

Effectiveness of a Structured Teaching Programme on Asthma among Agricultural Farmers in Selected Rural Areas of K. Gollahalli PHC, Bangalore

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Abstract: ***Introduction:** Farming occupation exposes workers to dust, pesticides, and other irritants that increase the Risk of Respiratory Problems, particularly Asthma. Asthma contributes significantly to global morbidity and mortality. Farmers often lack awareness of preventive measures, underscoring the need for structured teaching programmes (STPs) to enhance knowledge and improve health outcomes. **Methods:** A pre-experimental design with a Single group pre-test and post-test was adopted. Using purposive sampling, 60 farmers were interviewed with a structured schedule based on inclusion and exclusion criteria. Following the pre-test, an STP on asthma and its prevention was implemented. A posttest was conducted after 8 days using the same tool. Data were analyzed with descriptive and inferential statistics. **Results:** Demographically, most respondents were belonging to the age of 41-50 years (33.3%), male (61.7%), Hindu (98.3%), and literate (78.4%). Agricultural exposure ranged from 1-10 years for nearly half (48.3%). Pre-test mean knowledge score was 24.65 (63.21%), which increased to 32.80 (84.10%) in the post-test. Paired 't' test confirmed significant improvement at the 5% level. No significant association was found between knowledge gains and demographic variables. **Discussion:** The findings demonstrate that STPs are effective in enhancing farmers' knowledge about asthma and its prevention. Improved awareness can empower farmers to adopt protective measures, thereby reducing respiratory health risks. **Conclusion:** Structured teaching programmes significantly improve farmers' knowledge regarding asthma. Nurses play a vital role in delivering such interventions, ultimately contributing to better respiratory health and quality of life among agricultural workers.*

Keywords: Asthma, Farmers, Structured Teaching Programme, Respiratory Health

1. Introduction

Asthma is one of the most common chronic respiratory diseases worldwide and it is a major public health concern. According to WHO, Asthma is a chronic disease characterized by recurrent attacks of breathlessness and wheezing, and occurs in people of all ages. It is the most common chronic disease among children. Asthma affects an estimated 260 to 363 million people worldwide and there were 417 918 deaths due to asthma at the global level and 24.8 million DALYS attributable to asthma in 2016 (WHO). Asthma affected an estimated 363 million people in 2023 and caused 442 000 deaths. The vast majority of these deaths are preventable and occur in low- and lower-middle-income countries due to under-diagnosis and poor access to treatment.

Agriculture is one of the largest occupational sectors globally, employing millions of people who are exposed to numerous respiratory hazards. Farmers frequently encounter dust from grains, hay, animal feed, pesticides, fertilizers, molds, pollens, and other organic and inorganic substances that can trigger or aggravate asthma. In developing countries such as India, many farmers work without adequate personal protective equipment and have limited awareness regarding occupational respiratory hazards, further increasing their risk of respiratory complication

Studies in India show that asthma and chronic bronchitis symptom rates among agricultural workers range from **8.9% to over 21%**, noticeably higher than the national rural average.

An international study involving more than 200,000 farmers reported asthma prevalence ranging from 6.5% among male farmers to 7.8% among female farmers. A recent field report from Punjab found that 60% of farmers reported respiratory problems and 13% reported worsening asthma symptoms associated with agricultural air pollution.

Asthma is included in the WHO Global Action Plan for the Prevention and Control of NCDs and the United Nations 2030 Agenda for Sustainable Development.

Therefore, the present study was carried out to evaluate the effectiveness of a Structured Teaching Programme on knowledge regarding asthma and its prevention among farmers. The findings of this study are expected to provide evidence for implementing educational interventions that can improve farmers' awareness, encourage healthy preventive practices, and contribute to reducing the burden of occupational asthma.

2. Material and Methods

A Pre-experimental study with one group pre-test and post-test design was utilized for this research. The study was conducted among Farmers in selected rural areas under K. Gollahalli Primary Health Centre (PHC), Bangalore. A total of 60 farmers were selected as the sample for the study. The samples were chosen using a purposive sampling technique, based on the inclusion criteria established by the researcher. The Inclusion Criteria are: Farmers who are in selected rural areas of K. Gollahalli Primary Health Centre (PHC), who are willing to participate in the study, who can speak and understand Kannada, who are available at the time of data

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collection. The exclusion Criteria are: Farmers who are suffering from asthma and with other comorbid medical illness.

