Is Parent Education Tool Effective in Improving Awareness among Parents of a Wheezing Child? A Pre-Experimental Study

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ABSTRACT

BACKGROUND

Asthma is a common chronic disease in childhood. Globally, more than 339 million people are estimated to have asthma. The prevalence of childhood asthma in India is about 6 %. Even though childhood asthma is highly prevalent, the knowledge level among parents / caregivers about the disease, its risk factors, prevention and management is poor. Currently, in India there are no national or state level bodies to provide relevant information about the disease. The rationale of this study is to create a parent education tool that will provide the necessary details about the disease and to check the effectiveness by assessing the improvement in knowledge about childhood asthma among parents of wheezers after implementation of this self-prepared educational tool through a structured teaching programme.

METHODS

A pre-test post-test pre-experimental study was conducted among parents of children admitted to paediatric ward and intensive care unit of a tertiary care centre in North Kerala. A self-prepared questionnaire was used to assess the knowledge of parents before intervention. Intervention was done using an educational tool prepared by the researcher with the aid of power point presentation and hands on training on technique of using metered dose inhaler. Effectiveness of the tool was assessed after 10 days of intervention using the same questionnaire. Statistical analysis of collected data was done using Statistical Package for the Social Sciences (SPSS) version 26.

RESULTS

51 parents were included in the study. The scoring of questionnaire before and after educational intervention was done as poor (< 10 score), average (11 - 20 score) and good (21 - 31 score). The mean score before intervention was 9.98 (SD = 3.14) and after intervention the score became 17.73 (SD = 2.562), and the difference was statistically significant (P = 0.00). Mean score of the knowledge regarding treatment and prevention of asthma improved to 10.18 (SD = 2.133) from 4.29 (SD = 2.212).

CONCLUSIONS

A well-developed parent education tool is a requirement for minor adjustments needed in the lifestyle of a child with asthma, which ensures proper prevention and treatment.

KEYWORDS

Childhood Asthma, Wheezing Child, Parent Education, Asthma Education Tool, Asthma Awareness

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DOI: 10.18410/jebmh/2021/58

How to Cite This Article:
Keerthi K, Gireeshan VK, Deepthi K. Is parent education tool effective in improving awareness among parents of a wheezing child? A pre-experimental study. J Evid Based Med Healthc 2021;8(06):298-301. DOI: 10.18410/jebmh/2021/58

Submission 20-10-2020,
Peer Review 05-11-2020,
Acceptance 22-12-2020,
Published 08-02-2021.

BACKGROUND

Children with chronic diseases are found to have a life of adjustments and sacrifices. Asthma is one such chronic disease, where the lifestyle of the children is affected. Globally, more than 339 million people are estimated to have asthma.[1] The prevalence of childhood asthma in India is about 6 %.[2] A school-based study conducted by Mathew AC et al. showed prevalence of asthma among school going children in South India as 9.5 % among 5 - 10 year old and 7.27 % among 11 - 15 year old. The factors significantly associated with asthma were family history, poor ventilation and use of pillows made up of wool, foam or synthetic materials.[3]

In India, the symptoms are triggered by multiple factors like recurrent viral infections, tobacco smoking in family, smoke producing fuels for cooking, atopy, exacerbation due to improper use of inhaler, house dust mites, lack of exercise etc.[4,5] So the most important part in the control of asthma is prevention of exposure to these triggers. Most of the time even with adequate treatment, the symptoms continue to recur. This is due to the continued exposure to the allergens. Parents need to know about all the triggers or allergens, to identify their child's problem. Early identification of the disease and implementation of adequate treatment is important for the normal growth of the child also. With the proper usage of inhaled corticosteroids, the frequency of school absence, emergency department visits and hospitalisation can decrease significantly.[6]

Even though childhood asthma is highly prevalent, the knowledge level among parents about the disease, its risk factors, prevention and management is poor. Asthma is a disease where there are lot of false beliefs regarding the cause of the disease. Also, there is a stigma among common people regarding the usage of inhalers, especially corticosteroid inhaler. Generating proper awareness about the disease among the care takers is important in the care of the child. This is a little time consuming procedure in a busy outpatient department. These call to the need of a complete education tool, which will help the parents in understanding their child's disease.[7,8]

Currently, in India there are no national or state level bodies to provide relevant information about childhood asthma. Certain countries like Canada, United Kingdom, Switzerland have national bodies which provide material for proper awareness of childhood asthma.[9] This study focuses on assessing the awareness of parents regarding their child's disease and how an educational tool can help to obtain a better result.

