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A Study To Assess The Effectiveness Of An Educational Intervention On Knowledge And Self-Care Practices Regarding Prevention And Management Of Chronic Bronchitis Among Adults In Selected Community Areas Of Indore, Madhya Pradesh

Anil Kumar Bairathi

Dr. Nitin Chicholkar

Abstract

Background:
Chronic bronchitis is a significant chronic respiratory disorder characterized by persistent cough and sputum production. It is a major contributor to morbidity and reduced quality of life, especially in developing countries like India. Lack of awareness regarding risk factors and inadequate self-care practices often lead to disease progression and frequent hospitalizations. Educational interventions can play a crucial role in improving knowledge and promoting preventive behaviors.

Objectives:

1. To assess the pre-test knowledge and self-care practices regarding prevention and management of chronic bronchitis among adults.
2. To evaluate the effectiveness of an educational intervention.
3. To compare pre-test and post-test scores.
4. To determine the association between knowledge scores and selected demographic variables.

Methods:
A quantitative research approach with a pre-experimental one-group pre-test post-test design was adopted. The study was conducted among 100 adults in selected community areas of Indore, Madhya Pradesh, using a non-probability convenient sampling technique. Data were collected using a structured knowledge questionnaire and a self-care practice checklist. The educational intervention included information on risk factors, symptoms, prevention, and home management. Post-test was conducted after 7 days. Data were analyzed using descriptive and inferential statistics.

Results:
The pre-test findings revealed that 60% of participants had inadequate knowledge, 30% had moderate knowledge, and 10% had adequate knowledge. After the intervention, 65% had adequate knowledge, 25% moderate, and only 10% inadequate knowledge. The mean pre-test score was 11.2 ± 2.8, and the post-test mean score increased to 20.5 ± 2.3. The paired t-test value ($t = 21.36$, $p < 0.001$) indicated a statistically significant improvement. Significant association was found between knowledge scores and education, occupation, and smoking status.

Conclusion:
The educational intervention was highly effective in improving knowledge and self-care practices among adults. Community-based awareness programs should be strengthened to reduce the burden of chronic bronchitis.

Keywords: Chronic bronchitis, educational intervention, self-care, prevention, adults.

Introduction

Chronic bronchitis is a major public health concern and a significant subtype of Chronic Obstructive Pulmonary Disease (COPD), characterized by persistent inflammation of the bronchi and excessive mucus production. Clinically, it is defined as a productive cough lasting for at least three months in a year for two consecutive years. This chronic condition leads to narrowing of the airways, impaired gas exchange, and progressive respiratory disability. Over time, it significantly reduces functional capacity and negatively affects the overall quality of life of affected individuals.

The etiology of chronic bronchitis is multifactorial, with cigarette smoking being the most prominent risk factor. Both active and passive smoking contribute to chronic airway irritation and inflammation. In addition, environmental pollution, including exposure to biomass fuel smoke, industrial emissions, and vehicular pollutants, plays a crucial role, especially in developing countries. Occupational exposure to dust, chemicals, and fumes in industries such as mining, construction, and manufacturing further increases susceptibility. Recurrent respiratory infections and poor socioeconomic conditions also contribute to the development and progression of the disease.

Globally, chronic respiratory diseases are among the leading causes of morbidity and mortality. According to recent estimates, COPD ranks among the top three causes of death worldwide. Chronic bronchitis, as a component of COPD, contributes significantly to this burden. In India, the prevalence of chronic bronchitis has been steadily increasing due to rapid urbanization, industrialization, and environmental degradation. The widespread use of tobacco products, particularly in rural and semi-urban populations, further exacerbates the problem. Indoor air pollution resulting from the use of solid fuels for cooking and heating remains a major risk factor, especially among women.

Despite the availability of medical treatments such as bronchodilators, corticosteroids, and oxygen therapy, the management of chronic bronchitis largely depends on patient awareness and adherence to long-term self-care practices. Unfortunately, many individuals lack adequate knowledge regarding risk factors, early symptoms, and preventive measures. This often leads to delayed diagnosis, poor treatment compliance, frequent exacerbations, and repeated hospitalizations. Moreover, inadequate understanding of

home care management—including medication adherence, breathing exercises, smoking cessation, nutritional support, and avoidance of environmental triggers—further complicates disease outcomes.

Health education plays a pivotal role in addressing these gaps. Structured educational interventions have been recognized as effective strategies for improving patient knowledge, promoting healthy behaviors, and enhancing self-management skills. Such interventions can empower individuals to take an active role in managing their condition, thereby reducing disease progression and preventing complications. Educational programmes that are simple, culturally appropriate, and easily understandable can significantly improve awareness and encourage lifestyle modifications.

