

# Parental Asthma Knowledge

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## Summary

Asthma knowledge an important components of asthma education.

**Objective:** To determine the levels of asthma knowledge in parents of asthmatic children and factors that may influence it.

**Methods:** This is a prospective study done between March 1998 and July 1998. Sixty-seven parents were interviewed using the 31 item asthma knowledge questionnaire that had been validated and translated. The children' asthma severity was classified. The questionnaire includes bio-data of children and parents, types of medication and dosages duration of asthma, exposure to cigarette smoke, acute asthma admissions, and parent's economic status.

**Results:** The mean score for asthma knowledge was 15.5. The total score was 31. Asthma knowledge was significantly higher in parents whose children were using steroids [ $p = 0.03$ , CI (-3.58, -0.02)]. It correlated significantly with steroid dosage ( $r = 0.29$ ,  $p = 0.02$ ), and was significantly higher in parents of higher economic status. Parent's asthma knowledge had no association with children's asthma status, age of the child or parents, exposure to cigarette smoke, frequency of admission or asthma duration. **Conclusion:** The low asthma knowledge level indicates the need to increase the effort in educating parents. The main indicator for higher knowledge was steroid usage and dosage. Higher asthma knowledge in the high-income group was probably related to levels of education.

**Key Words:** Parental asthma knowledge

## Introduction

Asthma is a chronic inflammatory disease that results in morbidity and mortality. It may also cause substantial economic loss<sup>1</sup>. In Malaysia the prevalence ranges from 4.2 - 13.1% depending on the locality<sup>2,3</sup>. The aims in asthma management are to achieve minimal symptoms, normal lung

function and no acute exacerbations. Despite the availability of medication, asthma in Malaysia is still underdiagnosed and undertreated<sup>4,5</sup>. There are many factors that contribute to this such as undertreatment, non-compliance to medication and management plan, underestimation of severity, failure to recognise trigger factors and delayed treatment.

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The Asthma Insight and Reality in Asia Pacific study (ARIAP) highlighted the need for asthma education. This may help in achieving good asthma control among asthmatic children<sup>6</sup>. Asthma education involves educating patients and parents about asthma knowledge, skills and attitude necessary to control their symptoms, disease coping skills and motivation on how to participate in the management plan. The knowledge of asthma would include the understanding of its chronicity and pathophysiology, recognising symptoms of acute exacerbation, precipitating factors, immediate and preventive treatments, treatment aims and daily life activity. It has been shown that patients given asthma education had fewer admission days to the hospital and felt much better<sup>7</sup>. Patients with better asthma knowledge will be less dependent on acute and emergency units to treat their acute exacerbations<sup>8</sup>.

Poor asthma knowledge results in lower adherence to asthma treatment<sup>9</sup> while increasing asthma knowledge improved the compliance<sup>10</sup>. Parents play an important role in managing their children's asthma. In younger children, parents are responsible to care for their children's environment, medication and to bring them to the hospital when further management is necessary. In older children, parents can monitor their children's behaviour, environment and treatment compliance. Parents are affected both physically and emotionally by their children's illness<sup>11</sup>. Thus educating parents is an integral aspect of asthma management in children. Good parental understanding is shown to be associated with adequate treatment<sup>12</sup>. The objectives of this study were to assess parent's asthma knowledge and factors that may influence their level of knowledge.

## Materials and Methods

Parents with asthmatic children attending the respiratory clinic in Paediatric Institute, Hospital

Kuala Lumpur or who were admitted to general ward for acute exacerbations were invited to participate in the study. The study duration was five months. Both parents and children were chosen in term of their availability when interviews were conducted. Asthma was diagnosed according to The American Thoracic Society definition 1987<sup>13</sup>. These children were followed-up by paediatricians in the Institute.

Children aged between six months to 16 years were included in the study. Excluded were children diagnosed to have other chronic respiratory problems such as gastro-oesophageal fistula, bronchopulmonary dysplasia, bronchiectasis, cystic fibrosis and all forms of cardiac disease. Parents who could not comprehend the questionnaire were excluded.

