International Journal of Medical and Health Research
ISSN: 2454-9142; Impact Factor: RJIF 5.54
Received: 21-05-2019; Accepted: 23-06-2019
www.medicalsciencejournal.com
Volume 5; Issue 8; August 2019; Page No. 119-123

A clinical study of knowledge, attitude and practices regarding asthma among the parents of asthmatic children

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Abstract
Background: Asthma is a common chronic illness known for acute exacerbations with frequent hospitalizations. Their quality of life is affected with limited physical activity and school absenteeism. The parental perception of illness is crucial for successful management and ensuring long term compliance.
Aim: To evaluate the knowledge, attitude and practices regarding asthma among the parents of asthmatic children.
Methods: 500 parents of asthmatic children attending special asthma OP in a medical college were interviewed with a questionnaire by a principal investigator.
Results: 36% parents were aware of the diagnosis. 35% were reluctant to accept the diagnosis. 5% were aware of all aspects of the disease. 15% children were on inhalers, of these 85% were non-compliant.
Conclusion: Parental perception of the disease is poor and reflects their reluctance to accept the diagnosis. This can be achieved by setting up of specialized asthma clinics, educating the parents and timely initiation of inhalers with written action plan.

Keywords: knowledge, attitude, practices, parental perception, childhood asthma

1. Introduction

Asthma is the most common chronic illness of childhood with almost 50% cases developing by 10 years of age. Worldwide variations in prevalence have been seen and every decade there is increase in prevalence by 50% [1]. India has an estimated 15-20 million asthmatics every year. Despite revolutionary advances in asthma management there is increase in asthma morbidity and mortality. There is significant school absenteeism and loss of working hours for parents. Acute severe asthma is one of the commonest reasons for presentation to emergency department, hospital admissions and PICU admissions. The annual hospitalization rates in India have doubled in the last decade [2]. Failure to improve outcome in asthma is due to under diagnosis, delayed diagnosis, failure of initiating preventive measures, suboptimal treatment, lack of recognition of warning signs and non-compliance.

The onset of asthma for most patients is in early childhood with persistence of disease determined by risk factors like atopic disease, recurrent symptoms and a positive family history. Medical professionals are trained for the same but lack of awareness in the community affects the outcome adversely. In children the parental perception of this chronic illness is crucial for better management of acute exacerbation and improving the long-term prognosis. Poor medical infrastructure, overpopulation, overcrowding, illiteracy, poverty, myths and misconceptions continue to prevail as a result of inadequate asthma awareness [3].

A study conducted in 1995 at a tertiary centre in North India revealed poor parental knowledge associated with myths and misconceptions affecting asthma outcome in children [4].

A study done in South India a decade later in 2005 has revealed that only 3% of parents are aware that this condition results from narrowing of airways [5]. Lack of knowledge exists even in other countries. A study in China shows only 18% of parents are aware of all aspects of asthma [6]. Globally, standard protocols have been set up for better asthma care in acute severe asthma, uncontrolled asthma and prevention of asthma. Continuing medical education for medical professionals has helped in better outcome in hospital-based settings [7]. However the major challenges lie in the community and among the close relations of the asthmatic child. Parental awareness of this illness with their acceptance of this condition, awareness of the role of environmental factors and need for adherence to treatment remains crucial for asthma free episodes in an asthmatic child.

The objective of this study is to evaluate the knowledge, attitude and practices of asthma in parents of known asthmatic children.

2. Materials and Methods

This descriptive study was conducted over a 4 year period at pediatric asthma clinic at Amala institute of medical sciences, Trichur, Kerala. Parents of 500 asthmatic children attending the clinic were enrolled.

Inclusion criteria: Parents of the children between 3-16 years diagnosed to have asthma and attending this asthma clinic for the first time. These children had at least 4 documented episodes of wheezing with at least 2 episodes in last 6 months.

Exclusion criteria: Wheezing associated with cardiac diseases, bronchiectasis, children on anti-tuberculous drugs, other chronic lung diseases like cystic fibrosis, non-respiratory chronic condition like nephrotic syndrome.
Informed consent was obtained from parents. Interview was conducted by a principal investigator at one sitting with a 30 point questionnaire. Questions were designed to elicit spontaneous responses. Positive responses were noted. No attempt was made to correct any response. Questions dealt with parental perception of disease, natural history of the illness to date, precipitating factors, treatment received till date, emergency measures adopted by parents in acute exacerbations, use of inhalers and reason for discontinuation.
Statistical analysis: Was performed using chi -square test.

