

Weekly Use of Household Cleaning Sprays May Increase Asthma Incidence

Over the past decade, a growing body of evidence has shown that frequent occupational use of cleaning products increases the risk of asthma. Until now, the question of whether nonoccupational exposure to such chemicals poses the same risk has remained largely unexplored.

Study results published in the October 15 *American Journal of Respiratory and Critical Care Medicine* suggested that the use of household cleaning sprays may be responsible for as many as one in seven cases of adult-onset asthma. Glass-cleaning, furniture, and air-refreshing sprays

the follow-up survey conducted between 1999 and 2001 at 22 of the original centers, Dr. Zock and colleagues identified 3,503 persons who reported having done the cleaning in their homes and who had been free of asthma at baseline.

Using modular questionnaires, the investigators conducted face-to-face interviews to determine the frequency with which the subjects used 15 types of cleaning products (ie, never, less than one day/week, one to three days/week, four to seven days/week). Asthma was defined as present if it had been diagnosed by a physician

symptoms and wheeze were 1.35 and 1.49, respectively, for use of glass-cleaning sprays, 1.49 and 1.46 for use of furniture sprays, and 1.71 and 1.36 for use of air-refreshing sprays. The incidence rate of physician-diagnosed asthma was 2.3 per 1,000 person-years and was higher among those who used sprays at least four days per week (RR, 2.11), compared with those who used sprays less often than once per week.

“These associations were consistent for subgroups and not modified by atopy,” the authors reported, adding that dose-response relationships were apparent be-

KEY POINT

Use of common household cleaning sprays may be an important risk factor for adult-onset asthma.

Occupational and Environmental Medicine at Michigan State University in East Lansing, noted that the study by Dr. Zock and colleagues is “the first to demonstrate an association between the use of cleaning products in the home and the onset of asthma among adults” and praised the study’s strong methodology: “longitudinal design, large sample size, and standardized data acquisition.” However, the results should not be viewed as surprising, he said, since they are consistent with those from several previous studies, including at least six epidemiologic studies of professional cleaners that showed adverse respiratory effects from the use of cleaning products and a case report describing an increased risk of wheezing in young children exposed to household chemicals.

Although the current study sheds no light on the biological mechanisms responsible for producing asthma in those using cleaning sprays, it “emphasize[s] the importance of clinicians being aware of the potential for respiratory toxicity” associated with the use of cleaning products, Dr. Rosenman told *Pulmonary Reviews*.

“Clinicians should routinely ask adults with asthma whether they do cleaning at home; if so, how often, and what kinds of cleaning products or air fresheners they use”—all of which should be considered potential asthma triggers, he added. 🌬️

—Ora Baer

Suggested Reading

European Community Respiratory Health Survey II Steering Committee. The European Community Respiratory Health Survey II. *Eur Respir J*. 2002;20(5):1071-1079.

Rosenman KD. Clean as a whistle, but what about that wheeze? *Am J Respir Crit Care Med*. 2007;176(8):731-732.

Zock J-P, Plana E, Jarvis D, et al. The use of household sprays and adult asthma: an international longitudinal study. *Am J Respir Crit Care Med*. 2007;176(8):735-741.

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—Kenneth D. Rosenman, MD

were the products implicated most often. Further investigation is planned to identify the chemical ingredients responsible for triggering asthma and to elucidate the mechanisms involved, focusing particularly on airway inflammatory response, Jan-Paul Zock, PhD, told *Pulmonary Reviews*.

Face-to-Face Interviews

In this prospective study, which used data from the follow-up to the European Community Respiratory Health Survey (ECRHS I), use of cleaning sprays one to three days a week was associated with asthma symptoms, wheezing, or the use of asthma medication, according to Dr. Zock, lead investigator, from the Center for Research in Environmental Epidemiology, Barcelona.

The ECRHS I—which involved more than 18,000 randomly selected adults from more than 35 centers in 18 (mostly European) countries—was an analysis of data gathered between 1991 and 1993 about symptoms of asthma and exposure to known or suspected asthmagens. From

or if participants exhibited symptoms of asthma within the previous 12 months or were currently on medication for asthma. Clinical testing consisted of standardized techniques for spirometry and methacholine challenge. The average length of follow-up was nine years.

Dose-Response Relationship

The researchers found that about 6% of participants reported current asthma symptoms at the follow-up survey. After adjustment for sex, age, smoking, study center, and employment in a cleaning job during follow-up, “consistently positive associations for most asthma definitions were observed for cleaning sprays in general, and glass-cleaning, furniture, and air-refreshing sprays in particular,” the authors observed.

The use of any cleaning spray at least weekly—reported by 42% of participants—was associated with the incidence of asthma symptoms/use of asthma medications (relative risk [RR], 1.49) and wheeze (RR, 1.39). The RRs for asthma

tween frequency of use and asthma symptoms and between the number of different sprays used and both asthma symptoms and wheeze.

Although the authors did not find a link between nonspray cleaning products and asthma, they noted that because of a paucity of data about exposure patterns associated with nonspray cleaning products, “it is not unlikely that our findings reflect a risk of broader use of home cleaning products.”

The authors pointed out that the study had a number of other limitations as well, including a design that did not allow for strong conclusions to be drawn about the mechanisms responsible for the development of asthma. But they speculated that some of the chemicals in cleaning sprays may induce a sensitization reaction or act as irritants, triggering a localized airway inflammatory response.

Strong Methodology

In an accompanying editorial, Kenneth D. Rosenman, MD, Chief of the Division of