### *Asthma knowledge questionnaire.*

This questionnaire was developed and validated by Fitzclarence and Henry<sup>14</sup>. The questionnaire has 31 questions that ask about asthma symptoms, trigger factors, basic physiology, types of medication and its usages and important general knowledge about asthma (Table I). For all questions except questions no 1, 6, 10, 21 and 23, the required answer was either true or false. Only a correct answer was given a score of one. A wrong answer or "don't know" scored zero. For questions 1, 6, 10, 21 and 23 where specific answers were needed, the score given depended on the model answer. The total score was 31. The questionnaire was selected because it was used before in the local population in its translated version<sup>15</sup>.

### *Asthma background severity.*

Background severity was based on asthma control in the past one year and presence of symptoms in the past two weeks. Questions include frequency of asthma exacerbations, number of admissions and visits to the physician in the past one-year, current medication, dosages and possible trigger factors. Based on this

questionnaire, patients were categorized into infrequent episodic, frequent episodic and persistent asthma. The severity was determined by the presence of symptoms such as cough, wheezing episodes, presences of breathlessness, early morning and nocturnal waking in the previous two weeks.

#### *Definition*

Asthma was defined as infrequent, frequent, or persistent based on previous consensus guidelines<sup>16</sup>.

#### *Study Design*

This was a cross-sectional study conducted over a period of five months. Either the mother or father answered the questionnaire. Once informed consent was obtained, the bio-data of parents and children that involved in the study were taken. The bio-data of each child included age, sex, and duration of asthma. The parent's bio-data consisted of age, sex, education, monthly family income, smoker status or presence of smoker at home, and employment. Levels of education were classified as primary school level, secondary school level, diploma, and bachelor degree and above. Monthly family income was categorised to less than RM1000, less than RM2000, less than RM3000 and RM4000 and above. Parents were interviewed by a researcher using the Asthma Status Questionnaire and subsequently the Asthma Knowledge Questionnaire.

#### *Statistics*

All data were entered into database SSPS version 10.00. Statistical analysis was computed using the SPSS package. For continuous data, the correlations between the variables were determined using Pearson's correlation test. For categorical data, the independent T test was used to test levels of significance. When there was more than two data, analysis of variance (ANOVA) was used. Linear logistic regression was used to determine the significant dependent variable. P-value of less than 0.05 with confidence interval 95% was taken for level of significance.

## **Results**

#### *Parents:*

Sixty-seven parents participated in the study. Thirty-one of them were parents of children who had been admitted in the ward because of asthma. Thirty-six parents were of stable children seen in the specialist clinics for regular follow-up. The mean age of the parents was 36.1 (33-46) years. Thirty-eight parents had spouses who were also working. Only 26 parents stated their monthly income and level of education.

#### *Asthma Knowledge*

The mean score was 15.5 (8.2-24.0). The highest score in individual question were for question numbers 26, 27 and 31. Sixty-four parents were able to answer these questions correctly. The lowest score was for question 28. Only five parents were able to answer it correctly. Table I shows the number of correct responses in each question.

There was a significant positive correlation between parental asthma knowledge and their children's steroid dosages ( $r = 0.30$ ,  $p = 0.01$ ), socio economic status ( $r = 0.56$ ,  $p = 0.03$ ) and level of education ( $r = 0.60$ ,  $p = 0.01$ ). However it did not significantly correlate with duration of asthma ( $r = -0.05$ ,  $p = 0.97$ ), frequency of admission ( $r = 0.14$ ,  $p = 0.25$ ) and age of the child ( $r = -0.09$ ,  $p = 0.95$ ). Asthma knowledge among parents whose children were on steroids was significantly higher than those who were not ( $p < 0.036$ , CI (3.5, 0.21)). Other variables did not significantly influence parent's asthma knowledge. (Table II) Using linear regression analysis, the most significant factor that influenced the level of asthma knowledge was education level.

