

**INTERPRETATION OF COMMON
RESPIRATORY SYMPTOMS AND ATOPIC
DISEASES BY PARENTS OF ASTHMATIC
CHILDREN AND THEIR PERCEPTIONS TOWARDS
ASTHMA MEDICATION.**

BY

DR.FAZULIATI BINTI FAUZI

Dissertation Submitted In Partial Fulfilment Of The
Requirement For The Degree Of Master Of Medicine
(PEDIATRICS)

**UNIVERSITI SAINS MALAYSIA
2002**

ACKNOWLEDGEMENT

I would like to express my thanks and deepest gratitude to my research supervisor, Associate Professor Dr. Quah Ban Seng for his advice, corrections and encouragement in the preparation of this dissertation. Without his support, this project would be impossible.

My special thanks also to my personal supervisor, Dr. Mazidah Abd. Rasid who has guided me in the preparation of this dissertation. A special thanks to Dr Ariffin Nasir (my personal supervisor when Dr. Mazidah was away) for his support and help in data analysis.

My special thanks to HKB and HUSM (Paediatric general ward and asthma clinic) staff for their cooperation and contribution in making this study a success.

During the preparation, many sleepless nights passed by and it would not have been possible without the support of my dear husband, Dr. Hasbullah Thaman , my lovely daughter, Farah Liyana and my beloved parents.

Finally, I would like to dedicate this dissertation to all the beautiful people who were involved direct or indirectly in this study. Last but not least, my special thanks to the parents and children who participated in this study in which without them this project would never have been possible.

TABLE OF CONTENTS

CONTENTS	PAGE
ACKNOWLEDGEMENT	ii
TABLE OF CONTENT	iii
LIST OF TABLES	iv
ABBREVIATIONS	vi
ABSTRAK	vii
ABSTRACT	x
INTRODUCTION	1
OBJECTIVES	23
METHODOLOGY	24
DEFINITIONS	31
RESULTS	32
DISCUSSION	54
LIMITATIONS OF THE STUDY	72
CONCLUSIONS	74
RECOMMENDATIONS	76
REFERENCES	77

LIST OF TABLES

TABLES	TITLES
Table 1	Distribution of asthmatic and non-asthmatic children by districts
Table 2	Distribution of asthmatic and non-asthmatic children by ethnic groups
Table 3	Distribution of asthmatic and non-asthmatic children by age group.
Table 4	Distribution of asthmatic and non-asthmatic children by parental age
Table 5	Distribution of asthmatic and non-asthmatic children by respondent in the interview
Table 6	Distribution of asthmatic and non-asthmatic children by fathers' education level.
Table 7	Distribution of asthmatic and non-asthmatic children by mothers' education level.
Table 8	Distribution of income by parents of asthmatic and non-asthmatic children
Table 9	Responses to question "Does your child ever have "lelah"? by parents of asthmatic and non-asthmatic children.

Table 10	Grouping of the description of word “lelah” by parents of asthmatic and non-asthmatic children
Table 11	Description of “lelah” by parents of asthmatic and non-asthmatic children
Table 12	Description of noisy breathing by 145 parents of asthmatic children who experienced noisy breathing
Table 13	Grouping of the description of difficulty in breathing by parents of asthmatic children
Table 14	Description of difficulty in breathing by 133 parents of asthmatic children who experienced DIB
Table 15	Responses to question “Does your child have “resdung” by parents of asthmatic children who have allergic rhinitis.
Table 16	Description of “resdung” by parents of asthmatic children who have allergic rhinitis
Table 17	Words used to describe skin lesion by parents of asthmatic children who have eczema
Table 18	Reasons for preference of inhaled medication by parents of asthmatic children
Table 19	Reasons for disliking the usage of inhalers by parents of asthmatic children
Table 20	Reasons for preferring oral medication compared to inhalers by parents of asthmatic children
Table 21	Reasons of parents concerned for long term usage of inhalers.

