

How do Thai children and adolescents describe asthma symptoms?

Phankingthongkum S, Daengsuwan T, Visitsunthorn, Thamlikitkul V, Udompunthuruk S, Vichyanond P. How do Thai children and adolescents describe asthma symptoms?

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Prevalence of childhood asthma appears to be increasing worldwide. In Thailand, the prevalence of childhood asthma increased from 4.2% to 13% within the past decade. The last epidemiologic survey in Thailand utilized the International Study of Asthma and Allergies in Childhood (ISAAC) phase I questionnaire translated into Thai language. Language in the questionnaire can affect the reliability and validity of results of the survey. The purpose of this study is to determine common Thai wordings actually used by Thai children and adolescents to describe wheeze, chest tightness, shortness of breath and dyspnea. Sixty asthmatic Thai children, aged 9.2–18 years with asthmatic attacks less than 1 yr prior to the study, and 178 age-matched controls were recruited into the study. Asthmatic children spontaneously expressed their terms describing their asthma symptoms (in Thai) and then answered a preoutlined questionnaire regarding asthma terminology during an interview session after viewing the severe attack scene of the International ISAAC video questionnaire. Controls responded only to the preoutlined questionnaire after viewing the video scene. Of the 60 asthmatic children (38 males and 22 females, mean age 11.9 yr), 75% had their last asthmatic attacks within 2 months prior to the study. Wheeze was referred to as ‘/hɔː.də/ (หืด)’ and ‘/wiːd/’ in 50% and 33% of patients, respectively, and ‘/hɔː.də/ (หืด)’ in 93.8% among controls. Using only the word ‘/wiːd/’ in our previous ISAAC-I survey, as it sounded like the English word ‘wheeze’, it appears that up to 67% of the cases could have been missed. Dyspnea was referred to as rapid breathing and feeling tired in 78.2% of cases and as rapid and difficult breathing in 76.3% of controls. Chest tightness was referred to as chest discomfort in 65.7%. Shortness of breath was referred to as not being able to catch a breath, too short a breath, not enough breath and feeling suffocated in 88.8%. Local terms for asthma symptoms should be established and validated into each language to obtain reliable epidemiologic data.

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Asthma, an inflammatory disease of the airway, is the most common chronic disease of childhood (1). Its prevalence is increasing worldwide (2). Standardized international comparisons of asthma prevalence have been conducted based on comparing prevalence of asthma symptoms in questionnaire surveys [the European Community Respiratory Health Survey (ECRHS) in adults (3) and the International Study of Asthma and Allergies in Childhood (ISAAC) in children (4)]. In Thailand, the prevalence of childhood asthma increased from 4.2% (5) to 13% (6) in 5 years

(1990–95). The phase I ISAAC questionnaires were developed based on questions drawn from the International Union Against Tuberculosis and Lung Diseases (IUATLD) questionnaire (7) and surveys conducted in London (8), Melbourne (9) and Auckland (10). The questionnaire consisted of written and video parts. Both of which have been validated using a methacholine challenge test (11) as a gold standard. Video questionnaire was found to have as high sensitivity and specificity as the IUATLD questionnaire (12). In the ISAAC phase I, the

original questionnaire was translated into local languages by local specialists with back translation by other related medical personnel in the same community to ensure reliability of wordings used. Differences in local wording translation, however, may affect the reliability and validity of the survey. Reported wheeze within the last 12 months is considered to be a surrogate marker for the diagnosis of asthma (13). This could represent a major difficulty for children in some countries in which no exact equivalent wordings of wheeze exist (14,15) as demonstrated in the study of the Tokelauan community in New Zealand (16), in the translation of the IUATLD questionnaire into German language (7) and in a study in a French-speaking population (17). In Thailand, the questionnaire was translated into Thai language by a panel of pediatric allergists and the term 'wheeze' was directly spelled out in Thai language as '/wi:d/'.

The objective of this study was to determine Thai terminology actually used by patients to describe wheeze, chest tightness, shortness of breath and dyspnea.

Materials and methods

Study population

Sixty asthmatic children with a history of reversible airway obstruction after inhaling a standard dose of β_2 -agonist, from the Allergy Clinic, Department of Pediatrics Siriraj hospital, were prospectively recruited into the study. Their age ranged from 9.2 to 18 years (mean \pm SD = 11.9 ± 2.2 years) and their last episodes of acute wheeze were within 1 year prior to the time of entry into the study. To demonstrate adequate specificity of the terminology used, 178 age-matched controls, who were in good health and without any history of previous wheeze, were prospectively recruited from primary schools into the study. Data were collected from October 1999 to June 2000. Their clinical characteristics are shown in Table 1.