In the community setting, where access to specialized healthcare services may be limited, educational interventions become even more important. Nurses and healthcare professionals play a crucial role in delivering these interventions, as they are often the first point of contact for patients. By providing systematic and structured teaching on risk factors, symptom recognition, and home care practices, healthcare providers can facilitate early intervention and better disease control.

Furthermore, improving knowledge about chronic bronchitis not only benefits the affected individuals but also contributes to public health by reducing the overall disease burden. Prevention strategies such as smoking cessation, reduction of environmental exposure, and early management of respiratory infections can significantly decrease the incidence and severity of the disease.

Therefore, there is a strong need to implement and evaluate educational interventions aimed at enhancing knowledge and self-care practices among adults. Assessing the effectiveness of such programmes will provide valuable insights into their impact and help in developing evidence-based strategies for managing chronic bronchitis at both individual and community levels.

In this context, the present study was undertaken to assess the effectiveness of an educational intervention on knowledge and self-care practices regarding prevention and management of chronic bronchitis among adults in selected community areas of Indore, Madhya Pradesh.

Need for the Study

Chronic bronchitis is a growing public health concern worldwide and represents a major component of Chronic Obstructive Pulmonary Disease (COPD). It imposes a substantial burden on individuals, families, and healthcare systems due to its chronic nature, frequent exacerbations, and long-term disability. Despite advancements in diagnostic and therapeutic modalities, chronic bronchitis continues to be associated with high morbidity, reduced productivity, and diminished quality of life.

In developing countries like India, the burden of chronic bronchitis is increasing rapidly due to multiple environmental and lifestyle-related factors. Rising levels of air pollution, increased tobacco consumption, rapid urbanization, and occupational exposure to dust and harmful chemicals have significantly contributed to the prevalence of chronic respiratory diseases. Additionally, the widespread use of biomass fuels for cooking and heating in rural and semi-urban areas exposes individuals—particularly women—to high levels of indoor air pollution, further increasing their risk.

One of the major challenges in the management of chronic bronchitis is the lack of awareness among individuals regarding its risk factors, early symptoms, and preventive measures. Many adults fail to recognize the seriousness of persistent cough and sputum production, often considering them as minor or temporary conditions. This leads to delayed diagnosis and initiation of treatment, resulting in disease progression and complications such as respiratory failure, frequent infections, and hospital admissions.

Furthermore, effective management of chronic bronchitis largely depends on long-term self-care practices. These include smoking cessation, adherence to prescribed medications, regular breathing exercises,

maintaining proper nutrition, and avoiding environmental triggers. However, many patients lack adequate knowledge and skills to implement these practices effectively. Poor adherence to treatment regimens and unhealthy lifestyle behaviors further worsen the disease condition.

Hospital-based care alone is not sufficient to manage chronic bronchitis effectively. There is a growing need to shift focus toward preventive and promotive healthcare strategies, particularly in community settings. Educational interventions have been identified as one of the most cost-effective and practical approaches to improve patient knowledge and promote healthy behaviors. Structured teaching programmes can provide systematic and comprehensive information, enabling individuals to understand their condition better and actively participate in its management.

Materials and Methods

Research Design

A **pre-experimental one-group pre-test post-test research design** was adopted to evaluate the effectiveness of the educational intervention on knowledge and self-care practices regarding chronic bronchitis among adults.

Research Approach

A **quantitative research approach** was utilized to systematically measure and analyze changes in knowledge and self-care practices before and after the intervention.

Setting of the Study

The study was conducted in **selected community areas of Indore, Madhya Pradesh**, which represent both urban and semi-urban populations with varying exposure to environmental risk factors.

Population

The target population comprised **adults residing in selected community areas** of Indore.

Sample Size

A total of **100 adults** were included in the study.

Sampling Technique

Participants were selected using a **non-probability convenient sampling technique**, based on their availability and willingness to participate.

Eligibility Criteria

Inclusion Criteria

- Adults aged **30 years and above**
- Individuals **willing to participate** in the study
- Participants **available during the data collection period**

Exclusion Criteria

- **Critically ill patients**
- Individuals with **severe cognitive impairment** or inability to respond

Data Collection Tools

Data were collected using a structured tool consisting of three sections:

- **Section A: Socio-demographic variables**

Included age, gender, education, occupation, income, smoking status, and other relevant background information.