3. Results

Following were the results- The socio-demographic characteristics of the participants is shown in [Table 1]. Among the children whose parents were interviewed 63.2% were male children and 36.8% were female. Of the participants 82% were mothers only, 5% were fathers only and 13% both parents were present.100% parents were literate, 89% mothers had studied beyond Xth standard, and 75% fathers had studied beyond Xth standard. By the revised Kuppuswamy's socioeconomic status scale (SES) [8, 9] majority were middle class (33.6% upper middle, 47% lower middle), 1.4%upper class and 18% lower class. 69.2 % (346) were from joint families with 19.1% belonging to families with >6 members. 30.8 % (154) parents came from nuclear families. 491(98.2%) parents were married but 4(0.8%) parents were widowed and 5(1%) parents were divorced or separated. No families had a rural background. 80%were from urban areas and 20% semi urban.

4. Tables and figures

Table1: Socio demographic characteristics (n=500)

Variables	Results	
Gender of children	Male	316(63.2%)
	Female	184(36.8%)
Gender of parents	Mothers	410(82%)
	Fathers	25(5%)
	Both present	65(13%)
Education status of parents		
Fathers	< X standard	375(75%)
	>X standard	125(25%)
Mothers	<X standard	55(11%)
	>X standard	445(89%)
Socioeconomic status	Upper class	7(1.4%)
	Upper middle	168(33.6%)
	Lower middle	235(47%)
	Lower	90(18%)
Family dynamics	Joint family	346(69.2%)
	Number of family members	
	< 5	280(80.9%)
	>6	66(19.1%)
	Nuclear family < 4	154(30.8%)
Marital status	Married	49(98.2%)
	Divorced/ single	5(1%)
	Widow/ widower	4(0.8%)
Residence	Urban	400(80%)
	Semi urban	100(20%)
	Rural	0(0%)

Table 2: Details of the child's condition based on questionnaire

	Age group	Frequency (%)
Age at first onset of symptoms	< 5 years	376(75.2%)
	5 – 10 years	112(22.4%)
	>10 years	12 (2.4%)
Age at diagnosis of Asthma	Age group	Frequency (%)
	< 5 years	222(44.4 %)
	5 – 10 years	187(37.4%)
	>10 years	91(18.2%)

Table 3: Family history of allergic disorder based on SES

SES	Yes	No	Total (%)
Upper	3	4	7(42.8%)
Upper middle	155	13	168(92.2%)
Lower middle	177	58	235(75.3%)
Lower	45	45	90(50%)

p value (chi square test<0.0001)

Table 4: Parental awareness of diagnosis

Aware	180(36%)
Unaware	320(64%)

Table 5: Parental awareness about asthma based on the age groups of children

Age group	Aware	Unaware	Total (%)
<5years	20	202	222(9%)
5-10 years	75	187	235(40%)
>10 years	85	6	91(93.4%)

p value (chi square test<0.0001)

Table 6: Parental awareness based on SES

SES	Aware	Unaware	Total (%)
Upper	5	2	7(71)
Upper middle	118	50	168(70.2%)
Lower middle	57	178	235(24.2%)
Lower	0	90	90(0%)

p value (chi square<0.0001)

Table 7: Parental acceptance of diagnosis

Accepted	325/500(65%)
Not willing	175/500(35%)

Table 8: Parental acceptance of diagnosis based on SES

SES	Aware	Unaware	Total (%)
Upper	7	0	7(100%)
Upper middle	144	24	168(85.7%)
Lower middle	150	85	235(63.8%)
Lower	24	66	90(26.6%)

p value (chi square<0.0001)

Table 9: General understanding based on SES

SES	Aware	Unaware	Total (%)
Upper	4	3	7(57%)
Upper middle	10	158	168(5.9%)
Lower middle	11	224	235(4.6%)
Lower	0	90	90(0%)

p value (chi square<0.0001)

Table 10: Regarding aetiology and course of the disease

Cause of asthma	**Believed to be contagious**	**115/500(23%)**
	To be hereditary	290/500(58%)
	Could be both	70/500(14%)
	Unknown cause	25/500(5%)
Course and prognosis	Felt does not affect children	305/500(61%)
	Felt children outgrow asthma with age	415/500(83%)
	Awareness of acute exacerbations and need for long term therapy	355/500(71%)
	Awareness of co morbidities leading to uncontrolled asthma	150/500(30%)

Table 11: Regarding triggers perceived as causing an exacerbation

Dust	**380/500(76%)**
Biomass fuel/wood	325/500(65%)
Cold climate	305/500(61%)
Smoking(passive) Other smoke (waste/herbal fumes)	400/500(80%) 125/500(25%)
Diet	187/500(37.4%)
Unnecessary diet restrictions	125/500(25%)
Lifestyle habits (perfumes, air fresheners, etc.)	235/500(47%)
Exercise	280/500(56%)