Many parents knew that their children's airways were more sensitive than normal children (79.1%), but only five (7%) knew that airway obstruction was caused by both, muscle contraction and increased secretions in the

airway. Forty-nine parents knew only either one of the pathology. This indicated lack of understanding in the physiology of asthma.

Regarding treatment, 25 (37.3%) parents were unable to name any preventive medications, and similar number of parents did not know the name of the medication for acute asthma exacerbation. Many parents recognised the medication by the colour of the metered dose inhalers. Thus there would be not much confusion since many of them are using only two types of MDI.

About the side-effects of the medication, only 35 (52.2%) parents agreed that inhaled medication had fewer side effects than oral medications. While 17 (25.4) parents believed that short term oral steroids had many side-effects. When parents were asked the causes of failure to respond to initial dose of MDI bronchodilator during the acute exacerbation, 54 (80.6%) parents could give only one cause, which was the severity of the

asthmatic attack. Forty-five parents (67.2%) thought that it was alright to continue the treatment at home despite that the lack of benefit to initial treatment as long as the child's condition did not worsen. This may have delayed coming to hospital for the necessary treatment.

Many parents recognized that exercise triggered asthmatic attacks. Twenty-eight (41.8%) children were noticed by their parents to develop acute exacerbations during exercise. However 67.2% of the parents didn't know any methods to prevent an asthmatic attack during exercise. There were many fallacies about asthma. There were parents who believed that asthma can damage the heart (53.7%), allergy injection can cure asthma (62.7%), antibiotics are important in asthma treatment (62.7%), asthma is infectious (20.9%), and that children can become addicted to asthma drugs (37.3%). Many parents believed that the majority of asthmatic children had stunted growth (56.7%).

**Table I: Number of correct responses for each questions**

Question No	Correct answer (%)	Correct answers compared to model answer
1. What are the three mains symptoms of asthma?		One: 33 (49.3) Two: 24 (35.8) Three: 9 (13.4)
2. More than one in 10 children has asthma in their childhood.	44 (65.7)	
3. Children with asthma have abnormally air passages in their lung.	53 (79.1)	
4. If one child have asthma then all his/her brothers and sister are almost certain to have asthma as well.	46 (68.7)	
5. Most children with asthma have an increase in mucus when they drink cow's milk.	20 (29.9)	
6. Write down all the thing you know that causes asthma (sometimes call trigger factor)		One: 52 (77.6) Two: 13 (19.4)
7. During an attack of asthma the wheeze may be due to tightening in the wall of the air passages in the lung.	54 (80.6)	

8. During an attack of asthma the wheeze may be due to swelling in the lining of the passages in the lungs.	31 (46.3)	
9. Asthma damages the heart	17 (25.4)	
10. Write down two asthma treatments (medicines), which are taken everyday on regular basis to prevent attack on asthma from occurring.		One: 35 (52.2) Two: 7 (10.4)
11. What are three asthma treatments (medicines), which are useful during an attack of asthma?		One: 30 (44.8) Two: 12 (17.9)
12. Antibiotic are important part for treatment for most children with asthma.	25 (37.3)	
13. Most children with asthma should not eat diary products.	37 (55.2)	
14. Allergy injection cures asthma.	31 (46.3)	
15. If a person dies from an asthma attack, this usually means that the final attack must have begun so quickly that there was no time to start any treatment.	10 (14.9)	
16. Person with asthma usually have "nervous problem"	28 (41.8)	
17. Asthma is infectious (i.e. you can catch from other person)	53 (79.1)	
18. Inhaled medications for asthma (e.g. Ventolin puffer, rotacaps) have fewer side effect than tablets	35 (52.5)	
19. Short cause of oral steroids (such as prednisolone usually cause significant side effect.	12 (25.4)	
20. Some asthma treatment (such as ventolin) damages the heart.	19 (28.4)	
21. A five years old boy has an attack of asthma and take two puffs of ventolin from a puffer (meter dose inhaler). After five minutes he is no better. Give some reasons this might happen.		One: 34 (50.7) Two: 12 (17.9)
22. During an attack of asthma, which you are managing at home, your child required a nebuliser every two hour. He/she is gaining benefit but is very breathless after two hours. Provided he/she not getting any worse, it is found to continue with two hourly treatments.	22 (32.8)	
23. Write down ways of helping to prevent attacks of asthma during exercise.		One: 16 (23) Two: 1 (1.5)
24. Children with asthma become addicted to their asthma drugs.	41 (61.5)	
25. Swimming is the only suitable exercise for asthmatic.	34 (50.7)	
26. Parental smoking may made child's asthma worse.	64 (95.5)	
27. With appropriate treatment most children with asthma should lead a normal life with no restriction in activity.	64 (95.5)	
28. The best way to measure the severity of child's asthma is for the doctor to listen to his chest.	5 (7.5)	
29. Asthma is usually more of the problem at night than during the day.	50 (74.6)	
30. Most children with asthma will have stunted growth.	29 (43.3)	
31. Children with frequent asthma should use preventive drugs.	64 (95.5)	