ABBREVIATIONS

ATS	American Thoracic Society
DIB	Difficulty in breathing
ECRHS	European Community Respiratory Health Survey
GINA	Global Initiative for Asthma
HUSM	Hospital Universiti Sains Malaysia
HKB	Hospital Kota Bharu
ISAAC	International Study of Asthma and Allergy in Childhood
SPSS	Statistical Package for Social Science

ABSTRAK

Pengenalan:

Kajian menunjukkan prevalen penyakit asma dan penyakit alahan semakin meningkat. Samada ia menunjukkan peningkatan yang sebenar adalah bergantung kepada bagaimana ibubapa menjawab soalan kajian tersebut.

Penyiasatan juga menunjukkan terdapat masalah didalam komplian terhadap ubat asma terutamanya ubat inhalasi.

Objektif:

1. Menyiasat interpretasi ibubapa terhadap gejala-gejala biasa penyakit asma dan alahan.
2. Untuk mengetahui anggapan ibubapa terhadap penggunaan ubat inhalasi didalam perawatan penyakit asma.

Metodologi:

Temuramah dijalankan dari bulan Mac 2001 sehingga bulan September 2002 di HUSM dan HKB. Ibubapa kepada pesakit asma yang datang untuk rawatan lanjutan diklinik asma HUSM dan HKB dan juga ibubapa kepada pesakit asma yang dimasukkan kedalam wad pediatrik HUSM kerana serangan asma dimasukkan ke dalam kajian. Ibubapa kepada pesakit yang tidak mengalami asma dijadikan kumpulan kontrol. Ibubapa ditemuramah menggunakan soalan yang telah disediakan mengandungi data berkaitan faktor demografi, interpretasi

kepada gejala biasa penyakit asma dan penyakit alahan, dan pandangan ibu bapa terhadap ubat asma.

Keputusan:

Seratus peratus ibubapa kepada pesakit asma mengatakan anak mereka pernah mengalami lelah manakala hanya 7.6% ibubapa kepada kanak-kanak bukan asma mengatakan anak mereka pernah lelah. ($P < 0.001$). Sebahagian besar ibubapa menginterpretasikan lelah sebagai susah bernafas. Ibubapa mengalami masalah didalam menginterpretasikan nafas berbunyi dan tiada satu perkataan pun yang sesuai untuk menerangkannya. Kebanyakan ibubapa (59.3%) hanya meniru bunyi yang mereka dengar dan tidak dapat menyatakannya menggunakan perkataan yang tepat.

88.9% ibubapa kepada pesakit asma yang juga menghidapi "allergic rhinitis" menyatakan bahawa anak mereka mengalami resdung dan hanya 14.7% ibubapa kepada kanak-kanak asma yang bukan pengidap "allergic rhinitis" mengatakan anak mereka mengalami "resdung" ($P < 0.001$). Untuk "eczema", tiada perkataan khusus untuk menyatakannya.

Kebanyakan ibubapa menyatakan mereka menyukai ubat inhalasi (68.5%), tetapi mereka tetap bimbang penggunaan ubat inhalasi untuk jangkamasa yang panjang terutama terhadap kesan sampingan ubat dan takut terlampau bergantung kepada ubat.

Kesimpulan:

Perkataan lelah telah digunakan oleh semua ibubapa kepada pesakit asma dan segolongan besar menginterpretasikan lelah sebagai susah bernafas. Tiada perkataan yang khusus untuk menginterpretasikan nafas berbunyi. Masyarakat kita juga tidak menyatakan bahawa nafas berbunyi adalah bunyi seperti siulan sepertimana yang biasa digunakan didalam soalan kajian. Perkataan resdung digunakan oleh 88.9% ibubapa kepada pesakit asma yang juga menghidapi "allergic rhinitis". Perkataan resdung juga boleh digunakan untuk menyatakan gejala-gejala yang di alami disebabkan penyakit-penyakit hidung yang lain seperti selsema, jangkitan kuman dan lain-lain. Penggunaan ubat inhalasi adalah berpatutan didalam masyarakat kita.

ABSTRACT

Introduction:

Survey evidence indicates an increased prevalence of asthma and atopic diseases in childhood. Whether it represents the true increment depends on the ways in which parents respond to survey questions. Studies also showed that there are problems in compliance towards asthma medications especially inhalers.