Objectives

1. Assess the knowledge regarding prevention and treatment of childhood asthma among parents of children below 12 years with wheezing.
2. Find out the effectiveness of parent education tool in improving the knowledge and care given by the parents of children with asthma.

METHODS

This study was conducted in a tertiary care centre in Malappuram district in North Kerala form October 2019 to March 2020. Study design was pre-experimental one group pre-test – post-test design. To calculate the sample size, a previous similar study was taken, which showed that the pre-test mean score was 13.8 + 8.7, which was increased to 16.9 + 6.3 after intervention giving an effective size of 0.41. With 80 % power and with an alpha 5 %, for a two sided test the required sample size was 48. Anticipating 10 % drop out, sample size was fixed as 60.

This study included parents of children below 12 years admitted in paediatric ward and intensive care unit with a diagnosis of bronchial asthma or transient wheezer. The diagnosis of bronchial asthma was made using modified Asthma Predictive Index (mAPI).[10] All those children who doesn't fulfil mAPI, but had a history of two or more wheezing episodes requiring bronchodilator therapy were considered as transient wheezers.[11] Those children with other causes for wheezing like heart diseases, restrictive lung diseases etc. were excluded from the study.

> 4 Wheezing Episodes and		
> 1 Major Criteria		**> 2 Minor Criteria**
1. Parental asthma		1. Food allergy
2. Atopic dermatitis	**OR**	2. > 4 % blood eosinophilia
3. Evidence of sensitization to allergens (positive skin test or blood test)		3. Wheezing apart from colds
Modified Asthma Predictive Index		

An ethical clearance was obtained from institutional ethic committee of Government Medical College, Manjeri, Malappuram. The questionnaire and educational tool were validated by experts.

After getting consent, on discharge of their child, the participants were given a structured questionnaire, prepared by the researchers, in Malayalam containing 31 questions from epidemiology, aetiology, clinical features, triggers of acute exacerbation, treatment and prevention of asthma. Then, they were given a one-to-one class on asthma using an educational tool, in Malayalam using power point presentation, which was also prepared by the researchers. They were explained about the factors precipitating asthma, how to assess the severity of their child's disease, how to reduce the exposure to the allergens and how to keep their child's environment clean of allergens. Also, hands on training on using metered dose inhaler (MDI) with spacer and mask was given. They were taught to identify the onset of symptoms for early administration of preventive medicines. They were also trained to keep an asthma diary to help them in follow up and adjustment of drugs. After 10 days, all the participants were called to the outpatient department of Government Medical College, Manjeri for review of their child, during which they were asked to fill the questionnaire for the second time. They were also asked to demonstrate the technique of using MDI.

Statistical analysis of collected data was done using SPSS version 26. Data was described using frequency distribution, arithmetic mean and standard deviation. Comparison between the two scores were done using paired sample t test at 0.05 as the level of significance.

RESULTS

During the study period, 60 parents of children admitted in paediatric ward and intensive care unit were included in the study. Out of this, 9 parents did not follow up. The socio demographic details of the 51 study samples are given in Table 1.

	Characteristics	Number (%) (N = 51)
Age of the Parent	< 20 years	3 (5.9 %)
	20 - 25 years	19 (37.3 %)
	25 - 30 years	17 (33.3 %)
	> 30 years	12 (23.5 %)
Education	10th standard or below	19 (37.7 %)
	12th standard	15 (29.4 %)
	Degree	17 (33.3 %)
Occupation	House wife	50 (98 %)
	Part time job	1 (2 %)
Religion	Hindu	19 (37.3 %)
	Muslim	32 (62.7 %)

Table 1. Sociodemographic Details of Study Sample

The scoring of questionnaire before and after educational intervention was done as poor (< 10 score), average (11 - 20 score) and good (21 - 31 score).

During pre-test, 25 parents (49 %) had poor score, 26 (51 %) had average score and none had good score. The mean value of pre-test sample was 9.98 with a standard deviation of 3.14.

In post-test, 40 parents (78.4 %) scored as average and 11 (21.6 %) scored as good. None of the parents had poor score in post-test. The mean of post-test sample was 17.73 with a standard deviation of 2.562.

