

Performing sound imitation in differentiating stridor and wheezing in clinical practice.

Nasser S Alharbi*, Dana Al-Enezi, Alwalid Alteraif

Department of Pediatric, College of Medicine, King Saud University, Riyadh, Kingdom of Saudi Arabia

Abstract

Noisy breathing is a common symptom of respiratory illnesses; wheezing and stridor are common sounds that need to be clarified during assessment of children with history of recurrent attacks of noisy breathing. The answers of non-english speaking families can be influenced by the used words to express wheezing and stridor in their language. The primary outcome of this survey based study is to assess if the sounds imitation of wheezing and stridor is a common practice by Arabic speaking pediatricians while assessing children with noisy breathing. A hundred fifty two arabic speaking pediatricians participated. Almost 25% and 5% of Arabic speaking pediatricians use sound imitation to express stridor and wheezing (respectively). Mainly due to their inability to express stridor/wheezing in Arabic language, variable Arabic words are used to express both sounds interchangeably. The pediatricians have a major language barrier to express stridor and wheezing to their original language, sound imitation of both sounds is common practice and we suggest that it improves the communication between pediatricians and families.

Keywords: Stridor, Wheezing, Sound imitation, Arabic.

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Introduction

Respiratory illnesses are a common reason for utilizing inpatient and outpatient facilities in pediatric hospitals. History taking and clinical examination are performed to assess abnormal breathing sounds, such as wheezing and stridor, which are the initial presenting symptom of various acute and chronic respiratory illnesses [1-4].

Stridor is a high-pitched sound that results from partial obstruction of the airways, whereas wheezing is a musical sound produced due to narrowing of small airways. The underlying pathologies that contributed to the audible stridor widely varied and required a different approach [3-5].

The parent's understating of respiratory sounds is a challenge. Their knowledge of respiratory sounds such as wheezing or whistling is limited; therefore, studies suggest the use of audio segments to obtain more accurate history from parents [6].

The language used, especially in non-english speakers, is another challenge during the conversation with families, as their understanding of the used word can influence their answers. In the UK, a study found that the prevalence of asthma was significantly higher if the same survey uses the word whistling "wheezing" instead of "wheezing attack." In Malaysia, families used the same words to describe different respiratory sounds; hence, interpretation of respiratory sounds is more challenging for non-english speakers [6,7].

Furthermore, knowledge barrier is also a major factor that affects the appropriate understanding of these sounds. Studies showed that significant percentage of parents is unable to correctly identify wheezing from videos that present variable respiratory sounds. No differences were noticed between parents of asthmatic and non-asthmatic children. The use of

video segments improved their answers, and pediatricians were encouraged to be aware of this limitation of family understanding [6].

In this study, we aimed to determine the popularity of performing sound imitation of stridor and wheezing among Arabic speaking pediatricians during assessment of child with noisy breathing.

Methodology

Ethics

The Institutional Review Board (IRB) of the College of Medicine Research Center in King Saud University (KSU) approved this study. Consent was obtained in English. The participants' identities were not included in the questionnaire.

Design

A cross-sectional survey-based study was conducted at King Khaled University Hospital (KKUH), Riyadh Saudi Arabia, between January and February 2019. Questionnaires were distributed to all Arabic-speaking pediatricians in the clinical setting or during educational meetings. Participants were briefly interviewed by Arabic-speaking investigators in Arabic to confirm that they are Arabic speakers before their participation. The participant's job titles were pediatric residents, specialists/fellows, or consultants.

Questionnaires

The Questionnaires was distributed by the data collectors. Data obtained in the questionnaire included age, gender, and job

title. Pediatricians were also asked to answer the following items:

- 1 If they perform sound imitation of wheezing or stridor sound during their conversation with Arabic speaking children and their families.
- 2 If they are familiar with any Arabic words to verbally express stridor and wheezing in Arabic language.
- 3 They were asked to document the Arabic words they used to describe stridor and wheezing.

Definitions

Sound imitation is the act of vocally producing sounds that mimic stridor and wheezing.

Validation of e-documented words

Documented words were considered as correct Arabic if they match any medical terms in any one of the Arabic medical dictionaries available in the library of College of Medicine at King Saud University (KSU).

Results

A total of 142 Arabic-speaking pediatricians agreed to participate in this study and answer the questionnaires. Participants consisted of pediatric residents (n=90), board-certified specialists (n=41), and pediatric consultants (n=11).

