



A study to assess the effectiveness of internet based asthma self-care management among mothers of asthmatic children

Meena P^{1*} and Nivetha M²

^{1*} Department of Child Health Nursing, Saveetha College of Nursing, SIMATS, Chennai, Tamil Nadu, India

² B.Sc (N) IV Year, Saveetha College of Nursing, SIMATS, Chennai, Tamil Nadu, India

Abstract

Background: Asthma is the most common chronic respiratory disease in India, affecting approximately 10% of the population. It is most common chronic disease of childhood, affecting more than 6 million children in the United States. Asthma is defined as a chronic inflammatory disease of the airways. The chronic inflammation is associated with airway hyper responsiveness that leads to recurrent symptoms such as wheezing, dyspnea (shortness of breath), chest tightness and coughing. Symptom episodes are generally associated with widespread, but variable, airflow obstruction within the lungs that is usually reversible either spontaneously or with appropriate asthma treatment.

Objectives

- To assess the level of knowledge regarding internet based asthma self-care management among mothers of asthmatic children.
- To determine the effectiveness of health teaching regarding internet based asthma self-care management among mothers of asthmatic children.
- To determine the effectiveness of pre and posttest of knowledge regarding internet based asthma self-care management among mothers of asthmatic children.
- To find out the association between knowledge regarding internet based asthma self-care management among mothers of asthmatic children with selected demographic variables

Methodology: A Quasi-experimental research design with a convenience sampling technique was adopted to conduct a study among 30 Mothers of children, children age around 2 to 13 years. Data was gathered by using a structured questionnaire. Confidentiality was maintained throughout the procedure. Collected data were analyzed by using descriptive and inferential statistics.

Result: Among 30 Mothers of children shows that the levels of knowledge regarding internet based asthma self-care management of asthma in the pre-test (86.67%) have inadequate knowledge, (13.33%) have moderate knowledge. Whereas in post-test all 30 (100%) had adequate knowledge. The study shows that there is no significant association between the levels of knowledge regarding self-care management of asthma with demographic variables like age, number of children, re, educational status, occupation, Place of residence.

Conclusion: The findings of the study revealed that health teaching on internet based asthma self-care management helped to improve the level of knowledge among mothers of asthmatic children. The study concluded that there is no significant difference between the levels of knowledge on self-care management of asthma among mothers of children.

Keywords: assess, effectiveness, self-care management, asthma, internet, mothers of children

Introduction

Asthma is a chronic disorder of the tree, characterized by completely or partially reversible airway obstruction, which may improve spontaneously or may subside only after specific therapy. Airway hyper responsiveness is defined as the narrowing of the airways response to a variety of stimuli, such as allergens and nonspecific triggers and infections. Asthma is a chronic disorder of both children and adults, with 300 million individuals afflicted worldwide ^[1]. Poor asthma control contributes to unnecessary morbidity, limitations to daily activities and impairments in overall

quality of life ^[2].

The chronic inflammation is associated with airway hyper responsiveness that leads to recurrent symptoms such as wheezing, dyspnea (shortness of breath), chest tightness and coughing. Symptom episodes are generally associated with widespread, but variable, airflow obstruction within the lungs that is usually reversible either spontaneously or with appropriate asthma treatment ^[3].

Asthma is associated with T helper cell type-2 immune responses, which are typical of other atopic conditions. Various allergen (e.g., dust mites, cockroach residue, furred

animals, and pollens) and non-allergic triggers produce a cascade of immune-mediated events leading to chronic airway inflammation. Elevated levels of T 2 cells in the airways release specific cytokines, including interleukin (IL)-4, IL-5, IL-9 and IL-13 that promote eosinophilia inflammation and immunoglobulin E production by mast cells. Ig E production, in turn, triggers the release of inflammatory mediators, such as histamine and leukotrienes that cause Bronchospasm edema and increased mucous secretion which lead to the characteristic symptoms of asthma [4]. Wheezing disorder in childhood are common and vary widely in clinical presentation and disease course. Various phenotypes have been proposed and classified either by trigger for the wheeze, for example episodic viral wheeze or multiple trigger wheeze [5].