Objectives:

1. To investigate parents' interpretation of the common symptoms of asthma and atopic diseases.
2. To describe parents' perception towards the use of inhaled medication for asthma therapy.

Methodology:

An interview was conducted from March 2001 to September 2002 in HKB and HUSM. Parents of asthmatic children who attended asthma clinic at HUSM and HKB and whose children were admitted for asthma to the paediatric general ward HUSM were included in the study. Parents of non-asthmatic children who attended paediatric clinic at HUSM and whose children were admitted to the paediatric general ward HUSM were recruited as controls. Parents were interviewed using a standard questionnaire containing demographic data, interpretation on common

respiratory symptoms and atopic disease and their perception towards asthma medications.

Results:

One hundred percent of parents of asthmatic children mentioned that their children ever had “lelah” compared to 7.6% parents of non-asthmatic children ($P < 0.001$).

The majority of parents described “lelah” as difficulty in breathing (64.3% for asthmatic group and 83.5% for non-asthmatic group). The parents had difficulty in the interpretation of noisy breathing, most of the parents (59.3%) only imitate the sounds. 88.9% of parents of asthmatic children who have allergic rhinitis said their children had “resdung” whereas only 14.7% of parents of asthmatic children who did not have allergic rhinitis said their children had “resdung” ($P < 0.001$). For eczema, there were no any specific words which can represent eczema.

A majority of parents preferred the usage of inhalers (68.5%) but they were concerned about the side effects of long-term usage and dependency towards the drugs.

Conclusion:

Word “lelah” was used by all parents of asthmatic children and a majority describe “lelah” as difficulty in breathing. There were no specific words to described noisy breathing. Our population did not describe the noisy breathing as whistling as had been used in the survey questionnaire. Word “resdung” was used by 88.9% of parents of asthmatic children who have allergic rhinitis. “Resdung” can also be used to describe nasal symptoms due to other nasal problems such as flu, infection and others. This may explained the low positive predictive value (62.7%) of “resdung”. The use of inhalers was appropriate for our population.

1. INTRODUCTION

1.1 Background of the study

Epidemiological studies conducted worldwide suggest an increasing prevalence of childhood wheezing illnesses, under diagnosis and under treatment of asthma.

Reported wheeze is considered central to diagnosing asthma and measuring asthma prevalence. However, establishing the real prevalence of wheeze is problematic. (Cane et al, 2000)

Most estimates of the prevalence of asthma are based on the data from questionnaires about asthmatic symptoms or from the diagnosis performed by a physician. The standardized questionnaire is used to study the prevalence of asthma.

The International Study of Asthma and Allergies in Childhood (ISAAC) has established internationally an acceptable paediatric questionnaire with standardised methodology to compare the prevalence and severity of asthma and atopic diseases in children, both within and between countries (Kaur et al. 1998). Using an identical questionnaire, comparisons of prevalent figures among different countries are more valid.

ISAAC Phase One has described the prevalence of asthma, allergic rhinoconjunctivitis and atopic eczema in over 155 centres from 56 countries and has 'mapped' the prevalence of these conditions in two age groups (6 /7 and 13/14 years of age) (Warner, 1999).

For the 13 and 14 year age group, the range in self reported 12 month prevalence of symptoms of wheeze was very large, ranging from 2.1 – 4.4% in Albania, China, Greece, Georgia, Indonesia, Romania and Russia to 29.1 – 32.2% in Australia, New Zealand, Republic of Ireland and the UK. There were a number of interesting regional trends, including a strong Northwest (high) to Southeast (low) gradient within Europe. For the 6 and 7 year age group, parental reports showed a 12-month prevalence of wheeze, ranging from 4.1 – 32.1% with the lowest rates in India, Indonesia, Iran and Malaysia and the highest rates in Australia, Brazil, Costa Rica, New Zealand and Panama. The international patterns of wheeze and asthma symptom prevalence that were observed could not be explained by our current understanding of the causation of asthma. (ISAAC International Data Centre, 2000).

Norzila (2000), examined the intra-observer reliability of the Malay language versions of two international respiratory questionnaires, i.e. the International Study of Asthma and Allergy in Children (ISAAC) and the American Thoracic Society (ATS) questionnaires, and using the more reliable of these questionnaires, to

estimate the prevalence of asthma and allergy related symptoms in an ethnically homogeneous inner city community in Kuala Lumpur.