Stridor

Nearly 25% of participants performed sound imitation of stridor during the interview with family members, mainly due to lack of knowledge of any Arabic word to describe stridor, 40.1% used Arabic but incorrect words, and approximately one-third do not express stridor either by Arabic words or by performing sound imitation (Table 1).

Details of participants (Pediatricians)	
Number of participants	142
Median age (years)	28
Residents	90
Board-certified specialists	41
Pediatric consultants	11
Sex (male:female)	0.82:1

Table 1. Details of participants (Pediatricians).

Wheezing

Among 142 participants, only 5.6% used sound imitation of wheezing due to lack of knowledge of any Arabic term to describe it, 81.7% used different Arabic words that were mostly incorrect, and only 2.8% do not express wheezing correctly either by Arabic words or by sound imitation (Table 2).

Results				
	Sound imitation	Correct Arabic word	Incorrect Arabic word	None
Stridor	25.30%	10.60%	29.60%	34.50%
Wheezing	5.60%	9.50%	81.70%	2.80%

Table 2. Results.

A frequent observation the same Arabic words were also used to describe both stridor and wheezing interchangeably.

Discussion

Previous studies have reported challenges faced by family members in understanding respiratory sounds due language and knowledge gaps. This is the first study to demonstrate that paediatrician's limitations in respiratory sound expression is an additional challenge to the family's understanding of wheezing and stridor [6,7].

In this study we found that imitation of respiratory sounds by Arabic-speaking pediatricians is a common practice in the clinical settings (especially for stridor). It is performed not only to overcome the families' knowledge gap but also to help the pediatricians to express the respiratory sounds to the families.

Also we found that one-third of the Arabic-speaking pediatricians are unable to assess history of stridor as they are not able to express stridor verbally by Arabic words or by performing sound imitation.

Many pediatricians translate both stridor and wheezing to the same Arabic word which may influence the accuracy of clinical assessment for children with history of noisy breathing.

Until the correct Arabic terminologies for stridor and wheezing are established and become common community knowledge, we suggest that sound imitation of the respiratory sounds be used to facilitate proper communication between families and physicians.

Furthermore, recorded sounds may also be used to improve the communication between families and physicians as previously reported [6].

The limitation in our study is that we did not test the understanding of the Arabic speaking families to the Arabic words used by the pediatricians to express the respiratory sounds in Arabic [8].

Conclusion

The lack of the proper words to describe stridor and wheezing for Non-English speaking families may affect the accuracy of the clinical assessment for children with noisy breathing. The accurate translation of wheezing and stridor can be challenging for pediatricians. Sound imitation of the respiratory sounds is a reasonable alternative to overcome the language gap between the pediatricians and the parents. Therefore, we suggest the use of sounds imitation to express respiratory sounds during the

clinical assessment of any children with history of noisy breathing especially with Non-English speaking families.

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Ethical approval

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References

1. Shanmugam S, Nathan AM, Zaki R, et al. Parents are poor at labelling wheeze in children: A cross-sectional study. *BMC Pediatr.* 2016;16:80.
2. Nair H, Simoes EA, Rudan I, et al. Global and regional burden of hospital admissions for severe acute lower respiratory infections in young children in 2010: A systematic analysis. *Lancet.* 2013;381(9875):1380-90.
3. Zar HJ, Ferkol TW. The global burden of respiratory disease-impact on child health. *Pediatr Pulmonol.* 2014;49(5):430-4.
4. Ida JB, Thompson DM. Pediatric stridor. *Otolaryngol Clin North Am.* 2014;47(5):795-819.
5. Oo S, Le Souef P. The wheezing child: an algorithm. *Aust Fam Physician.* 2015;44(6):360-4.
6. Bessa OA, Leite AJ, Sole D, et al. Prevalence and risk factors associated with wheezing in the first year of life. *J Pediatr.* 2014;90(2):190-6.
7. Pescatore AM, Spycher BD, Beardsmore CS, et al. "Attacks" or "Whistling": Impact of questionnaire wording on wheeze prevalence estimates. *PLoS One.* 2015;10(6):e0131618.
8. Stenson BJ, Tarnow-Mordi WO, Darlow BA, et al. Oxygen Saturation and Outcomes in Preterm Infants. *New Engl J Med.* 2013;368(22):2094-104.

*Correspondence to

Dr. Nasser Saleh Alharbi

Assistant Professor of Pediatric Respiratory Medicine

Department of Pediatrics, College of Medicine

King Saud University and King Saud University Medical City

Riyadh

Saudi Arabia

Tel: +966504442287

Email: nsalharbi@ksu.edu.sa