Development of the Tool

Selection of the Tool: Interview schedule was selected for the study to assess the knowledge of farmers.

Development of the Tool: The tool was developed on the basis of the objectives of the study. The following steps were adopted in the development of the tool.

Description of the Tool: The interview schedule was designed with two parts.

Part 1: Part one consisted of items pertaining to the demographic variables

Part 2: Part two consisted of 39 items pertaining to asthma and its prevention and management.

Testing of the Instruments:

The reliability of the validated tool was established by Split Half Techniques to measure the Internal consistency of the tool by using Karl Pearson Coefficient formula. The coefficient of correlation of knowledge test was found to be 0.947. Since the computed correlation of knowledge score was high, the tool was found to be reliable

Structured Knowledge Questionnaire on Asthma Prevention: Developed by the investigator, this questionnaire consisted of 39 multiple-choice questions, each with one correct answer and three distractors. The correct answer was scored as "1," and an incorrect answer was scored as "0." The total score was then summed up and interpreted based on the following method:

Score	Percentage	Interpretation
0-19	<50%	Inadequate knowledge
20-29	51-75%	Moderately adequate knowledge
30-39	>75%	Adequate knowledge

Following the completion of the pre-test, a Structured Teaching Programme (STP) on asthma prevention was administered to the farmers in small groups. The duration of each teaching session was approximately 45-60 minutes.

The STP covered the following topics:

- General information and meaning of Asthma
- Risk factors
- Signs and symptoms and diagnosis
- Basic management and complications
- Prevention of indoor and outdoor Asthma

Appropriate audio-visual aids, including charts and flip charts, were used to facilitate understanding. The post-test was conducted after 7 days interval using the same structured Knowledge questionnaire to evaluate the effectiveness of

Structured Teaching Programme (STP) on asthma prevention among the farmers.

3. Result

Table 1: Frequency and Percentage distribution of Background characteristics of Farmers, n=60

Background Characteristics	Frequency	Percentage
Age in Years:		
21-30	13	21.7
31-40	18	30
41-50	20	33.3
51-60	9	15
Sex:		
Male	37	61.7
Female	23	38.3
Religion:		
Hindu	59	98.3
Muslim	1	1.7
Education:		
Non formal	13	21.7
Primary	19	31.6
Higher secondary	25	41.7
PUC	3	5
Exposure in Agricultural work (in Years):		
1-10	29	48.4
11-20	20	33.3
21-30	11	18.3

Table 1: presents the distribution of farmers according to their selected background characteristics. Regarding age, the highest proportion of farmers, 20 (33.3%), belonged to the 41-50 years age group, with respect to sex, the majority of the farmers were male (37, 61.7%), while 23 (38.3%) were female. Regarding religion, almost all the participants were Hindu (59, 98.3%), whereas only 1 (1.7%) participant belonged to the Muslim religion.

Regarding education, 25 (41.7%) had completed higher secondary education, followed by 19 (31.6%) with primary education, 13 (21.7%) with non-formal education, and 3 (5.0%) with PUC education. Nearly half of the farmers 29 (48.4%) had 1-10 years of agricultural work experience, while 20 (33.3%) had 11-20 years and 11 (18.3%) had 21-30 years of experience.

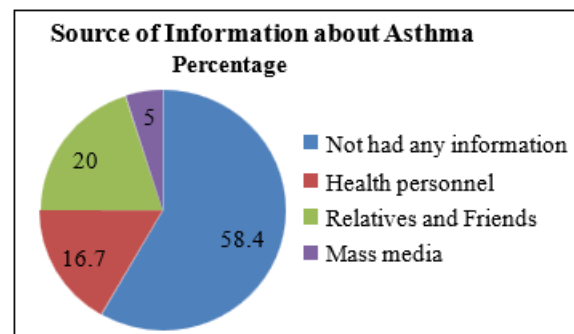


Figure 1: Distribution of respondents by Source of information about Asthma

Table 2: Mean Knowledge Score of Pre & Post Test on Prevention of Asthma, n=60

Knowledge Level	Inadequate	Moderate	adequate	Mean (%)	SD	Paired t-value
Pre Test Score	6.67%	90.00%	3.33%	63.21	3.09	18.33
Post Test Score	0.00%	5.00%	95.00%	84.1	2.3	

Table 2: Presents the comparison of the respondent's knowledge levels regarding asthma prevention before and after the Structured Teaching Programme (STP). In the pre-test, the majority of participants (90.0%) had moderate knowledge, 6.67% had inadequate knowledge, and only 3.33% had adequate knowledge. Following the intervention, a noted improvement was observed, with 95.0% of participants attained adequate knowledge and only 5.0% remaining in the moderate category, while none had inadequate knowledge.