**Table II: Relationship between various variables and asthma knowledge**

	Mean score for parental asthma knowledge	p - value	Confidence interval (CI)
Ward patient	15.70	0.72	(-1.48, 1.97)
Clinic patient	15.38		
Father	14.69	0.33	(-1.13, 3.31)
Mother	15.78		
Both spouse working	15.81	0.49	(-1.15, 2.36)
One spouse working	15.21		
Working mother	15.98	0.13	(-0.40, 3.16)
Housewife	14.61		
Stay with smoker	15.65	0.74	(-1.43, 2.01)
Stay with non-smoker	15.37		
History of admission	15.71	0.43	(-2.33, 1.27)
No admission	15.18		
Treatment			
a) B2-agonist only	14.36	0.10	(-1.13, 3.31)
On prophylaxis	15.94		
b) Use steroid	14.40	0.027	(-3.58, -0.22)
No steroid	16.30		
c) Beclomethasone	15.80	ANOVA	
Budesonide	17.76	0.77	
Cromoglycate	14.50		
Within group			
Becl - Bude		0.11	(-0.48, 3.76)
Bude - Cromo		0.02	(0.51, 5.98)
Becl - Cromo		0.28	(-1.63, 3.76)
Asthma status			
a) Frequent episodic.	15.44	ANOVA	
b) Infrequent episodic.	15.85	0.54	
c) Persistent episodic	15.23		

## Discussion

The mean score of the parents was 15.5, which was 50% of the total score. This was lower than that of parents in the Royal Children Hospital, Australia who scored 19.9. The total mean score in special groups when using the same questionnaire in our local population was, 24.3 for third year medical students, 18.3 for paramedics, and 19.9 for nurses<sup>17</sup>. The range was also very wide (8.4-24.0). This is quite unsatisfactory

especially for a tertiary centre. The majority of patients seen in the Paediatric Institute were of lower socioeconomic status. They represent the group with a lower level of education as in other government hospitals. This may be worse in the rural areas. Inadequate asthma knowledge is generally a universal problem. Even the score in the above Australian study was not satisfactory. In another study, Henry et. al. reported unsatisfactory results in parents whose children were admitted to Newcastle Mater Hospital and

John Hunter Hospital (mean 18.3). They found asthma knowledge was higher in parents whose children were previously diagnosed as asthmatics, had higher occupation level and when all residents in the house were non-smokers<sup>18</sup>. The results of this study is only similar to the above in occupational groups but not with respect to smoking status. Another difference is that their sample group was larger (171 parents).

Parental asthma knowledge was higher when their children were on steroids and correlated significantly with steroid dosages. Higher steroids usage meant more severe and difficult asthma.

Thus these children were seen at more regular intervals to monitor their progress. Asthma education in this group was emphasized more than to the less problematic group. As a result they had more regular and closer contact with the health personnel.

In conclusion this study showed generally inadequate asthma knowledge in parents and more effort should be made to disseminate asthma knowledge to parents. Asthma education must be emphasized as part of asthma management.

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