The Malay translations of both ISAAC and ATS questionnaires were administered to 787 school children aged 7 to 12 years old of Malay ethnic in an inner city of Kuala Lumpur which were answered by their parents.

She found that the translated ISAAC questionnaire was more reliable than the translated ATS questionnaire. Asthma and related symptoms were common among Malay school children in the inner city of Kuala Lumpur.

From her study, according to the ISAAC questionnaire the prevalence of ever wheezes, wheezes in the last 12 months, ever asthma, and wheezes with exercise in the last 12 months was 12.5%, 6.6%, 10.3% and 5.9% respectively. The prevalence of ever sneeze or runny nose, sneeze or runny nose in the last 12 months, watery eyes in the last 12 months and eczema was 15.2%, 11.1%, 4.4% and 8.5% respectively.

In our local set up in 1995, a study by Quah (1997) using written ISAAC questionnaire administered to 7055 school children in 1995 reported a prevalence of 'ever wheeze', 'wheeze in the last 12 months' and 'diagnosed asthma' of 9.4%, 6.0% and 9.4% respectively. He studied two age groups (5 to 7 year old and 12 to 14 year old) and found that the older age group had more severe asthma symptoms (by frequency of recent wheeze and their sleep disturbance). He also found a prevalence of 'rhinitis ever' about 27% and 'eczema ever' of 12%.

Reported wheeze has frequently been used as a surrogate marker for asthma and is considered central to diagnosing asthma and measuring asthma prevalence. ISAAC questionnaire used wheeze as one of the indicator for asthma. Assuming that wheeze could be considered a homogenous symptom, there are no exact equivalents of wheeze in some languages. Similarly, there is no exact word in the Malay language those equivalents to wheeze.

It is not known whether the translation of wheeze and other respiratory symptoms to the Malay language is the same with parents' interpretation in order for them to answer correctly.

Recent quantitative research done by Cane et al. (2000), has found that parents' concepts of wheeze differ from those used in epidemiological surveys, and that parents use the term "wheeze" to describe a range of respiratory noises, only some of which conform to a clinical definition of wheeze.

Cane and McKenzie (2001) noted parents locate sounds better than describing them. At least 30% of all parents use other words for wheeze and 30% labelled other sounds as 'wheeze'.

Young et al. (2002) also found that parents in their study offered descriptions of wheeze, which included terms that do not usually feature in classic clinical descriptions of wheeze. As in many survey instruments, including the ISAAC questionnaire, whistling was used as a descriptor for wheeze, but their findings suggest it might be misleading or confusing to use this description without some qualification.

Elphick et al. (2001) did a study to investigate terminologies used by parents to describe their children's breathing sounds. They found that wheeze was the most commonly chosen word on initial questioning (59%). Only 36% were still using this term at the end of the interview, representing a decrease of one third, whereas the use of the word "rattles" doubled. They concluded that their results reflect the degree of inaccuracy involved in the use of the term wheeze in clinical practice, which may be leading to over diagnosis of asthma.

The aim of this study is to investigate the words used by parents to describe their children's respiratory symptoms. Words used by parents to describe their child's respiratory symptoms will guide us in knowing whether their interpretation of these symptom were as expected in survey questions and enable us to use these words in studies of prevalence of asthma in our population.

To do this it is essential to understand how parents identify, classify and experience their children's respiratory symptoms for them to interpret key questions in survey instrument.

This study also tries to describe the symptoms used by parents in other atopic diseases, such as allergic rhinitis and eczema.

Asthma and allergic rhinitis are linked in several ways. The shared immunology pathogenesis is nasal bronchial reflex and allergen sensitisation. Epidemiological studies have also shown a link between asthma and allergy. There is interrelatedness of the upper and lower airway function, the link operating directionally from the sinuses to the lungs. In addition, there is a co-occurrence of asthma and allergic rhinitis in the population.

