (100%) belonged to the Hindu religion.

With reference to maternal education, 40% of mothers had primary-level education, 33% had completed secondary education, 20% had higher secondary education and 7% were illiterate. In relation to maternal occupation, 40% were working in private organizations, another 40% were homemakers and 20% were engaged in self-employment. Regarding family composition, a predominant proportion of children (87%) belonged to nuclear families, while the remaining 13% came from joint families.

Concerning the duration of coryza, 57% of the children had experienced symptoms for two days, 33% for one day and 10% for three days. It was also observed that none of the participants (100%) had received medical treatment for coryza at the time of data collection.

2. Findings related to the pre-test and post-test assessment of common cold symptoms

The initial assessment of common cold symptoms indicated that more than half of the participants (57%) experienced mild coryza, while 37% had moderate symptoms and 6% presented with severe symptoms. None of the children were completely free from symptoms during the pre-test evaluation.

Following the intervention, the post-test results demonstrated a considerable improvement in the children's symptom status. Approximately 63% of the participants continued to experience mild symptoms, whereas 37% became completely free from symptoms. Importantly, no children were classified under the moderate or severe symptom categories during the final assessment.

3. Findings regarding the effectiveness of the intervention

The statistical comparison of symptom scores before and after the intervention showed a decrease in the average symptom score from 6.8 (SD = 3.27) in the pre-test to 1.16 (SD = 1.18) in the post-test. The calculated paired *t* value was 12.99 with 29 degrees of freedom, which indicated a statistically significant difference at the 5% significance level.

The reduction in the mean symptom score from the initial assessment to the final assessment demonstrated an improvement in the condition of the participating children after receiving steam inhalation with tulsi leaves and turmeric powder for three consecutive days.

4. Findings related to the association between pre-test symptom scores and selected demographic variables

The analysis of the relationship between pre-intervention coryza symptom scores and selected demographic characteristics revealed statistically significant associations with gender ($\chi^2 = 4.41$) and duration of coryza ($\chi^2 = 13.2$) at the 0.05 level of significance, as reported in the study.

In contrast, the analysis did not demonstrate statistically significant relationships between the initial symptom scores and other demographic characteristics, namely age, religion, mothers' educational qualification, mothers' occupational status and family structure.

5. Overall findings of the study

The overall results indicated that most of the selected school-going children had mild or moderate common cold symptoms before the intervention. Following the administration of steam inhalation with tulsi leaves and turmeric powder, an improvement in symptom classification and a substantial decline in the mean symptom score were observed.

The statistically significant difference between the pre-test and post-test assessments (paired $t = 12.99$) suggests that the intervention was associated with a reduction in common cold symptoms among the study participants. Nevertheless, since the investigation followed a one-group pre-experimental design without a control group, the observed improvement cannot be conclusively attributed to the intervention alone. Further studies incorporating appropriate control groups are necessary to establish its effectiveness and safety.

INTERPRETATION AND CONCLUSION

The research was undertaken to determine the effectiveness of steam inhalation incorporating tulsi leaves and turmeric powder in alleviating common cold symptoms among school-aged children between 5 and 15 years in a selected urban locality of Bangalore. The demographic profile indicated that the largest proportion of participants (43%) were in the 5–8 years age category, 60% were girls and the entire study population (100%) belonged to the Hindu community. Regarding maternal education, 40% had studied up to the primary level. With respect to occupation, 40% of the mothers were employed in private sectors, while an equal percentage were homemakers. A substantial majority of the children (87%) came from nuclear families. Furthermore, 57% had been experiencing coryza for two days, and none had undergone medical treatment for the condition during the study period.

The baseline evaluation demonstrated that 57% of the participants experienced mild coryza, 37% presented with moderate symptoms and 6% had severe symptoms. After the intervention, the final assessment revealed that 37% of the children had recovered from the symptoms, while 63% continued to experience mild coryza. No participants were found to have moderate or severe symptoms in the post-test evaluation. This distribution reflected a favourable change in the symptom pattern following the intervention.

A comparison of the initial and final assessment scores demonstrated a considerable decline in the mean symptom score, from 6.8 (SD = 3.27) before the intervention to 1.16 (SD = 1.18) after the intervention. The paired *t* test yielded a calculated value of 12.99 with 29 degrees of freedom, indicating statistical significance at the 5% level. This result established the presence of a significant difference between the pre-test and post-test symptom scores following the administration of steam inhalation with tulsi leaves and turmeric powder.

The examination of relationships between selected demographic characteristics and baseline coryza scores revealed statistically significant associations with gender and the duration of symptoms, as indicated by the reported chi-square results. Conversely, no significant relationships were identified with age, religion, maternal educational qualification, maternal occupation or family type. These observations suggest that certain demographic factors were associated with variations in the initial symptom scores among the selected children.

On the basis of the study results, a statistically significant improvement in common cold symptom scores was observed following the intervention. The considerable decline in the average symptom score, together with the favourable changes in post-test symptom classification, suggests that steam

inhalation using tulsi leaves and turmeric powder was associated with relief of coryza symptoms among the participating children. However, the use of a single-group pre-experimental design without a comparison group restricts the extent to which the improvement can be directly attributed to the intervention.

The study emphasizes the need for appropriate and evidence-based approaches to managing common cold among school-going children. Although improvement was observed in the present investigation, the safety of interventions involving hot steam requires particular consideration because of the potential for accidental burns and scald injuries in children. Therefore, further investigations using controlled research designs and adequate safety precautions are recommended to establish the effectiveness and safety of this intervention.

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