Sequence of investigation

Asthmatic children.

- View the video sequence of severe wheezing attack from the International Version of ISAAC video questionnaire [AVQ3.0 (18)].
 - Self-answer the open question 'what do you call the sound that you heard from the video?'
 - Proceed on to report terms denoting their asthma symptoms in the preoutlined questionnaire (Table 2).

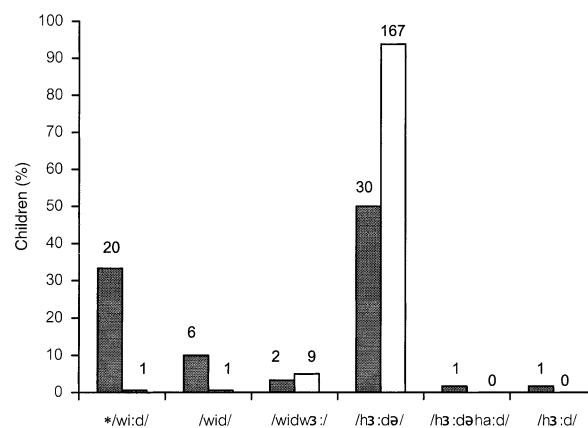


Fig. 1. Percentage of asthmatic and control children describing different terminology for 'wheeze' in the preoutlined questionnaire (the number of children in each group is indicated above the histogram). ■, cases; □, controls.

- Questionnaire was readministered to 25 asthmatic children within 2 weeks to 6 months after the first interview to evaluate the reproducibility of the questionnaire.

Controls.

- View the video sequence of severe wheezing attack from the International ISAAC video (AVQ3.0).
- Self-answer the preoutlined questionnaire for the controls (Table 2).

The preoutlined questionnaire included multiple-choice selections (in Thai) for each asthma terminology, i.e. wheeze, chest tightness, shortness of breath and dyspnea. This questionnaire was developed and refined from a pilot study in 20 asthmatic children.

Questions about age, sex, age of disease onset, duration from last attack, severity and medication were also included.

Statistical analysis

Descriptive statistics were used for data analysis. The frequency of responses to each question was presented mainly as percentages.

Results

The questionnaire was answered by 60 asthmatic children (38 males and 22 females with a mean age of 11.9 ± 2.2 years, range 9.2–18 years) and by 178 controls (92 males and 86 females with a mean age of 10.8 ± 0.7 years, range 9–12.8 years old). Sixty-six percent of patients started wheezing before 5 years of age. Seventy-five percent of patients had their last asthmatic attacks within 2 months of the study. A large majority of

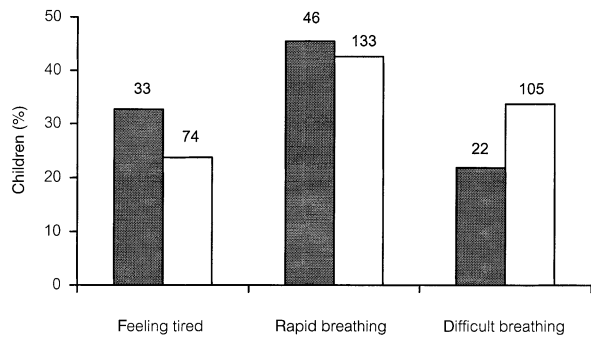


Fig. 2 Percentage of asthmatic and control children describing different terminology for 'dyspnea' in the preoutlined questionnaire (the number of children in each group is indicated above the histogram). ■, cases; □, controls.

patients were classified to a clinical severity class (2) as mild persistent asthma (63.3%). Most cases did not have any symptoms during interview. Detailed clinical characteristics of these children are shown in Table 1.

From the open questionnaire (Table 3), 31 asthmatics (51.7%) reported that they had the same sound as heard from the video but could not describe the term. The others defined the sound of wheeze as either /hə:da/ (ฮึด) or /wi:d/ (วี๊ด) in 21.6% each. From the preoutlined questionnaire, wheeze was referred to as /hə:da/ (ฮึด) and /wi:d/ (วี๊ด) in 50% and 33% of patients, respectively, and /hə:da/ (ฮึด) in 93.8% of controls (Fig. 1). Comparing those selecting the term /wi:d/ (วี๊ด) among asthmatics and controls, the sensitivity and specificity in choosing such a term were 33.3% and 99.4% whereas those for the term /hə:da/ (ฮึด) were 50% and 6.2%, respectively. While using either /wi:d/ (วี๊ด) or /hə:da/ (ฮึด) improved the

sensitivity to 83.3%, it reduced the specificity to an unacceptably low value (5.6%).