Furthermore, both conditions respond to similar treatments, including anti-histamine-containing therapies that may ameliorate allergic rhinitis and also potentially help alleviate asthma symptoms. (DuBuske, 1999)

For asthma and atopic eczema, the immunobiology of these disorders have shown a common pathophysiological basis of an exaggerated and inappropriate IgE mediated inflammation in response to allergen exposure, this is referred as allergy. (Sheikh- ,2002)

The ISAAC study (ISAAC International Data Center, 2000) showed the prevalence of rhinitis with itchy-watery eyes (“allergic rhinoconjunctivitis”) in the past year varied across centres from 0.8% – 14.9% in the 6/7 year olds and from 1.4% – 39.7% in the 13/14 year olds. Within each age group, the global pattern was broadly consistent across each of the symptom categories. In centres of higher prevalence there was great variability in the proportion of rhinoconjunctivitis labelled as hay fever. The lowest prevalence of rhinoconjunctivitis was found in parts of Eastern Europe, South and Central Asia. High prevalence was reported from centres in several regions. The results suggest substantial worldwide variations in the prevalence and labelling of symptoms of allergic rhinoconjunctivitis.

The ISAAC study also showed that the prevalence range for symptoms of atopic eczema was similar in both age groups, from less than 2% to over 16% and less than 1% to over 17% in the 6/7 and 13/14 year age groups respectively. A higher prevalence of atopic eczema symptoms was reported in Australasia, Northern Europe and some centres in Africa and lower symptom prevalence was reported in Eastern and Central Europe and Asia. Similar patterns were seen for symptoms of severe atopic eczema. The results also suggest substantial worldwide variation in the prevalence and labelling of symptoms of atopic eczema.

This study aims to determine words used by the parents to describe these atopic diseases in the Malay language. As with asthma, it is essential to understand how parents identify and classify these symptoms for them to interpret the questions in survey instrument.

As asthma is the most common chronic illness of childhood, a better understanding of parents' attitude towards inhaled asthma medication would be helpful in improving asthma educational programmes and therefore ensure a better patient compliance with therapy. Therefore, their perceptions towards asthma medication should be evaluated in order to ensure patient compliance and the effectiveness of the therapy.

2. LITERATURE REVIEW

2.1 DEFINITIONS AND DIAGNOSIS OF ASTHMA

Estimates of the prevalence of asthma in childhood are higher in developed countries than in developing areas of the world. The lack of an agreed definition for asthma leads to inconsistent diagnostic practices, which may partially explain these differences. Thus data are not easily compared and provide little information that can be used in health planning or in defining the causative agent. (Ferris 1978; Gregg 1986)

A physician faces many challenges in making a definitive diagnosis of asthma in young children. Although there are clinical and historical features consistent with asthma, identical features are present in many other diseases. Furthermore there is no specific test for asthma. Other disease must always be ruled out before a definitive diagnosis of asthma is made.

The working definition of asthma set forth in the Guidelines for the Diagnosis and Management of asthma prepared for the National Heart, Lung, and Blood Institute's National Asthma Education and Prevention Programme (NAEPP) indicates that asthma is a chronic inflammatory disorder of the airways characterized by recurrent episodes of wheezing, breathlessness, chest tightness,

and coughing. Furthermore these episodes are usually associated with widespread, but variable airflow obstruction.

Although this definition of asthma is technically correct, it is not helpful in making diagnosis in young children. Chronic inflammation can be present in other lung diseases and can cause the same pattern of recurrent chest symptoms. Because there is no specific test for asthma, other diseases must be ruled out before a diagnosis of asthma can be made. (Strunk, 2002).

Makino (1996) stated that asthma is characterized clinically with repeated episodes of wheezes and dyspnoea, associated with at least a partially reversible airway narrowing, physiologically increased airway responsiveness, a pathologically inflammation of the airway with the infiltration of eosinophils, T cells and mast cells, immunologically in around two thirds of patients, increased production of Ig E antibodies to environmental allergens.

Kemp and Kemp (2001) propose asthma as a chronic inflammatory disorder that produces airway hyper-responsiveness, airflow limitation and persistent respiratory symptoms, such as wheezing, coughing, chest tightness and shortness of breath. Acute bronchoconstriction, airway oedema, mucus plug formation and airway remodelling produce airflow limitation.

