

TEACHERS' KNOWLEDGE OF ASTHMA IN PRIMARY SCHOOLS

M. Movahedi¹, M. Moin¹ and M. Tavakol²

1) Department of Immunology and Allergy, Children Medical Center, Tehran University of Medical Sciences, Tehran, Iran

2) Center for Medical Education Development, Tehran University of Medical Sciences, Tehran Iran

Abstract - A survey was carried out in 1998-99 among 20 selected primary schools in the north, south, east and west regions of Tehran to determine the level of teachers' knowledge of asthma. 387(96.7 %) of 400 questionnaires were completed and evaluated. Five items were investigated; "general knowledge", "symptoms and triggers", "exercise", "treatment" and "individual experience". Statistical analysis was performed by using counting statistics. For the correlation of items, Spearman correlation coefficients and Wilcoxon's test were used. The teachers in primary schools showed a good basic knowledge of asthma and trigger factors of asthma. Poor understanding was found with regard to the etiology of asthma; 40.6% of teachers knew that asthma could not be transmitted by virus. There was no statistically significant effect of teaching experience in terms of years, level of education and contact with asthmatic child on the knowledge score. 24% of teachers felt that they had the average information about asthma. We suggest that teachers at primary school receive further instructions in this regard.

Acta Medica Iranica 38 (4):232-234; 2000

Key Words: Teachers; primary schools; asthma, awareness

INTRODUCTION

Asthma, a chronic disease of the respiratory tract, affects approximately five percent of the population in the United States (US). In the US asthma prevalence in children is estimated between 3 and 10% and accounts for 100-200 deaths in children each year. Asthma is the most common cause of absence from school among US children, and is responsible for a large number of pediatric emergency room visits and hospitalization. Children with asthma miss twice as many school days as other children: 7.2 days/year for children with asthma vs. 3.4-days/year average for children without asthma (1), including an estimated 4.8 million children (2). The incidence is highest in primary school children (3). This means that in any class of approximately 30 young children, 4 or 5 are likely to have some degree of asthma. Although asthma is on the rise, modern treatments when taken correctly can keep the majority of children symptom-free most of the time. Children with asthma spend a large part of their day or two-third of the year under the supervision of

teachers. Consequently the degree of understanding of asthma among teachers is of major importance in ensuring that the disease does not affect the activities of the child at school. In 1990 a school project organizer was appointed to assess the current management of asthma in schools and to develop educational material where needed. Other studies of this topic (4,5) have demonstrated that teachers have a low level of understanding of asthma despite the fact that the use of checklists in some of the studies (3,5) may have over-estimated the knowledge base. Because some children's symptoms decrease as they get older, the incidence of asthma is usually lower in the secondary school population. Consequently it was decided initially to target primary schools population. The aim of study is to quantify by survey techniques the teachers' level of knowledge about asthma in four regions of Tehran.

MATERIALS AND METHODS

5285 primary schools in Tehran, Iran, with more than seven teachers in each one, were approached to take part in the survey. Twenty of the primary schools were selected by random sampling from each region. Bureau of executive of Education in Ministry of Education gave out the questionnaires to teachers in the schools accompanied by an explanatory letter. There was no follow-up of the schools that did not respond. Responses were obtained from 387 teachers in 80 schools (96.7 percent of the teachers approached). Data analysis was based on 387 questionnaires. The sample included 335 (86.4%) females, 38 (9.8%) males and 3.6 per cent without response. The age groups of the subjects varied, mode of age groups was more than 41 years. Level of education ranged from under diploma to masters with mode of diploma. (Table 1 summarizes the major background characteristic of the sample). The instrument for the study was developed by the researchers due to lack of existing appropriate tools: Knowledge of Asthma Diseases Test (KADT). The KADT was a 12-item, false-truth test and free comment answers to one key questions designed to measure a teacher's knowledge of asthma diseases in primary schools. Response to an item was scored as 1; an incorrect response was scored as 0. The possible

score range on the KADT was 0 to 12. Classification of test items was done on the basis of an assumption about the level of mental skill a teacher must use to respond correctly to the item. All questions had only one right answer. All items were verified using major authoritative specialist references and were subjected to content validation by three pediatricians. Statistical analysis was performed by using counting statistics. For the correlation of items, Spearman correlation coefficients and Wilcoxon's test were used.

The KADT had a high internal consistency ($r = 0.78$). The KADT was tested under standardized conditions with a group of diploma teachers. Following the scoring of the KADT, the effectiveness of each item was determined by an item analysis. Item analysis provided information about the percentage of the group that answered the item correctly and the discrimination index or ability of the item to differentiate between teachers of high and low ability. All items with a D value of $+0.60$ were maintained. Three items were reworded due to their initial negative D values.

Validation of the KADT can only be discussed through logical rather than empirical means. Since the KADT was not compared to a standardized test, it was impossible to obtain a numerical estimate of the validity of the test. However, based on logical means, that is, respectable split of half method and higher interrater agreement on each time, one can conclude that the test is valid. A coding list for the responses was prepared and a trained asthma physician at the Children Medical Center coded all questionnaires. The coding was then checked prior to data entry to a computer. All analyses were performed using the statistical package S.Plus Version 4.5 on a personal computer. Ninety-five per cent confidence intervals (CI) for the difference in response between subgroups were also calculated.