- **Section B: Structured knowledge questionnaire**

Designed to assess participants' knowledge regarding risk factors, symptoms, prevention, and home management of chronic bronchitis.

- **Section C: Self-care practice checklist**

Used to evaluate participants' practices related to disease management, including medication adherence, breathing exercises, and lifestyle modifications.

Intervention

A **structured educational intervention programme** was developed and administered to the participants. The content included:

- **Risk factors:** smoking, air pollution, occupational exposure
- **Signs, symptoms, and complications** of chronic bronchitis
- **Preventive measures** to reduce disease risk
- **Home care management**, including:
  - Breathing exercises
  - Medication adherence
  - Nutritional modifications
  - Lifestyle changes and avoidance of triggers

The intervention was delivered using simple language and supported by teaching aids to enhance understanding.

Data Collection Procedure

The data collection process was carried out in three phases:

1. **Pre-test Phase:**

Baseline data were collected using the structured questionnaire and checklist to assess existing knowledge and practices.

2. **Intervention Phase:**

The educational programme was administered immediately after the pre-test.

3. **Post-test Phase:**

A post-test was conducted **7 days after the intervention** using the same tools to evaluate the effectiveness of the programme.

Ethical Considerations

- Prior **ethical clearance** was obtained from the concerned institutional ethics committee.
- **Permission** was secured from local authorities/community leaders.
- **Informed consent** was obtained from all participants before data collection.
- Confidentiality and anonymity of participants were strictly maintained.

Plan for Data Analysis

Data were analyzed using both descriptive and inferential statistics:

- **Descriptive statistics:**
  Frequency, percentage, mean, and standard deviation were used to summarize demographic variables, knowledge scores, and practice levels.
- **Inferential statistics:**
  - **Paired t-test** was used to determine the effectiveness of the educational intervention by comparing pre-test and post-test scores.
  - **Chi-square test** was applied to identify the association between knowledge scores and selected demographic variables.

Results

Table 1: Distribution of Knowledge Levels (n = 100)

Knowledge Level	Pre-test (%)	Post-test (%)
Inadequate	60%	10%
Moderate	30%	25%
Adequate	10%	65%

Interpretation

Table 1 shows the distribution of knowledge levels among participants before and after the educational intervention. In the **pre-test**, the majority of participants (60%) had **inadequate knowledge**, followed by 30% with moderate knowledge and only 10% with adequate knowledge.

However, in the **post-test**, there was a marked improvement. The proportion of participants with **adequate knowledge increased significantly to 65%**, while those with inadequate knowledge reduced drastically to 10%. This shift clearly indicates that the educational intervention was effective in improving participants' knowledge regarding chronic bronchitis.