A number of studies have suggested that asthma is under diagnosed, particularly in children. (Kaur et al, 1998). To make a diagnosis of asthma, a history of recurrent respiratory symptoms must be established, alternative diagnosis must be excluded, and reversible airflow obstruction must be demonstrated. Problems associated with making a diagnosis include the frequent remission and exacerbation of symptoms, the inability to perform spirometry in young children, the lack of availability of spirometric equipment in most paediatric offices, and frequent symptoms of cough in the presence of viral infections.

Hall et al (2001) did a survey to aid providers in the diagnosis of paediatric asthma. The survey is part of a comprehensive asthma management programme called Easy Breathing, which was implemented in Hartford, Connecticut. The aim was to determine the sensitivity, specificity, and predictive value of a simple, self-administered questionnaire for the diagnosis of asthma in children.

They designed this study by developing the questionnaire to assist primary care providers in making a diagnosis of asthma in children and were administered in 4 different primary care and subspecialty clinics, validated, and then used as part of an asthma management programme called Easy Breathing. Asthma diagnoses were made according to recommended National Asthma Expert Panel Guidelines. They found that 4 questions on survey were shown to be sensitive and specific for asthma.

The 4 questions are:

1. wheezing
2. nocturnal cough
3. exercise induced respiratory symptoms
4. persistent cough with cold.

The sensitivity was greater for all levels (mild, moderate, severe) of persistent asthma than for intermittent asthma. A positive response to any one of the 4 questions was over 94% sensitive for asthma; a negative response to all 4 questions was 55% specific for ruling out asthma.

They concluded that patient responses to 4 specific respiratory symptoms questions could assist primary care providers in diagnosing asthma in children. Primary care providers serving paediatric populations at high risk for asthma should consider asking patients or their parents these 4 questions regarding asthma symptoms on a regular basis.

Most of the previous attempts to develop diagnostic instruments for asthma have been for adults. The ISAAC questionnaire developed and validated specifically for use in paediatric epidemiological studies is not useful for practitioners' practice. These previous attempts to validate asthma surveys used reactivity to bronchial challenge testing with histamine or exercise as the diagnosis gold standard. However, bronchial challenge testing is even less useful in paediatric practice because it cannot be used in children less than 7 years old and it is not practical to

use in large populations of children. For these reasons, in order to achieve greater specificity and consistency across age ranges, Hall et al (2001) used clinical diagnosis of asthma as their standard. This approach is consistent with The National heart, Lung, and Blood Institute National Asthma Expert Panel Asthma Guidelines in which episodic symptoms of airflow obstruction with exclusion of other diagnoses are the basis for a diagnosis of asthma and they reported higher specificity and similar sensitivity than reported for the other instruments.

(Hall et al, 2001)

From the reasons that have been stated above, we have chosen all children with doctor diagnosed asthma (clinical diagnosis of asthma) for ease of recruitment of our study. Furthermore, we do not have any expertise or facility for the bronchial challenge test.

2.2 PREVALENCE OF ASTHMA

The prevalence of paediatric asthma has risen sharply over the past 30 years, as has its impact on childhood and associated costs (Wood, 2002).

2.2.1 Prevalence of asthma in Western countries

Asthma prevalence is generally higher in Western countries than in developing countries. This pattern is illustrated by the European Community Respiratory Health Survey (ECRHS) findings in which the rates for “wheezing in the last year” are considered. The median prevalence for ECRHS study was 20.7%, with a range in the Western countries of 8.5% (Pavia) to 32.0% (Dublin). However, the prevalence was 4.2% in Algiers and 4.1% in Bombay. Similar observations were made in the preliminary report of the ISAAC findings from the Southeast Asian region. (Beasley, 2000)

2.2.2 Asthma prevalence is increasing in developing countries as they become more westernised or become urbanized.

Asthma prevalence is increasing in developing countries as they become more westernised. For example, Hsieh and Tsai examined the prevalence of allergic disorders in school children of 7 and 15 years of age in Taipei, Taiwan, and found that prevalence of childhood asthma increased from 1.3% in 1974 to 5.1% in 1985 and 5.8% in 1991. (Beasley, 2000)

Similar findings have been observed when communities move from a rural to an urban environment. The magnitude of the increase in asthma prevalence that may occur with urbanization would be considerable. For example, in a study from the 1970s the prevalence of asthma among Xhosa children living in a Cape Town township was more than 20 times greater than those from a rural area in the Transkei. Similar findings have been observed in a more recent study from Zimbabwe, in which exercise induced asthma was used as a more objective marker of reversible airflow obstruction. In this study, 25 to 50 fold differences between rural and urban populations were observed, findings that could not be accounted for by genetic factors. (Beasley, 2000).