Alternative causes of suspected asthma symptoms should be excluded, such as chronic obstructive pulmonary disease, bronchitis, chronic sinusitis, gastro esophageal reflux disease, recurrent respiratory infections, and heart disease. A positive family history of asthma or other atopic diseases or a personal history of atopic disorders, particularly allergic rhinitis, can also be helpful in identifying patients with asthma. During the history, it is also important to examine for possible triggers of asthma symptoms, such as dust mites, cockroaches, animal dander, pollens, exercise, and exposure to tobacco smoke or cold air. Exposure to agents encountered in the work environment can also cause asthma. If work-related asthma is suspected, details of work exposures and improvements in asthma symptoms during holidays should be explored. It is also important to assess for comorbidities that can aggravate asthma symptoms, such as allergic rhinitis, sinusitis, obstructive sleep apnea and gastro esophageal reflux disease [6].

The diagnosis of asthma in young children is often more difficult since episodic wheezing and cough are common in this population and spirometry is unreliable in patients under 6 years of age. A useful method of confirming the diagnosis in young children is a trial of treatment with short-acting bronchodilators and inhaled corticosteroids [7]. Marked clinical improvement during treatment and deterioration upon cessation of therapy supports a diagnosis of asthma [8].

The goal of asthma therapy in children is to achieve asthma control by optimizing lung function, reducing limitations in day time activities and the need for reliever treatment, and by reducing asthma exacerbations [9]. Allergen-specific immunotherapy may also be considered in most patients with allergic asthma, but must be prescribed by physicians who are adequately trained in the treatment of allergies [10].

The majority of children with asthma are easy to manage with occasional bronchodilator use or low or moderate dose of ICS. Children who are referred to specialist care, but do not respond to standard therapy, are defined as having problematic severe asthma [11]. The exact prevalence of this group is hard to estimate but is probably approximately 5% of all children with asthma are 0.5% of the pediatric population [12].

Materials and methods

A Quasi-experimental research design was used to assess the effectiveness on internet based asthma self-care management of among mothers of asthmatic children. The

study was conducted through internet by using whatsapp group those who attending the pediatric OPD at Thiruvallur Government Hospital. The sample size comprised 30 mothers of asthma children, those who the inclusion criteria. The convenience sampling technique was used to collect the data from the sample. The inclusion criteria were mother with children age around 6 to 12 years, willing to participate and who are available during the data collection. Those who are not willing to participate in the study and any other chronic illness were excluded. Explained about the study and informed consent was obtained. Data were collected by structured questionnaires. Confidentiality was maintained throughout the study. The first-day pre-test was conducted and health education was given through whatsapp and the seventh-day post-test was conducted. Collected data were analyzed by using descriptive and inferential statistics. The project has been approved by the Ethics Committee of the Institution.

Results and discussion

Description of Sample Characteristics

Majority out of 30 mothers of asthma children, 16(53.3%) were aged between 18 – 25 years, 15(50%) had 2 children, 16(53.3%) had higher secondary education, 17(56.7%) were housewives, 22(73.3%) were residing in urban area, 26(86.7%) had knowledge about asthma, 17(56.7%) had not followed any inhalers and 29(66.7%) had opinioned that the best way to take asthma medicine is by inhaler.

Section A: To assess the level of knowledge regarding internet based asthma self-care management among mothers of asthmatic children.

Table 1: Frequency and percentage distribution of level of knowledge regarding internet based asthma self-care management among mothers of asthmatic children. n = 30

Knowledge	Inadequate		Moderate		Adequate	
	No.	%	No.	%	No.	%
Pretest	26	86.67	4	13.33	0	0
Post Test	0	0	0	0	30	100.0

The data presented in the table 1 shows that in the pretest, 26(86.67%) had inadequate knowledge and 4(13.33%) had moderate knowledge regarding internet based asthma self-care management among mothers of asthmatic children. Whereas in the post test, all 30(100%) had adequate knowledge regarding internet based asthma self-care management among mothers of asthmatic children.

The present study was supported by K. Kavitha, T. Kalyani Devi (2018) [13] conducted study on Effectiveness of structured teaching program on knowledge of asthmatic School children towards control of bronchial asthma. A quasi-experimental study was conducted to assess the knowledge of asthmatic school children. Pre-test post-test design was adopted.

A sample of 40 asthmatic children was selected by using purposive sampling technique. Based on the knowledge of children a structured teaching programmed was developed and its effectiveness was determined by using the same pre-test questionnaire. In pre-test majority 63% had inadequate knowledge on bronchial asthma; 30% had the moderately adequate knowledge and only 8% had adequate knowledge.

Whereas in post-test 15% had inadequate knowledge; 45% had the moderately inadequate knowledge and 40% had

adequate knowledge^[13].