Table 12: Regarding treatment

Regarding Alternative management	**Have been on alternative medicine in the past**	**475/500(91.4%)**
	Ayurveda	180/500(36%)
	Homeopathy	304/500(60.8%)
	Will prefer to continue same in a non-emergency situation as believe there is cure in alternative medicine	150/500(30%)
	awareness for long term prevention	80/500(16%)
	awareness of inhalers used for control and relief	140/500(28%)
Emergency measures taken by parents when child has an acute exacerbation	Start oral syrup/tablet	450/500(90%)
	Get nebulised at clinic	320/500(64%)
	Prefer injections as quick relief	125/500(25%)
	Choose nebulizer over inhaler	235/500(47%)
	Home nebulizer used	165/500(35%)
	On oral steroids for relief by local physician	210/500(42%)
	Self-administered steroids	65/500(13%)

Table 13: Regarding inhaler treatment

Already on inhalers at time of interview	**75/500(15%)**
Upper	3/7(42%)
Upper middle	50/168(29.7%)
Lower middle	20/235(8.4%)
Lower	2/90(2.2%)
Those not on inhalers and reluctant to start the same	204/425(48%)
Upper class	Nil (all agreed)
Upper middle	23/118(19.4%)
Lower middle	118/215(54.8%)
Lower	74/88(84%)
Those on inhalers	(n =75)
Aware of diagnosis	75/75(100%)
Age appropriate device	14/75(18.6%)
Accuracy of technique	40/75(53.3%)
Non-compliant or irregular use	64/75(85.3%)
Written action plan for emergency	5/75(6.6%)

Table 14: Patients on inhalers based on SES

SES	**On inhalers**	**Not on inhalers**	**Total (%)**
Upper	3	4	7(42%)
Upper middle	50	118	168(29.7%)
Lower middle	20	215	235(8.4%)
Lower	2	88	90(2.2%)

p value (chi square<0.0001)

Table 15: Reluctance to start inhalers based on SES

SES	**Willing**	**Reluctant**	**Total (% of reluctant)**
Upper	4	0	4(0%)
Upper middle	95	23	118(19.4%)
Lower middle	97	118	215(54.8%)
Lower	14	74	88(84%)

P value (chi square<0.0001)

Table 16: Myths and misconceptions about inhalers

Myths and misconceptions	**410/500(82%)**
Phobia of inhalers	480/500(96%)
Can be habit forming	460/500(92%)
Adverse effects	460/500(92%)
Difficult to use	440/500(88%)
Social stigma	415/500(83%)
Only as last resort	440/500(88%)
Should be a cure	480/500(96%)
Not cost effective	280/500(56%)

5. Discussion

Asthma is a chronic condition which can be well controlled but not cured. If uncontrolled it leads to acute exacerbations, hospitalizations and poor long outcome. There is a substantial financial burden to patients, families and community. In any asthmatic patient preventive management and emphasis on long term inhaler therapy remains the main goal for successful outcome. Asthma has an incidence of 12.5 per 1000. Paediatric asthma prevalence is on the rise. In children the parental awareness of this condition is very crucial for good outcome in the child. Our study focuses on evaluating the parents on their awareness of the diagnosis, knowledge about the condition, their awareness towards its prevention and the beliefs regarding treatment, its associated myths and misconceptions.

Awareness of child's diagnosis

Only 36% parents were aware that their children had asthma. Based on the age groups only 9% in group 1(<5years) were aware as compared to 40% in group 2 (5-10 years) and 93.4% in group 3 (>10years). This difference is statistically significant (p value<0.0001). This is also reflected in the differences seen in the table 2 which shows age at first onset of symptoms and age when asthma diagnosis was reached. Symptoms suggestive of airway obstruction, wheeze and asthma were noted in 75.2% of children before 5 years of age (group1) but only 44.4% of these children got diagnosed before 5 years. This shows there is delayed diagnosis in younger children which hence reflects in the data regarding poor parental awareness of the diagnosis. Data based on SES revealed that parents from lower SES class [10]. Have significantly poor awareness about the child's diagnosis compared to upper and middle classes and the difference is again statistically significant (p

value<0.0001). Family history was elicited in 380 cases (76%). This is higher in comparison to previous 2 studies, in 2005 a study revealed positive family history in 45% only [5]. And another study it was >50% [10]. This higher positive history in our study shows majority of those who mentioned positive family history were from upper middle (92.2%) and lower middle (75.3%) class. The lower class denied family history in 45% cases and this shows a significant p value of <0.0001. Hence the lower SES are unaware of the child's diagnosis and also are unclear about the family history. Class values and educational status being a basic determinant has been demonstrated in previous study also [4].

Acceptance of diagnosis

The diagnosis was accepted by 65% parents. There is a higher acceptance in our study compared to a similar study in 2005 [39%]. The acceptance among parents of upper, upper middle and lower middle class is more than the lower SES(26.6%) and is again statistically significant (p value< 0.0001).