2.2.3 Changing prevalence of asthma

Annual Health Interview Surveys have disclosed increases in self-reported prevalence of asthma in the United States from 30.7 per 1000 in 1980 to 53.8 in 1993-1994. The greatest proportionate increase has occurred in children less than 5 years of age with a 160% increase from 22.2 per 1000 in 1980 to 57.8 in 1993-1994. For children of 5 to 14 years of age, the prevalence increased from 42.8 per 1000 in 1980 to 74.4 in 1993-1994, an increase of 74%. (Sly, 1999)

Other national data from the National Centre Health Statistics indicate increases in cumulative prevalence of asthma at 6 to 11 years of age from 1976 to 1980 as compared with 1971 to 1974. The second National Health and Nutrition Examination Survey of 1976 to 1980 also indicated a higher prevalence of physician-diagnosed current asthma and/or wheezing at 3 to 17 years of age in more boys than girls (7.8% versus 5.5%, $P < 0.01$). Prevalence also was greater among children living in urban areas compared with rural areas. (Sly, 1999).

Akinbami & Schoendorf (2002) published a study on trends in childhood asthma. The objectives of their study was to produce a comprehensive description of trends in childhood asthma prevalence, health care utilization, and mortality to assess the disease burden among United States children by using the national data.

Five data sources from National Center for Health Statistics were used to describe trends in asthma for children aged 0 to 17 years from 1980 to the most recent year for which data were available. These included the National Health Interview Survey (NHIS), the National ambulatory Medical Care Survey, the National Hospital Discharge Survey, and the Mortality Component of the National Vital Statistics System.

The results were that asthma prevalence increased by an average of 4.3% per year from 1980 to 1996, from 3.6% to 6.2%. The peak prevalence was 7.5% in 1995. In 1997, asthma attack prevalence was 5.4%, but changes in the NHIS design in 1997 precluded comparison to previous estimates. Asthma attack prevalence remains at level from 1997 to 2000. After the decrease between 1980 and 1989, the asthma office visit rates increased by an average of 3.8% per year from 1989 to 1999. Although childhood asthma death is rare, the asthma death rate increased by 3.4% per year from 1980 to 1998. Children aged 0 to 4 years have the largest increase in prevalence and a greater health care use, but adolescents have the highest mortality. The recent data suggest that the burden from childhood asthma may have recently reached a plateau after of several years of increasing, although additional years of data collection are necessary to confirm the change in trend.

In view that Malaysia is a developing country, the probability of the changing prevalence of asthma also occurred in our country. However, additional and continuous studies are necessary to confirm the changes in trend.

As mentioned before, most of the studies on prevalence of asthma are based on the data from questionnaires about asthmatic symptoms. A better understanding on how parents interpret key questions in the survey instrument is important to ensure that it represent the true data. We were therefore prompted to evaluate the words used by parents to interpret common respiratory symptoms of asthma.

2.3 ADHERENCE TO ASTHMA THERAPY

Asthma is a serious chronic inflammatory disease affecting people worldwide. If managed appropriately, hospitalisation is rare, yet over 40 percent of costs are related to emergency services and hospitalisations that result from the failure to effectively use preventive treatment. Studies found that patient who follow the recommended management programme tend to do well clinically. However, objective measures show that fewer than 50% of patients with asthma take their inhaled medication as prescribed. (Stoloff, 2000).