RESULTS

An analysis of score from the 12-item KADT produced a group mean score of 8.93 (SD, 1.73). The potential score range was 0 to 12. The KADT scores must be interpreted as criterion-referenced scores; that is, they are based on an absolute standard of quality (100 %). Because criterion-referenced test measure individual performance at a given time rather than performance as it generally compares with national norms, their degree of diagnostic is precise. One hundred and twenty-six teachers (32.6 per cent) had direct contact with an asthmatic child. Teachers reported that asthma medication was kept by the child, teachers and centrally in schools in 54.3%, 8.3% and 11.1% respectively. 25.8% did not know the proper keeping of inhalers. The most important resources for acquiring information concerning asthma education for

primary school teachers, were mentioned as radio, TV and classroom

Table 1. Distribution of background characteristics of sample

	Variables	Number	Percentage
Age groups	18-22	4	1
	23-26	14	3.6
	27-31	31	8
	32-36	67	17.3
	37-41	116	30
	42 or more	135	34.9
	No response	20	5.2
Sex	Female	335	3.6
	Male	38	86.8
Level of Education	Under Diploma	19	4.9
	Diploma	240	62
	Baccalaureate	93	24
	BS	23	5.9
	MS	1	0.3
	No response	11	2.8
Contact with asthmatic child	Yes	126	32.6
	No	256	66.1
	No response	5	1.3

The subjects' performance on the KADT suggests good knowledge about asthma, but subjects are not aware of the etiology and transmission of asthma. 59.4 percent cited that the cause of asthma was a virus and transmitted by secretions of saliva (77.5 percent). The factor mentioned by the smallest number of teachers (46.3 percent) was asthma exacerbated by stress. Another trigger, exercise, was mentioned by 87.6 per cent of teachers. The teachers were more knowledgeable about the factors that caused worsening of asthma (Table 2).

Table 2. Distribution of teachers' responses to factors exacerbating asthma

	Factors	Number	Percentage
Stress	Yes	179	46.3
	No	208	53.7
Exercise	Yes	339	87.6
	No	48	12.4
Climatic condition	Yes	356	92
	No	31	8
Smoking, damp and pollution	Yes	373	96.4
	No	14	3.6

In free comment answers dealing with an asthma attack 47.3 per cent mentioned administering an inhaler (Table 3) and 4.9 per cent did inappropriate actions. Sex of teachers was found to have a significant effect on scores ($t = 1.92$; $df 371$, $p = 0.05$). There was no statistically significant effect of age groups, years of experience and educational preparation on the KADT. There was no significant association between the contact with asthmatic child and the teachers' knowledge concerning asthma.

Table 3. What would you do if a child in your care had asthma attack?

Actions	Number	Percentages
Keep child calm	62	16
Administer inhaler	183	47.3
Call parents	30	7.7
Inappropriate actions	19	4.9
No response	93	24.1
Total	387	100

DISCUSSION

The results of scores on the KADT suggest that there are areas of weakness in the asthmatic disease knowledge base of primary school teachers. This study suggests, as previous studies have (5,6,7), that teachers are not aware of all the aspects about asthma diseases. Storage of inhalers seems to be a universal problem in schools. In this survey teachers said that 54.3 percent of the inhalers were kept by children. If children are given responsibility for their own inhaler, there is the risk of its loss, getting broken or its misuse by other children. It is generally accepted by health professionals that children should be capable of looking after their own inhaler by the age of 7 or 8. The National Union of Teachers has changed its guidelines to teachers. It states, "certain medicine, however, such as inhalers used by asthmatic children, must be made readily accessible at all time of the school day". Of more concern is the limited knowledge of asthma etiology among teachers. 59.4 percent said that asthma transfer was via a virus and 77.5 percent cited that secretions of saliva were important in transfer of asthma diseases. We could not find this finding in other literature. 46.3 percent mentioned that asthma got worse by stress. In the West Gloucestershire study (6) 55 percent mentioned anxiety as a trigger factor; and this was 68 percent in the Southampton's(4) study. While it is well recognized that stress is an important factor in exacerbating asthma, it is noteworthy that emotional factors have been highlighted by so many more teachers rather than physical factors. The medical profession in

the 1950s and 1960s believed asthma to be largely a psychosomatic condition (8). Knowledge about what to do if a child has an asthma attack was not acceptable. Only 47.3 per cent of teachers in the study cited administering an inhaler if a child in their care had an asthma attack. Although acute attacks are not a common feature of asthma, teachers ought to be taught how to handle an acute situation in what is a potentially fatal condition. In the acute situation teachers were more likely to administer an inhaler, call parents and seek medical help if necessary. This study suggested that the programme of asthma training sessions given at schools in Tehran could be associated with an improved ability to help the asthmatic child lead a normal life at school and knowledge of the appropriate action if a child had an acute attack.

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