

The Meaning of Wheeze

Understanding of the word “wheeze” by parents of schoolchildren completing a respiratory questionnaire

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Background

Epidemiological studies have shown that asthma and wheezing in early childhood has risen in prevalence during the last decade (1). However, in these studies symptoms are reported mainly by parents and thus the individual definition of wheezing might influence the prevalence of the symptom. Several studies have shown that parents have various interpretations of wheeze and that their understanding often differs from clinicians interpretation of wheezing (2-4).

Questions:

1) How do parents interpret the word wheezing?

2) How do parents describe their own child's wheezing?

3) What predicts the correct use of the word wheeze?

Method

In 2003, a questionnaire on respiratory disorders was posted to a random population sample of 8700 children aged 6-9-years in Leicestershire, UK.

All parents were asked the following question (N=4236):

Do you think, that any of the following words mean the same as “wheeze”?

a) Rattly breathing (rattles); b) Snoring; c) Noises from the nose or throat during sleep; d) Croup (stridor); e) Whistling or squeaking noise in the chest; f) Worrying dry cough; g) Moist (wet) cough with phlegm

Parents reporting wheeze in their child answered two additional questions to assess the nature of the sound of wheeze:

When your child wheezes, what kind of noises does he or she usually make? (N=959)

a) Squeaky or whistling noises; b) wet, rattly noises; c) both whistling and rattly noises

After your child had a good cough, does the wheeze usually: (N=932)

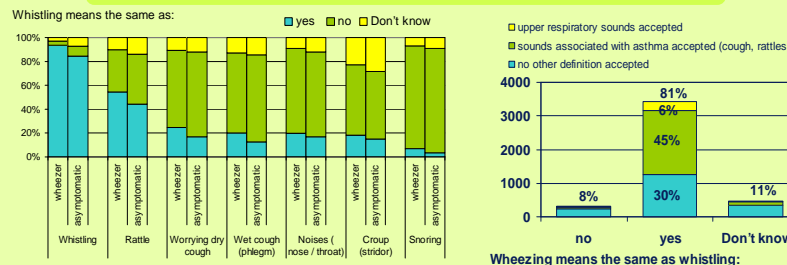
a) Clear up for a while; b) get worse; c) remain the same

Results

Response rate: 49% (3197 White British and 1039 South Asian)

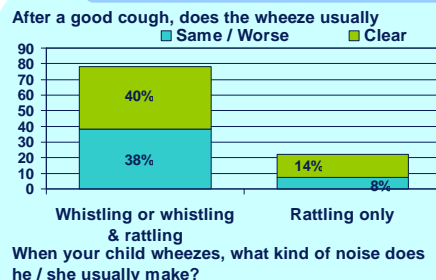
Proportion of children with current wheeze: 13% (561 / 4236); with ever diagnosed asthma: 22% (944 / 4236)

1) Interpretation of wheeze in all respondents (N=4236)



81% of respondents correctly interpreted wheezing as a “whistling or squeaking noise in chest”. Parents of a wheezing child (N=561) accepted all definitions more often than other parents. Other words that were often also accepted concerned symptoms commonly associated with asthma, such as rattles or cough.

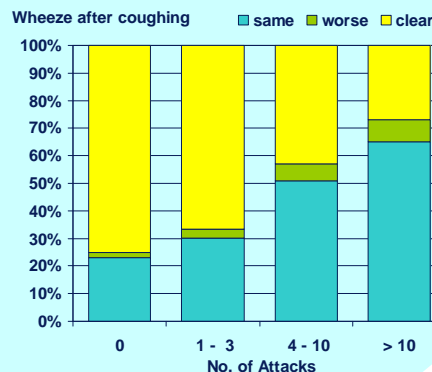
2) Description of symptoms in wheezing children (N=561)



22% of parents with a wheezy child described the sound their child made as rattly rather than whistling. 54% of parents of a wheezy child stated that the wheeze cleared up after coughing.

By severity of wheeze:

Parents reporting more frequent wheezing-attacks in their child described less often, that the wheeze cleared up after a cough ($\chi^2=82.28$, $p<0.001$). Similarly, parents of severe wheezers described the sound their child made as whistling rather than rattling ($\chi^2=44.16$, $p<0.001$). Similar results were obtained using other proxy measures for asthma severity (restriction of activities, frequency of sleep disturbance, shortness of breath).



3) Predictors of correct interpretation

In a multivariable logistic regression, a higher SES and White in contrast to South Asian ethnicity were independent predictors for the correct interpretation of wheeze.

DV: Wheeze=Whistle	OR	SE	95%Confidence Interval	p
SES (townsend)	0.851	0.047	(0.764 - 0.948)	0.003
Sex (f=0, m=1)	0.763	0.110	(0.576 - 1.011)	0.060
Ethnic Cohort (W=0, A=1)	0.377	0.061	(0.275 - 0.516)	0.000
Asthma (no=0, yes=1)	1.279	0.313	(0.792 - 2.067)	0.314
Respondent (Mother=0, Father=1)	0.764	0.143	(0.530 - 1.102)	0.150
Blue Inhaler	1.884	0.755	(0.859 - 4.132)	0.114
Brown Inhaler	0.934	0.401	(0.403 - 2.168)	0.874

Discussion

This study shows that a majority of unselected parents filling in a respiratory questionnaire recognises “whistling or squeaking noise in the chest” as a definition for “wheeze” and thus should be able to accurately answer these questions in a questionnaire. However, nearly one fifth of the respondents did not recognise this definition, although it was given earlier on in the questionnaire.

14% of parents of a wheezy child said that the noise their child made was rattly and did clear up after a cough. However, with increasing frequency and severity of reported wheezing attacks in their child, parental reporting became more accurate.

Assessing prevalence of wheeze in population surveys using questionnaires is an acceptable method.

Misclassification of other respiratory sounds as wheeze does occur, but mainly in families who's children have mild complaints, while accuracy of reporting improves with increasing severity of the child's symptoms.

SES, ethnicity and frequency of attacks are important predictors of the accuracy of parental reports of wheeze.