Since we were focusing on the improvement of care given to the child, analysis of preventive and treatment measures taken by the parents was done separately. This showed that, 68.8 % parents scored poor in the pre-test and 31.4 % scored average. During the post-test**,** 56.9 % parents had average score and 43.1 % had good score. The mean score of treatment and prevention part improved to 10.18 (SD = 2.133) from 4.29 (SD = 2.212).

The mean pre-test score and post-test score were compared using paired sample t test and was found to be significant with a P-value of < 0.05 (Table 2).

Score	Number (%) (N = 51)	Mean	Standard Deviation	T Test	P Value
Before Intervention					
Poor	25 (49 %)	9.98	3.14		
Average	26 (51 %)				
Good	0			21.35	0.00*
After Intervention					
Poor	0	17.73	2.562		
Average	40 (78.4 %)				
Good	11 (21.6 %)				

Table 2. Comparison between Scores before and after Parent Education

DISCUSSION

Even though, asthma is a very common disease among children, most of the parents are not aware about the disease, its treatment and prognosis. There are also many myths and false beliefs related to asthma among parents. Most of the people believe asthma to be a contagious disease. Many parents hesitates to refer their children's disease as asthma. Also, parents believe asthma to be a life long illness. Oily food, rice and other various food items are blamed as the cause of exacerbation in many situations.[12,13,14]

Most of the parents are concerned about the usage of inhaled corticosteroids and there are many false assumptions regarding its use. Many of them prefer oral drugs over inhalation, and believe inhalers to be addictive. A greater proportion is worried about inhaler's side effects, especially about side effects of inhaled steroids.[14] This increases resistance from patients and parents in usage of inhaled medicines. The increased cost and workload associated with MDI / spacer use, also act as important barriers to the adoption of the MDI / spacer.[15] During an acute attack of asthma, many parents massage their child's chest or back and provide the child some homemade or herbal remedies.[16]

Our study's aim was to improve the knowledge among parents of wheezing children by implementing a self-prepared education tool through a structured teaching programme. Each of the study subject were given one-to-one class and hands on training on metered dose inhaler. Their knowledge was assessed using a self-prepared questionnaire, before and after intervention. The scoring of questionnaire before and after educational intervention was done as poor (< 10 score), average (11 - 20 score) and good (21 - 31 score).

Our study showed an improvement in the mean score to 17.73 (SD = 2.562) after the intervention, from a mean score of 9.98 (SD = 3.14). While analysing the treatment and preventive measure taken by the parents, we found a change in mean score from 4.29 (SD = 2.133) before intervention to a mean score of 10.18 (SD = 2.212) after intervention (P = 0.00). This shows a significant improvement in knowledge of parents following a single intervention.

This is similar to an interventional study conducted among teachers in primary schools in Riyadh, Saudi Arabia in the year 2016. The study showed an improvement in teacher's awareness after intervention, with a post-program median score of 15, while pre-program score was 11 (P < 0.001).[17] Another interventional study conducted in 2012, among 40 parents in New Delhi, showed significant improvement in quality of life of children were educational intervention was done.[18] Similarly, a study conducted in 2017, among parent-child pair in Texas also showed that asthma education ensures better management of symptoms and reduces frequency of acute exacerbations in children.[6]

Our study points to the fact that, proper education of parents is important in taking care of children with asthma. But, there are no official documents to provide this information uniformly to all parents. National bodies of certain countries like Canada, United Kingdom and Switzerland are already providing education materials regarding childhood asthma.[9] It will do a great good in a country like India with 1.3 billion populations, if the governing bodies provide relevant education material to the people in their local language. In the current era, with easy access to internet and with the help of social media a lot of

myths and false assumptions of parents can be cleared, if the authorities provide the accurate education materials to everyone.

One limitation of our study is that we had done only a single intervention during the study period. Multiple interventions might have improved the overall performance of parents to get even better results. Also, we had taken only questionnaire based outcome. Incorporating the clinical improvement in a child with the intervention would show better light to the problems in our hand.

CONCLUSIONS

The present study shows that proper education of parents regarding childhood asthma will improve their knowledge and thereby improves the care given to their child. A well-developed parent education tool is a requirement for the minor adjustments needed in the lifestyle of a child with asthma, which ensures proper prevention and treatment.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.
Financial or other competing interests: None.
Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

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