All patients started with the open questionnaire so as to avoid a lead by words in the preoutlined questionnaire. Twenty-nine out of 60 asthmatics chose the same words for wheeze in both parts indicating that selections of such wordings were spontaneous and were not guided by words in the preoutlined questionnaire.

Dyspnea was referred to as rapid breathing (หอบ) and feeling tired (เหนื่อย) in 78.2% of cases and rapid and difficult breathing (หอบและหายใจลำบาก) in 76.3% of controls (details shown in Fig. 2). Chest tightness was defined as chest discomfort (แน่นหน้าอก) in 65.7% of patients (Table 4). Fourteen out of 60 (23.3%) did not have any abnormal sensation in their chest during asthmatic attack. Thirty-five percent of this group had their last asthmatic attacks longer than 2 months prior to the interview. Shortness of breath was referred to as not being able to catch a breath (หายใจไม่ทัน), too short of breath (หายใจสั้น), not enough breath (หายใจไม่พอ) and feeling suffocated (หายใจไม่ออก) in 88.8% combined (Table 5).

Of note from the second response (48% were interviewed within 2 months), 80% of asthmatic children reported the term for wheeze using either /hə:da/ (ฮึด) or /wi:d/ (วี๊ด) as described in the first interview.

Discussion

Perception of wheeze by patients in descriptive terms in non-English-speaking ethnicities has not been well-studied. The results of our study indicated that most asthmatic children as well as controls used terms to describe wheeze different from the ones chosen by medical personnel. Without incorporating such terms in a survey, the result of the study could be misleading and inaccurate.

Definition of asthma in the ISAAC questionnaires heavily relies on response to the question of 'wheeze' particularly within the past 12 months (13). Translating the questionnaire, especially the word 'wheezing' into several languages, has been problematical and may produce results which are not comparable if different wordings are used in countries with several ethnic groups (such as in China or India). It is apparent that to arrive at the correct prevalence of wheeze within each ethnic group, one would need to determine the actual word patients use to denote 'wheeze' in each local language. Validation of the ISAAC written questionnaire in local languages had only been performed in Brazil (19). Validation of the Thai version of the written ISAAC questionnaire has not been performed. In the present study, we

Table 1. Clinical characteristics of asthmatics and controls

Characteristics	Patients (n=60)	Controls (n=178)
Age (years)		
Mean±SD	11.9±2.2	10.8±0.7
Range	9.2–18	9–12.8
Sex (male:female)	38:22	92:86
Onset of wheezing		
≤5 years of age	40	
>5 years of age	20	
Duration from last attack		
0–2 months	45	
2–4 months	4	
4–6 months	9	
>6 months	2	
Severity of asthma		
Mild intermittent	19	
Mild persistent	38	
Moderate persistent	2	
Severe persistent	1	
Symptoms during interview		
Yes	3	
No	57	

Table 2. The preoutlined questionnaire for asthmatic children (translated from Thai questionnaire). Those for controls included item no. 1 and no. 4 only

1. Wheeze. During an asthmatic attack, do you have such an abnormal sound in your chest?
- No
 - Yes. You would describe the sound in your chest as (select one)
 - /wi:d/(วี๊ด)*
 - /wid/(หวีด)†
 - /widwɔː/(หวีดหรือวู้)
 - /hɔːdɔː/(ฮืด)‡
 - other
2. Chest tightness. During an asthmatic attack, do you have any abnormal sensation in your chest?
- No
 - Yes (select as many as you like)
 - chest discomfort (แน่นหน้าอก)
 - chest pain (เจ็บหน้าอก)
 - chest tightness as run over by a car (หนักหน้าอกเหมือนถูกทับ)
 - referred pain to the shoulder (เจ็บร้าวไปที่หัวไหล่)
 - burning sensation (แสบหน้าอก)
 - feeling between tightness and piercing pain (เสียดหน้าอก)
 - piercing pain (เจ็บเหมือนถูกแทง)
 - other
3. Shortness of breath. During an asthmatic attack, do you have any abnormal breathing?
- No
 - Yes (select as many as you like)
 - not being able to catch a breath (หายใจไม่ทัน)
 - too short a breath (หายใจสั้น)
 - not enough breath no. 1 (หายใจไม่เต็ม)
 - not enough breath no. 2 (หายใจไม่พอ)
 - feeling suffocated (หายใจไม่ออก)
 - noisy breathing (หายใจดัง)
 - rapid breathing (หายใจเร็ว)
4. Dyspnea. During an asthmatic attack, do you have the symptom as seen in the video? If you do so, select the term describing your symptom.
- No
 - Yes (select as many as you like)
 - feeling tired (เหนื่อย)
 - rapid breathing (หอบ)
 - difficult breathing (หายใจลำบาก)
 - other

*Term with the closest pronunciation to the word 'wheeze' and was used in the ISAAC-I survey.