General understanding about asthma

The overall general understanding of asthma, its pathogenesis and its course is poor in majority of parents with only 5% being able to understand all aspects. 23% attributed asthma being contagious, which is also similar to a previous study from Chennai in 2005 [5]. Thus highlighting the need to communicate to parents about the aetiology. Regarding the course of the disease, 61% felt asthma does not affect children and even if children have asthma 83% believed the child outgrows asthma as he gets older. 71% were aware of acute exacerbations and need for long term therapy, 30% were aware of co morbidities affecting asthma. This indicates a better communication between physician and patient is needed for a better understanding of the outcome of asthma [10]. A study was carried in mild asthma patients (beyond 14 years of age) in 2005 to document the role of educating patients about disease and its influence on the compliance in asthma treatment [11]. It showed a positive influence in compliance and lesser morbidity in the asthma educated group with lesser exacerbations, fewer hospitalizations. Another study conducted with 1400 patients in North India showed that asthmatics receiving treatment under 'specialist' and under 'Institute care' had better awareness about asthma and resulted in reduced exacerbations and better quality of life [12]. This emphasizes the need for improving communication for patients at primary care facilities and need for establishing specialised asthma clinics.

Awareness about the precipitating factors and triggers

More than 2/3rd of parents were aware of majority of precipitating factors including major triggers like dust, biomass fuel, and smoking. However though 56% parents were aware of exercise being triggers, these children were restricted from physical activity. The parents need to be aware of pharmacological and non-pharmacological measures which can prevent exercise induced bronchoconstriction. 47% parents were not aware of triggers like air fresheners, strong odours, and perfumes indicating an increase in prevalence could be attributed to newer and modern lifestyle habits. 25% parents believed in unnecessary dietary restrictions.

Alternative medicines used for treatment

36% parents had tried Ayurveda and 80.6% had homeopathy with 30% choosing these alternative therapies for long term non-emergency management. A previous study in 2002 has quoted 79% opting for complementary medicine which included Ayurveda, homeopathy and yoga [13].

Awareness of emergency measures in acute exacerbations

64% get nebulised immediately at local clinic or hospital, 35% practice self nebulisation at home and are unaware of the risks involved. On enquiry 47% prefer nebuliser over inhaler.13% start their children on oral steroid with over the counter medication without physician consultation. But 90% were aware an emergency measure needs to be taken and usually resorted to oral syrups containing bronchodilators by self-administration or used previous prescriptions. Awareness of starting an emergency medication has increased as compared to a previous study where only 45% to 62% resorted to oral medications [4]. Incidence of home nebulisation has increased, a previous study reported only 1% nebulisation at home [5]. In another study a high rate of morbidity was seen in patients using nebulisation at home and particularly in those not on regular long-term controller therapy [14].

Awareness regarding need for inhalers

16 % (80/500) were aware of need for long term preventive therapy and 28 % (140/500) were aware of need of inhalers as controller and relief measures. But only 15 % (75) were already on inhalers at time of questioning. This number is similar to the study from Chennai (13%) [5]. There was a statistically significant difference among the various SES groups with only 2.2% of lower SES being already on inhalers with greater number of children from upper and middle class already using them. Among those not on inhalers again 84% of the lower SES was noted to be reluctant to start inhalers in comparison with upper and middle class, this difference is statistically different.

Use of inhalers

Among those prescribed inhalers, the age appropriate devices were being used only in 18.6% and technique was accurate only in 53.3% children. Improper inhalation techniques have been demonstrated even in adult studies with need for reinforcement of technique being emphasized [15]. A significant number 85.3% were non-compliant or failed to use inhalers regularly. Written action plan was executed only by 6.6% parents and in developed countries previous studies have shown only 25% adults had written action plan [16].

82% of parents had misconceptions about inhalers and this added to their reluctance and non-compliance.

6. Conclusion

Overall parental awareness of an extremely common chronic condition like asthma is inadequate. Failure to diagnose asthma, lack of awareness and failure to start treatment early was seen in the younger age group children and those from lower SES class. As this condition has an unpredictable course there is an urgent need for setting up specialized asthma clinics for better physician parent communication especially focusing on the under 5 wheezers

and lower SES class. The lower SES class needs better access to specialized clinics and emphasis on regular follow up. Good asthma management programmes to augment awareness, eliminate social stigma and eliminate misconceptions of inhalers are urgently needed in the community. A regular follow up with emphasis on better avoidance of triggers and strict implementation of Written Action Plan is needed. Every major hospital needs specialized services and trained personnel to emphasis on usefulness of inhalers, demonstrate correct techniques and monitor long term outcome.

Abbreviations: SES: Socio economic status

Funding: nil

Conflict of interest: None

7. References

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