Growing evidence reveals that many patients with severe asthma do not adhere to their treatment. Across various chronic diseases, including asthma, adherence improves as disease severity increases from mild to moderate but appears to reverse with severe illness. (Stoloff, 2000)

Pharmacologic therapy is used to prevent and control asthma and reverse airflow obstruction. The major classes of asthma medications are beta-agonist, methyl xanthines, anticholinergic, leukotriene modifiers, non-steroidal anti-inflammatory drugs, and corticosteroids. The majority of these medications are inhaled, and their effectiveness in clinical practice can be affected by many factors.

The widespread introduction of aerosol therapy in the 1960s, in the form of a metered dose inhaler, was an important milestone in asthma management. Compared to the oral route of administration, inhaled therapy delivers higher concentrations of the drug directly to the airways with minimal side-effects. Consequently, much effort has been put into improving inhaled drug delivery by development of devices such as spacers and self-actuation devices. (Lim et al, 1996)

Despite the obvious advantages of inhalation therapy, patient acceptance to the use of inhaled medication is a crucial factor in ensuring patient compliance and therefore the effectiveness of therapy.

Cochrane et al (2000) examined three factors influencing the effectiveness of asthma treatment with inhaled corticosteroids in practice: patient compliance, inhalation technique, and lung aerosol deposition. They found that only a small percentage of the prescribed dose of an inhaled corticosteroid is likely to reach the target organ, the lungs, because of non-compliance with the prescribed dose, difficulty in the correct use of the inhaler, and the ability of a properly used inhaler to deliver the drug to the lungs.

Baumann et al (2002) did a study to examine the relationship of baseline nonadherence to subsequent asthma morbidity among inner –city children of the

United States. They found that the children whose caregivers were poor on either adherence measures had worse morbidity than those with good adherence, eg rate of hospitalisation was twice as high, they missed more than twice as much school, had poorer overall functioning, experienced more days of wheezing and had more restricted days of activity.

Bender (2002) found that inadequate patient adherence to prescribed treatment regimens is a major cause of poor clinical outcomes in the treatment of asthma. Among children with asthma, adherence rates are often below 50%. Multiple treatments, clinician and patient related barrier prevent the achievement of satisfactory levels of adherence. Treatment related barriers include prolonged and complex regimens, adverse effects, costs, and delayed onset of action. Clinician related barriers include difficulty in scheduling, treatment by one different caregiver after another, perceived clinician disinterest and time constraints. Patient related barriers include mild or severe asthma, poor understanding of the need for treatment, insufficient confidence in the clinician or medication, the presence of psychological problems and low motivation to change behaviour.

Although, all of these factors must be addressed to maximise adherence, patient motivation may be the most critical. This task falls primarily to clinicians (physicians, nurses, staff), and it requires thorough patient and care-giver

education, more frequent patient contact, and the development of a patient clinician partnership dedicated to the effective treatment of asthma.

In view of problems in compliance to treatment, we were therefore prompted to evaluate parents' perceptions and attitudes towards the use of inhaled medication. A better understanding of the parents' attitude towards inhaled asthma medications would be helpful in improving asthma educational programmes and therefore ensure better patient compliance with therapy.

OBJECTIVES:

The aims of this study are

1. To investigate parents' interpretations of common symptoms of asthma and atopic diseases.
2. To describe parents' perception towards the use of inhaled medication for asthma therapy.

METHODOLOGY

1. Design of study

This study was conducted by interviewing the parents of children with asthma who attended the paediatric asthma clinic Hospital Universiti Sains Malaysia (HUSM) or Hospital Kota Bharu (HKB) and also whose children were admitted to the paediatric general ward HUSM for asthma from March 2001 to September 2002.

This is a hospital-based study and the characteristics of the sample may not be the same as the general population. During this period a convenient sample of 165 children with asthma were selected for the study. Therefore not all children with asthma seen in these hospitals during the study period were included.

Another 170 children without asthma were selected as controls. The controls were children without asthma who attended the paediatric clinic HUSM for other medical problems or who were admitted to the paediatric ward HUSM for non-asthmatic diseases.

Patients who were diagnosed and treated for asthma in the ward or clinic, if their parents gave verbal consent for the interview, were included in the study.

Permission to do this study was officially obtained from the Heads of the Paediatric Department in Hospital Kota Bharu and in Hospital USM.