



The Leicester Cohorts

Repeatability of a questionnaire on wheeze and asthma in preschool children

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Introduction

The assessment of childhood respiratory symptoms by questionnaires has been shown to be reproducible in schoolchildren.

For preschool children, data on the repeatability of questionnaire-derived information are scarce.

Aims

In a population-based random sample of **1-year old children**, we wanted:

A) to assess the short-term repeatability of a parent completed postal respiratory questionnaire,

B) to compare the repeatability with other published questionnaires.

Methods - Leicestershire cohort

We sent a postal questionnaire to the parents of 3500 Caucasian and 800 south Asian children aged 1 year, randomly sampled from the population of Leicestershire, UK. 3194 (75%) replied.

After an interval of 3 months, a random sample of 800 respondents (600 Caucasians and 200 south Asians) received the questionnaire a second time with an explanatory letter.

The questionnaire contained detailed questions on wheeze, cough and upper respiratory symptoms, including the key ISAAC questions and some other questions adapted to the age of the children. Additional questions related to respiratory diagnoses and therapies, environmental exposures, parental history of atopy and socio-economic conditions.

Ethnic origin	White	South Asian
	N (Response rate)	
1 st survey: April 1998	2714 (62%)	480 (60%)
2 nd survey: July 1998	368 (61%)	92 (46%)

We calculated Cohen's Kappa to assess agreement corrected for chance. Kappa values of 0-0.4 indicate poor agreement, 0.41-0.6 moderate agreement, 0.61-0.8 good agreement and >0.8 excellent agreement.

A) Agreement between answers to self-reported questionnaires repeated after a 3-month interval

	P _o	P _{pos}	P _{neg}	κ	(95% CI)
Questions on wheeze					
Wheeze last 12 months	0.88	0.77	0.92	0.69	(0.61-0.77)
Wheeze ever	0.89	0.81	0.92	0.73	(0.65-0.80)
Shortness of breath	0.91	0.67	0.95	0.61	(0.50-0.72)
Questions on treatment					
Blue inhaler	0.94	0.79	0.97	0.76	(0.66-0.85)
Brown inhaler	0.98	0.81	0.99	0.80	(0.67-0.93)
Questions on other infections					
Eczema last 12 months	0.85	0.80	0.88	0.68	(0.61-0.76)
Chronic rhinitis	0.77	0.58	0.84	0.42	(0.32-0.51)
Cough at night last 12 months	0.80	0.52	0.88	0.39	(0.28-0.50)
Questions on family*					
Maternal wheeze/asthma	0.95	0.85	0.97	0.82	(0.74-0.89)
Maternal smoking	0.97	0.94	0.98	0.92	(0.87-0.97)
Questions on household					
Cooking fuel electricity	0.91	0.87	0.93	0.80	(0.74-0.86)
Household pets	0.97	0.96	0.97	0.93	(0.90-0.97)

P_o Proportion of observed total agreement; P_{pos} Proportion of observed positive agreement; P_{neg} Proportion of observed negative agreement; κ Kappa; Agreement 0-0.40 poor, 0.41-0.60 moderate, 0.61-0.80 good, >0.81 excellent

*Paternal figures were very similar.

B) Published studies on repeatability of self-reported questionnaires

	Age (years)	Interval	Questions	P _o	κ
Powell ^a	0 to 3	2 wks	Wheeze ever	0.91	0.68
			Shortness of breath	0.90	0.48
			Cough at night	0.74	0.56
Haby ^b	3 to 5	2 mo	Wheeze last 12 months	0.94	0.60
			Wheeze ever	0.97	0.84
			Blue inhaler	0.99	0.94
			Maternal smoking	0.99	0.91
Brunekreef ^c	6 to 12	1 mo	Wheeze last 12 months	0.95	0.73
			Shortness of breath	0.96	0.75
			Chronic rhinitis	0.86	0.56
Salome ^d	8 to 11	1 mo	Wheeze ever	0.93	0.80
			Cough at night	0.83	0.51
			Maternal asthma	0.91	0.65

P_o Proportion of observed total agreement; κ Kappa; Agreement 0-0.40 poor, 0.41-0.60 moderate, 0.61-0.80 good, >0.81 excellent

^aPowell, McNamara, Solis, Shaw. *Arch Dis Child* 2002; 87:376-9.

^bHaby, Peat, Marks, Woolcock, Leeder. *Thorax* 2001; 56:589-95.

^cBrunekreef, Groot, Rijcken, Hoeck, Steenbekkers, de Boer. *Eur Respir J* 1992; 5:930-5.

^dSalome, Peat, Britton, Woolcock. *Clin Allergy* 1987; 17:271-81.

Conclusion

• Repeatability of this postal questionnaire on respiratory symptoms in 1-year old children was:

- **excellent** for questions on **household characteristics, environmental exposures and family history,**
- **good** for questions on **prevalence, severity and treatment of wheeze** and
- **moderate** for **chronic cough and upper respiratory symptoms.**

• **Overall, repeatability of this preschool questionnaire (and other published^a) was comparable to results from questionnaires designed for schoolchildren.**