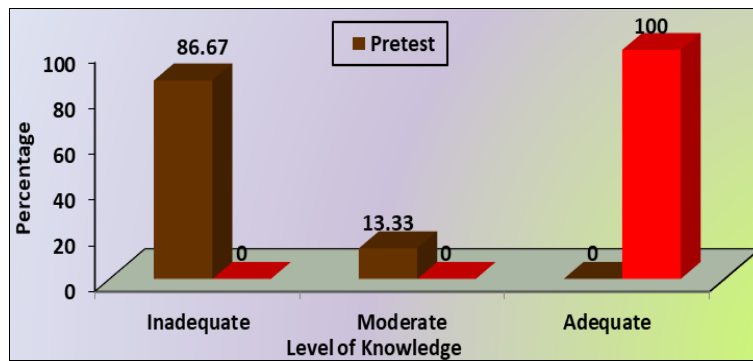


Fig 1: Frequency and percentage distribution of level of knowledge regarding internet based asthma self-care management among mothers of asthmatic children between pre-test and post-test.

Section B: To determine the effectiveness of health teaching regarding internet based asthma self-care management among mothers of asthmatic children.

Table 2: Comparison of pretest and posttest level of knowledge regarding internet based asthma self-care management among mothers of asthmatic children. n = 30

Knowledge	Mean	S.D	Paired 't' test Value
Pretest	7.77	2.01	t = 37.542 p = 0.0001 S***
Post Test	25.77	1.81	

***p<0.001, S – Significant

The table 2 shows that, the pretest mean score of knowledge was 7.77±2.01 and the posttest mean score of knowledge was 25.77±1.81. The calculated paired' test value of t = 37.542 was found to be statistically highly significant at p<0.001 level. This clearly infers that administration of Internet Based asthma Self Care management among mothers was found to be effective in improving their knowledge in the post test.

The presented study was supported by Keerthi K *et al.*, (2021)^[14] conducted a study on Is Parent Education Tool

Effective in Improving Awareness among Parents of a wheezing Child. 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. Effectiveness of the tool was assessed after 10 days of intervention using the same questionnaire. 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)^[14].

Section D: To find out the association between pre and post-test knowledge regarding internet based asthma self-care management among mothers of asthmatic children.

Table 3: Association of post level of knowledge regarding internet based asthma self-care management among mothers of asthma children with their selected demographic variables. n = 30

Demographic Variables	Moderately adequate knowledge		Adequate knowledge		Chi-Square Value
	No.	%	No.	%	
Age of mothers in years					χ ² =3.06 d.f=2 p = 0.214 N.S
18 – 25 years	8	26.7	8	26.7	
26 – 33 years	3	10.0	9	30.0	
34 – 41 years	0	0	2	6.7	
Number of children					χ ² =1.734 d.f=2 p = 0.420 N.S
1 child	6	20.0	7	23.3	
2 children	5	16.7	10	33.3	
Above 2 children	0	0	2	6.7	
Level of education					χ ² =2.135 d.f=4 p = 0.711 N.S
No formal education	0	0	1	3.3	
Primary school	2	6.7	3	10.0	
Higher secondary	7	23.3	9	30.0	
Diploma	1	3.3	5	16.7	
UG	1	3.3	1	3.3	
Occupation of mother					χ ² =3.656 d.f=3 p = 0.301
Housewife	7	23.3	10	33.3	
Coolie	0	0	3	10.0	

Private job	3	10.0	6	20.0	N.S
Government job	1	3.3	0	0	
Place of residence					$\chi^2=0.003$ d.f=1 p = 0.954 N.S
Urban	8	26.7	14	46.7	
Rural	3	10.0	5	16.7	
Have a knowledge about asthma?					$\chi^2=0.353$ d.f=1 p = 0.552 N.S
Yes	9	30.0	17	56.6	
No	2	6.7	2	6.7	
Are you following any inhalers?					$\chi^2=4.474$ d.f=1 p = 0.034 S*
Yes	2	6.7	11	36.6	
No	9	30.0	8	26.7	
The best way to take asthma medicine is by inhaler					$\chi^2=1.148$ d.f=1 p = 0.284 N.S
Yes	6	20.0	14	46.6	
No	5	16.7	5	16.7	

* $p < 0.05$, S – Significant, N.S – Not Significant

The table 3 shows that the demographic variable are you following any inhalers had shown statistically significant association with posttest level of knowledge regarding self-care management of asthma among mothers of asthma children at $p < 0.05$ level. The other demographic variables had not shown statistically significant association with posttest level of knowledge regarding internet based asthma self-care management of among mothers of asthmatic children.

