

Review: parental tobacco smoke increases the risk of asthma and respiratory symptoms in school age children

Cook DG, Strachan DP. Parental smoking and prevalence of respiratory symptoms and asthma in school age children. *Thorax* 1997 Dec;52:1081-94.

Question

In school age children, is exposure to parental (environmental) tobacco smoke associated with an increased risk of asthma and respiratory symptoms?

Data sources

Studies were identified with Medline and Embase searched to April 1997 using the terms tobacco smoke pollution; passive, second hand, involuntary, parent, maternal, mother, paternal, father or household; and smok—with various endings, tobacco or cigarette. Bibliographies of relevant studies were also reviewed.

Study selection

Studies were selected if they evaluated school age children (5–16 y) and both exposure to parental tobacco smoke and respiratory symptoms or asthma were assessed.

Data extraction

Data were extracted on year of publication, country of study, population characteristics including age, symptoms (asthma, wheeze, chronic cough, chronic phlegm, and breathlessness), symptom definitions, exposures (1 parent, both parents, and mother or father only), and individual study adjustment factors. Most studies collected data using parent completed questionnaires.

Main results

60 studies were included in the analysis: 25 studied asthma, 41 studied wheeze, 34 studied chronic cough, 7 studied chronic phlegm, and 6 studied breathlessness; 30 studies measured ≥ 2 symptoms. Meta-analysis showed that tobacco smoking by either or both parents increases the risk of asthma, wheeze, and

chronic cough in school age children (table). Chronic phlegm is increased if either parent smokes (OR 1.35, 95% CI 1.13 to 1.62) or both parents smoke (OR 1.46, CI 1.04 to 2.05) and breathlessness is increased if either parent smokes (OR 1.31, CI 1.08 to 1.59). Phlegm and breathlessness were not assessed for other parental smoking categories because of lack of data. The risks of all outcomes were higher when both parents smoked than if only 1 parent smoked. The findings were similar when analysed with or without studies that had adjusted analysis for confounders. No evidence of heterogeneity was found in studies that adjusted for confounders.

Conclusion

Tobacco smoking by either or both parents increases the risk of asthma, wheeze, chronic cough, and chronic phlegm in school aged children.

Pooled odds ratios (ORs) for association between parental tobacco smoke exposure and asthma, wheeze, and chronic cough in school age children

Smoking status	Asthma		Wheeze		Cough	
	OR	95% CI	OR	CI	OR	CI
1 or both parents	1.21	1.10 to 1.34	1.24	1.17 to 1.31	1.40	1.27 to 1.53
1 parent	1.04*	0.78 to 1.38	1.18	1.08 to 1.29	1.29	1.11 to 1.51
Both parents	1.50	1.29 to 1.73	1.47	1.14 to 1.90	1.67	1.48 to 1.89
Mother only	1.36	1.20 to 1.55	1.28	1.19 to 1.38	1.40	1.20 to 1.64
Father only	1.07*	0.92 to 1.24	1.14	1.06 to 1.23	1.21	1.09 to 1.34

*Not significant.

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Commentary

This systematic review by Cook and Strachan is part of a series of reviews about the adverse health effects of the exposure of adults and children to environmental tobacco smoke. The meta-analysis confirms that school age children of parents who smoke are at greater risk of developing asthma and other respiratory symptoms. Unlike previous reviews, the authors examined level of exposure and reported a clear dose response where prevalence of all symptoms increased if both parents smoked.

This review provides a valuable summary of the published evidence, although the importance of widening searches to include hand searches of key health journals and “grey” literature databases should not be overlooked.¹ The authors

acknowledged the potential publication bias and compared the results with 1 unpublished report of a multicentre European study.² An additional strength of the review was that after controlling for confounders, the strong association between smoking and adverse health events was still evident.

Environmental tobacco smoke pollution is increasingly being addressed by public policy, health promotion campaigns, and restrictive interventions such as those within the workplace. To date, however, few campaigns have highlighted the susceptibility of children to the adverse effects of passive smoking. The public health message for all healthcare professionals, particularly those in health promotion and primary care, is to assist

parents in smoking reduction and cessation and to highlight the risk of illness and vulnerability of their children. Promotion of smoke free zones or periods in the home will help reduce health risks from environmental tobacco smoke.³

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1 Counsell C. Formulating questions and locating primary studies for inclusion in systematic reviews. *Ann Intern Med* 1997;127:380–7.

2 Florey C du V, Swan AV, van der Lende R, et al. Report on the EC epidemiological survey of the relationship between air pollution and respiratory health in primary school children. Brussels: Commission of the European Communities, 1993.

3 Biener L, Cullen D, Di ZX, et al. Household smoking restrictions and adolescents' exposure to environmental tobacco smoke. *Prev Med* 1997;26:348–63.