

Impact Of Occupational Exposure On Exacerbation Of Asthma: A Population-Based Asthma Cohort Study

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RATIONALE: Previous studies have shown that occupational exposure has a substantial impact on asthma onset (occupational asthma), but there is still limited data on the association between occupational exposure and exacerbation of asthma.

METHODS: A new population-based asthma cohort (n=1781) was created by inviting adults (n=2887) who had reported ever having asthma when they took part in one of several prior population-based cohort studies in western Sweden. Each participant in the new cross-sectional study completed a questionnaire. The cohort for this investigation was restricted to those who had physician-diagnosed asthma and were currently working (n=912).

Overall exacerbation of asthma was defined as an affirmative answer to at least one of the following questions regarding breathing problems in the last 12 months: 1) having any extra visits to a primary care physician or district medical office; 2) taking any extra treatments with corticosteroids tablets; 3) needed to seek acute help at a hospital; 4) admitted to a hospital overnight; or 5) an emergency visit to a primary care physician or district medical office. Additionally, an affirmative answer to either 3), 4), or 5) was defined as **severe exacerbation of asthma**.

We used multivariate logistic regression to investigate the association between exacerbation of asthma and 23 different self-reported occupational exposures while adjusting for potential confounders.

RESULTS: The study cohort had a mean age of 43 years, a slight majority of women (54%), 10% current smokers, 12% exposed to second-hand smoking (SHS), and 78% with self-reported allergy (Table 1). Both overall and severe exacerbation of asthma were more common in women than men (overall 14% vs 9%, p<0.05; severe 7% vs 4%, p<0.05).

Table 1. Demographic characteristics of the study population (n=912)

	Study population N (%)
Sex	
Women	495 (54.3)
Men	417 (45.7)
Mean age (standard deviation)	42.5 (14.3)
Smoking status	
Never smoker	638 (70.0)
Ex-smoker	178 (19.5)
Current smoker	96 (10.4)
SHS in the past 12 months	107 (11.7)
Self-reported allergy	702 (77.5)
Exacerbation of asthma	
Overall	102 (11.2)
Severe	206 (22.6)
Occupational exposure in the past 12 months	
Gas/smoke/dust	411 (46.1)
Paper dust	160 (18.2)
Textile dust	111 (12.6)
Smell of mold	152 (17.0)

When taking sex, age, smoking, SHS and allergy into account, paper and textile dust, and smell of mold at the workplace were significantly associated with exacerbation of asthma (Table 2). Exposure to gas/smoke/dust was significantly associated with severe exacerbation of asthma. These findings remained largely unchanged when all the statistically significant work exposure covariates were included in the same regression model (data not shown).

Table 2. Associations between exacerbation of asthma and different occupational exposures in the past 12 months analyzed by multiple logistic regression models, presented with odds ratio (OR) with 95% confidence interval (CI)†

Predictors	Exacerbation of asthma	
	Overall OR (95 % CI), (n)	Severe OR (95 % CI), (n)
Gas/smoke/dust	1.28 (0.92-1.78),(n=98)	1.70 (1.08-2.66),(n=54)
Paper dust	1.56 (1.06-2.30),(n=47)	2.05 (1.27-3.32),(n=29)
Textile dust	1.58 (1.01-2.48),(n=35)	1.45 (0.81-2.59),(n=17)
Smell of mold	1.76 (1.19-2.61),(n=48)	2.98 (1.22-3.22),(n=28)

† Each model was separately performed for each type of work exposure, adjusting for sex, age (continuous variable), self-reported allergy, smoking (never vs. ex-smoker, never vs. current smoker) and SHS in the past 12 months.

CONCLUSIONS: Exposure to gas/smoke/dust, paper and textile dust, and mold in the workplace was associated with exacerbation of asthma. Reduction of these occupational exposures may help reduce the exacerbation.

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