The present study was supported by Nidhi Gupta (2017) conducted a study on A Descriptive Study to Assess the Knowledge and Preventive Measures Adopted by Parents for their Asthmatic Children Residing in Selected Areas of Dera Bassi, District Mohali, Punjab. Slightly more than half (54%) of parents belonged to age group 30–40. (41%) were graduate and above. As per occupation almost half (45%) were home maker. More than half (52%) parents belong to Sikh religion. Majority (62%) of parents of asthmatic children belonged to nuclear family. More than half (52%) were residing in urban area. Most of (56%) of family income was between Rs.1000–15000. Majority of (92%) families were having 1–3 children in family. Majority (86%) of families were not having any family history of asthma and. Majority (97%) of parents were having 1 child with asthma. Near about half (48%) of asthmatic children were between 0 and 6 years of age group. Major finding of the study revealed that slightly more than half of parents of asthmatic children had (52%) average and rest (48%) had good knowledge regarding asthma. Study also revealed that practice of parents regarding preventive measures was inadequate i.e. half (50%) of parents of asthmatic children were using poor preventive measures, 30% of parents of asthmatic children were using fair preventive measures and only 20% of parents were using good preventive measures for their children to prevent asthmatic attacks. knowledge of parents regarding asthma is significantly associated with certain demographic variables ($p=0.05$) as more mother had good knowledge, more subjects residing in urban Ares, with family history of asthma had good knowledge and asthmatic child is 0–6 year have good knowledge. preventive measures adopted by parents' regarding asthma was significantly associated with certain demographic variables ($p=0.05$) as respondents' age and religion.

Conclusion

The findings of the study revealed that health teaching on internet based asthma self-care management helped to

improve the level of knowledge among mothers of asthmatic children. The study concluded that there is no significant difference between the levels of knowledge on self-care management of asthma among mothers of children.

Acknowledgement

We would like to extend our gratitude to the authorities of Saveetha College of Nursing and Saveetha Medical College Hospital for this study

Authors contribution

All the authors actively participate in the work of study. All the authors read and approved the final manuscript.

Conflict of interest

The authors declare no conflict of interest.

References

- GINA report, Global strategy for asthma management and prevention 2011. <http://www.ginasthma.org/>.
- Bourdin A, Gras D, Vachier I, Chanez P. Upper airway Allergic rhinitis and asthma: united disease through epithelial cells 2009;64(1):999-1004.
- FitzGerald JM, Boulet LP, McIvor RA, Zimmerman S, Chapman KR. Asthma Control in Canada remains suboptimal: the Reality of Asthma Control (TRAC) study Canadian respiratory journal 2006;13(3):253-259.
- Lemanske RF, Busse WW. Asthma: Clinical expression and molecular Mechanisms. Journal of Allergy and Clinical Immunology 2010;125(2):95-102.
- Lougheed MD, Lemièrre C, Dell SD, Ducharme. Asthma management of preschoolers, children and adults. Canadian Respiratory Journal 2010;19(4):15-24.
- Kaplan AG, Balter MS *et al*. Diagnosis of asthma in Adults. CMAJ 2009;18(10):210-220.
- Kovesi T, Schuh S *et al*. Achieving control of asthma in preschoolers. CMAJ 2010;182(4):172-183.
- Frew AJ. Allergen immunotherapy Journal of Allergy and Clinical Immunology 2010;2(125):S306-313.
- Abramson MJ, Puy RM, Weiner JM. Allergen immunotherapy for asthma. Cochrane Database of Systematic Reviews 2003;7(8):23-24.
- Yingbo Lou, Adam Atherly *et al*. The impact of care management for high risk pediatric asthmatics on healthcare utilization. Journal of asthma 2019;58(1):133-140.
- Karen Pletta H, Bradley R, Kerr *et al*. Pediatric action

- plans: National Cross sectional online survey of parents perceptions JMIR publications 2020;3(2):21863.
12. Marjolein Engelkes, Hettie M, Janssens *et al.* Time trends in the incidence prevalence and age at diagnosis of asthma in children. *Pediatric allergy and immunology* 2015;26(4):367-374.
 13. Kavitha K, Kalyani Devi T. Effectiveness of structured teaching program on knowledge of asthmatic School children towards control of bronchial asthma. *Int J Nur. Sci* 2018;3(1):1-5.
 14. Keerthi K *et al.* Is Parent Education Tool Effective in Improving Awareness among Parents of a Wheezing Child? A Pre-Experimental Study *Journal of evidence based medicine and health care* 2021;8(6):298-301.