

Berkey, C.S., Ware, J.H., Dockery, D.W., Ferris, B.G., Speizer, F.E. "Indoor Air Pollution And Pulmonary Function Growth In Preadolescent Children" American Journal of Epidemiology 123(2): 250-260, 1986.

ABSTRACT. Results are reported from a study of the association between exposure to sidestream cigarette smoke or gas stove emissions and pulmonary function level and growth rate of 7,834 children seen at 2-5 annual visits between the ages of 6-10 years. Children whose mothers smoked one pack of cigarettes per day had levels of forced expiratory volume in one second (FEV1) at age eight that were 0.81% lower than children of nonsmoking mothers ($p < 0.0001$), and FEV1 growth rates approximately 0.17% per year lower ($p = 0.05$). For a child of age eight with an FEV1 of 1.62 liters, this corresponds to a deficit in rate of change of FEV1 of approximately 3 ml/annum and a deficit of 13 ml at age eight. Children whose mothers smoked one pack per day had levels of forced vital capacity (FVC) at age eight that were 0.33% higher than children of nonsmokers ($p = 0.12$); however, their growth rates of FVC were 0.17% per year lower ($p = 0.04$). Because few mothers changed their smoking habits during the course of the study, it was not possible to determine whether the difference in rate of growth was due to current exposure or to an effect of prenatal and early childhood exposure on the course of development. The magnitude of the effect on FEV1 is consistent with deficits in FEV1 of up to 3% in early adult life due to childhood exposure to sidestream cigarette smoke. The importance of this relatively small effect will be evaluated further through follow-up of these children as they are exposed to other risk factors such as personal active smoking. The data provide some evidence for an association between gas stove exposure and pulmonary function level, especially at younger ages, but no evidence for an effect of gas stove exposure on growth rate.

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