The mean knowledge score increased from 63.21% (SD = 3.09) in the pre-test to 84.10% (SD = 2.30) in the post-test. The obtained paired t-value of 18.33 indicates a statistically significant improvement in knowledge after the Structured Teaching Programme (STP)

4. Discussion

The demographic findings of the present study are comparable with those reported by J. A. Hoppin and D. M. Umbach (2026) in their study on pesticide use and adult-onset asthma among male farmers in the Agricultural Health Study. The study included 19,704 male farmers, of whom 441 (2.2%) reported adult-onset asthma, with 127 cases classified as allergic asthma and 314 as non-allergic asthma. The authors also reported that farmers with asthma were generally older, had a higher body weight, and were slightly more likely to have smoked than those without asthma. Similarly, in the present study, the majority of the respondents were males (61.7%), and the largest proportion (33.3%) belonged to the 41-50 years age group and resided in rural areas. Although the present study focused on assessing the effectiveness of a Structured Teaching Programme on knowledge regarding asthma prevention rather than the prevalence of asthma, the demographic characteristics of the participants are comparable with those reported in previous studies. These findings highlight the importance of providing health education on asthma prevention to farmers, who are at increased risk of respiratory problems due to occupational and environmental exposures.

The findings of the present study are comparable with those of Lingaraju C. M., Santosh Kumar S. K., and Munirathnamma (2016), who conducted a study among 30 farmers in Mysuru to assess knowledge regarding asthma prevention. Their study reported that 56.6% of the farmers had moderate knowledge regarding asthma prevention, and age, educational qualification, and source of information were significantly associated with knowledge at the 0.05 level. Similarly, in the present study conducted among 60 farmers, showed that 90.0% of the respondents had moderate knowledge in the pre-test. Furthermore, 58.4% of the respondents had not received any prior information about asthma, while only 20.0% obtained information from relatives and friends, 16.7% from health personnel, and 5.0% from mass media. The findings of both studies indicate that farmers have limited awareness regarding bronchial asthma

prevention before educational interventions, emphasizing the need for structured health education programmes to improve their knowledge and promote preventive practices.

The findings of the present study are consistent with the study conducted by Devraj Singh Chouhan and Virendra Singh. (2020), on the effectiveness of a Structured Teaching Programme (STP) regarding the prevention of bronchial asthma among persons working in the cement industry. Their study reported a statistically significant improvement in participants' knowledge following the intervention ($p < 0.01$). Similarly, the present study demonstrated a significant increase in knowledge after the Structured Teaching Programme, with the mean knowledge score increasing from 63.21% in the pre-test to 84.10% in the post-test ($t = 18.33$). The findings of both studies confirm that a Structured Teaching Programme is an effective educational strategy for improving knowledge regarding bronchial asthma prevention.

The findings of the present study are comparable with those reported by Lingaraju C. M., Santosh Kumar S. K., and Munirathnamma (2016), who assessed knowledge regarding asthma prevention among farmers in Mysuru. Their study found that 56.6% of the farmers had moderate knowledge regarding asthma prevention before the educational intervention. Similarly, in the present study, 90.0% of the respondents had moderate knowledge in the pre-test. The findings of both studies suggest that farmers possess only moderate awareness regarding bronchial asthma prevention, emphasizing the importance of structured health education programmes.

5. Conclusion

The present study was conducted in view of the increased occupational exposure of farmers to dust, pollen, pesticides, fertilizers, and other respiratory irritants, which predispose them to bronchial asthma. While previous studies have primarily focused on assessing asthma prevalence and knowledge levels, limited intervention-based studies have evaluated strategies to improve preventive knowledge. The findings of the present study demonstrated that the Structured Teaching Programme was effective in enhancing farmers' knowledge regarding bronchial asthma prevention. Hence, regular implementation of structured educational programmes is recommended to improve awareness, strengthen preventive practices, and reduce the occupational risk of bronchial asthma among farmers.

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