†Sound of a mouth whistling.

‡Combination of mouth whistle and whirling sound.

§Sound of deep breath.

determined patients' terms used to describe their asthma symptoms in Thai language and provided preliminary evidence of its reliability and validity. Wheeze has been described in other studies as whistling, squeaking, hissing, and rasp (20,21). A recent study clarified what parents of wheezy children understood by 'wheeze'. Thirty-six percent of the parents defined wheeze as a 'sound', of which 11% mentioned 'whistling'.

The others (28%) perceived wheeze in their child as sound with difficulty in breathing and/or unwell/cough (21). From the 12 epidemiologic studies of childhood asthma, seven studies gave a definition of wheeze using 'whistling' (21). Despite providing the term /wi:d/ (วี๊ด), which was used in our ISAAC-I survey, 50% of the asthmatic children in our study defined wheeze as /hɔːdɔː/ (ฮืด) which is not commonly used by medical

Table 3. Response to the open question 'What do you call the sound that you heard from the video?' in asthmatic patients

Responses	n (%)
Those reported that they had the same sound in their chest but could not describe the term	31 (51.7)
Those reported /wi:d/ (วี๊ด)	13 (21.6)
Those reported /hɔːdɔː/ (ฮืด)	13 (21.6)
Those reported /wid/ (หวีด)	1 (1.7)
Those reported /hɔːdɔːhɑːd/ (ฮืดฮืดฮืด)*	1 (1.7)
Those reported /hɔːd/ (หืด)†	1 (1.7)

*Sound of unpleasant breath.

†The Thai term used to describe asthma.

Table 4. Responses to the preoutlined questionnaire for 60 asthmatic children describing abnormal sensation in their chest during asthmatic attack to determine chest tightness

Responses	n (%)
Chest discomfort (แน่นหน้าอก)	44 (65.7)
Chest pain (เจ็บหน้าอก)	10 (14.9)
Chest tightness as run over by a car (หนักหน้าอกเหมือนถูกทับ)	5 (7.50)
Referred pain to the shoulder (เจ็บร้าวไปที่หัวไหล่)	0
Burning sensation (แสบหน้าอก)	1 (1.50)
Feeling between tightness and piercing pain (เสียดหน้าอก)	5 (7.50)
Piercing pain (เจ็บเหมือนถูกแทง)	2 (2.90)

personnel in Thailand. It is possible that the prevalence of asthma in Thailand could have been underestimated.

Other symptoms of asthma that have been used in ECRHS, i.e. dyspnea, chest tightness, shortness of breath should have been validated because some patients may not wheeze (22). Dyspnea is another English term denoting severity of asthma. Dyspnea in Thai terms /หิว:ป/ (หิว) could mean tachypnea, hyperpnea, and others. /หิว:ป/ (หิว) is commonly used to describe asthmatic attacks among patients in Thailand. Shortness of breath and chest tightness are not commonly used to describe symptoms among Thai patients; therefore no official Thai terms for these symptoms have been described.

Countries with different dialects may present with even more problems, e.g. China as more than three dialects were used (Mandarin, Cantonese, Putonghua). Thus, without proper use of terms, comparison could be invalid. Such problems could lead to an inaccurate comparison within and between countries. It is apparent that in India, with several existing dialects, a wide variation of asthma prevalence was observed in the ISAAC-I original report (23). Thus, studies such as ours should be initiated in such countries. Nevertheless without validation with a gold standard, one will never know the sensitivity and specificity of use of such terms.

To circumvent the problem, video questionnaire has been designed. Results from the video

Table 5. Responses to the preoutlined questionnaire for 60 asthmatic children describing abnormal breathing during an asthmatic attack to determine shortness of breath

Responses	n (%)
Not being able to catch a breath (หายใจไม่ทัน)	27 (25.2)
Too short a breath (หายใจสั้น)	21 (19.6)
Not enough breath no. 1 (หายใจไม่เริ่ม)	9 (8.4)
Not enough breath no. 2 (หายใจไม่พอ)	25 (23.4)
Feeling suffocated (หายใจไม่ออก)	22 (20.6)
Noisy breathing (หายใจดัง)	1 (0.9)
Rapid breathing (หายใจเร็ว)	2 (1.9)

questionnaire agreed well with results from the written questionnaire as demonstrated in data from Bangkok indicating a high reliability of the questionnaire (6).

Conclusion

We have identified the actual term Thai patients used to describe wheeze and other symptoms of asthma, which will be useful in future surveys. Validation of these terms will need to be performed to determine the accuracy of such epidemiologic tools.

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