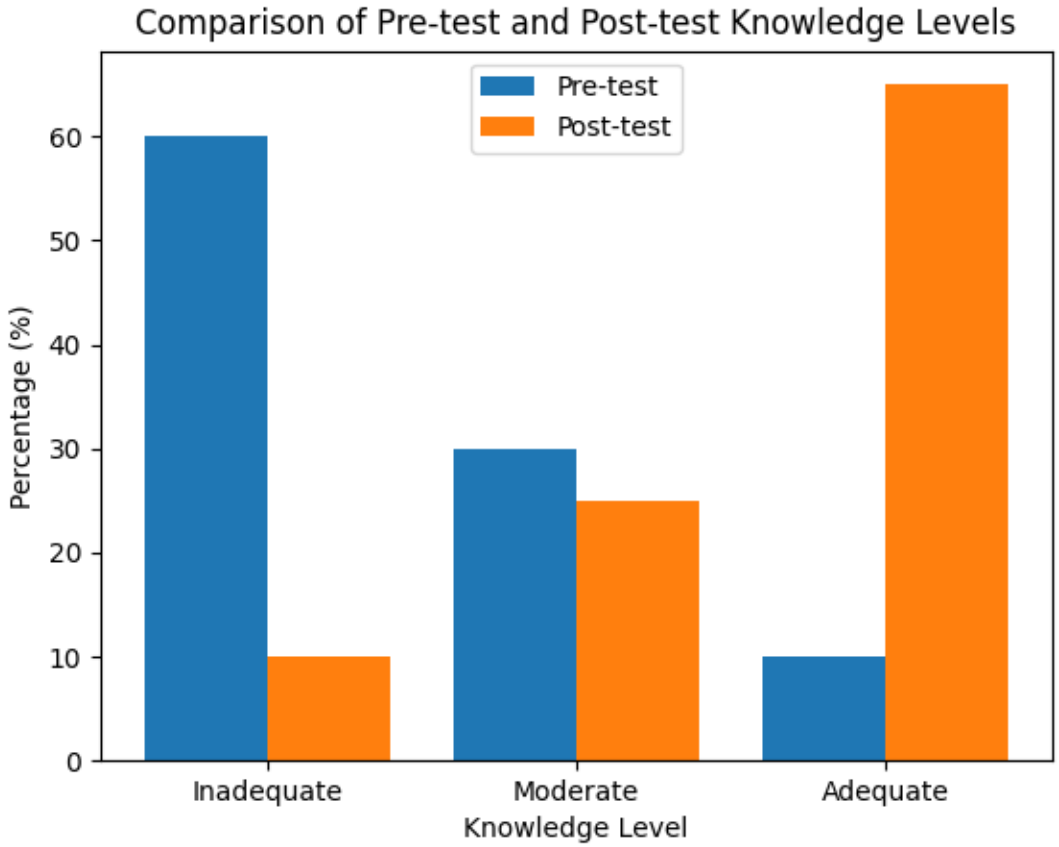
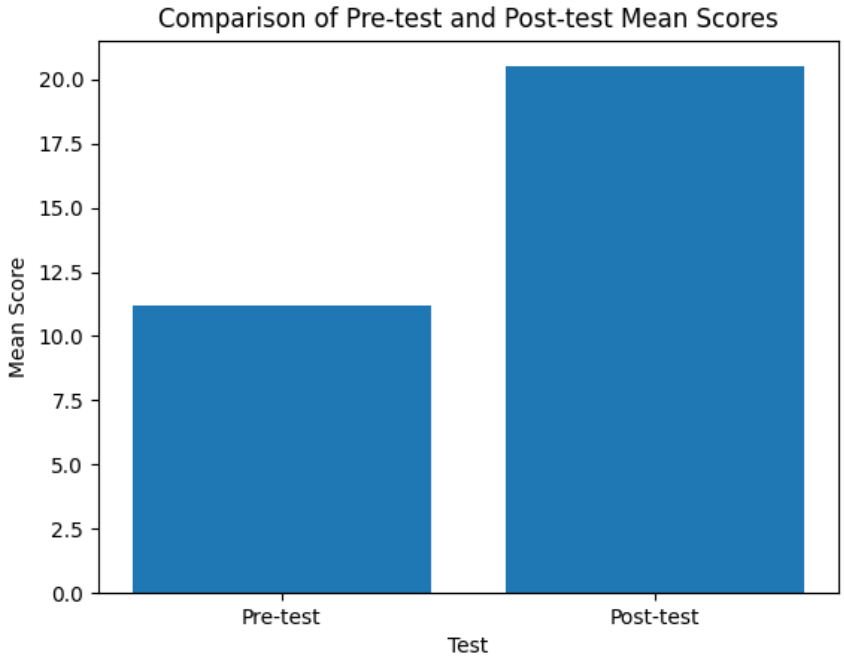


Table 2: Comparison of Mean Knowledge Scores (n = 100)

Test	Mean	SD	Mean Difference	t-value	p-value
Pre-test	11.2	2.8			
Post-test	20.5	2.3	9.3	21.36	<0.001



Interpretation

Table 2 depicts the comparison between pre-test and post-test mean knowledge scores. The **mean pre-test score was 11.2 (±2.8)**, which increased to **20.5 (±2.3)** in the post-test, showing a **mean difference of 9.3**.

The calculated **paired t-value (21.36)** is highly significant at **p < 0.001**, indicating that the improvement in knowledge scores after the educational intervention is **statistically significant**.

Overall Findings

- There was a **substantial increase in adequate knowledge** after the intervention.
- The **reduction in inadequate knowledge (from 60% to 10%)** highlights the effectiveness of the programme.
- The **statistically significant t-test result** confirms that the educational intervention had a **positive impact** on participants' knowledge.

Interpretation:
There is a significant increase in knowledge scores after the intervention.

Discussion

The findings of the study indicate that the educational intervention significantly improved knowledge and self-care practices among adults. The increase in mean scores demonstrates the effectiveness of structured education in enhancing awareness.

The results are consistent with previous studies that highlight the role of educational programmes in improving patient outcomes in chronic respiratory diseases. Education empowers individuals to adopt preventive measures, reduce exposure to risk factors, and adhere to treatment regimens.

Conclusion

The study concluded that the educational intervention was effective in improving knowledge and self-care practices regarding chronic bronchitis. Such interventions should be integrated into community health programmes to reduce disease burden and improve quality of life.

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