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Risk Factors for Work Disability in Severe Adult Asthma

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ABSTRACT

PURPOSE: We aimed to elucidate the prevalence of and risk factors for work disability in severe adult asthma and to evaluate the impact of work disability on downstream health outcomes.

METHODS: We used data from a prospective cohort study of 465 adults with severe asthma. Structured telephone interviews ascertained asthma status and employment history. A job exposure matrix (JEM) was used to characterize the likelihood of workplace exposure to "asthmagens."

RESULTS: The prevalence of asthma-related complete work disability was 14% among working-age adults with severe asthma (95% confidence interval, 11%-18%). Among those who were currently employed, the prevalence of partial work disability was 38% (95% confidence interval, 31%-45%). Sociodemographic ($P = .027$) and medical factors ($P = .020$) were related to the risk of complete work disability. Both sociodemographic characteristics ($P = .06$) and work exposures based on the JEM ($P = .012$) were related to partial work disability. In additional models, poorer asthma severity, physical health status, and mental health status were all associated with a higher risk of complete and partial work disability.

CONCLUSIONS: Work disability is common among adults with severe asthma. There are three sets of risk factors for work disability that are potentially modifiable: smoking, workplace exposures, and asthma severity.

KEYWORDS: Asthma; Work; Employment; Occupation; Disabled persons

A recent American Thoracic Society Statement concluded that 15% of adult asthma can be attributed to occupational exposures.[1] Occupational asthma, or asthma that is directly caused by workplace exposures, reflects only one aspect of the interrelationship between asthma and employment. Because asthma is a common medical condition and affects adults of working age, the true burden of asthma-related work disability is probably substantively higher. Previous work by our group and others suggests that work disability is common among adults with asthma.[2-9] It seems that both workplace and disease characteristics may contribute to the risk of disability.[3,4,9-13]

Recent national trends may be further contributing to the burden of asthma-related work disability. In the United States, the prevalence and severity of asthma are increasing.[7,14,15] Despite these trends, our understanding of the impact of severe disease on the ability to secure and maintain employment is limited. In a cohort of adults with severe asthma we evaluated the prevalence and risk factors for asthma-related work disability. To study the downstream effects of work disability on health outcomes, we elucidated the longitudinal impact of work disability and workplace exposures on the risk of asthma exacerbation that required emergency health care use for asthma.

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METHODS

Subject Recruitment

We used data from a prospective cohort study of adult members of Northern California Kaiser Permanente (KP). Recruitment methods have been reported in detail.[16-18] To establish a cohort with more severe asthma, we recruited adults after recent hospitalization for asthma.[19-23] Eligible subjects were adult KP members (≥18 years) who were hospitalized with a principal International Classification of Diseases, 9th revision (ICD-9) discharge diagnosis code for asthma (codes 493.xx) during a 4-year period beginning in April 2000. We also included KP members hospitalized with a secondary discharge diagnosis code for asthma and a principal diagnosis code for acute asthma-related respiratory conditions.[16] Persons with a primary or secondary discharge diagnosis code for chronic bronchitis (491.xx), emphysema (492.xx), or chronic airway obstruction (496.xx) were excluded. In addition, all subjects reported a physician diagnosis of asthma at the time of telephone interview.

CLINICAL SIGNIFICANCE

- Work disability is common in severe adult asthma.
- Work disability has adverse downstream health effects in adult asthma.
- Smoking, workplace exposures, and asthma severity are potentially modifiable risk factors for work disability in asthma.

The complete cohort included 865 subjects (53% completion rate). Because the current analysis examines risk factors for work disability, we restricted the sample to 465 persons who had a history of labor force participation and were less than 65 years old. As previously reported, the diagnosis of asthma was validated with a medical record review.[17]

Predictor Variables

The analysis examined the relationship between 3 sets of predictor variables and the risk of asthma-related work disability and disability payments: sociodemographic characteristics, medical factors, and job-related exposures.

Sociodemographic Characteristics

Structured telephone interviews ascertained age, sex, race-ethnicity, educational attainment, and marital status as previously described.[5] Because income is a direct function of employment status, we chose educational attainment as the preferred socioeconomic indicator.

Medical Factors

Asthma onset, history of asthma remission, and atopic history (hayfever or eczema) were ascertained using previously described questions.[3] Cigarette smoking was measured using questions developed for the National Health Interview Survey.[28]

Job Exposures

We used a previously developed job exposure matrix (JEM) to classify occupations as low, intermediate, or high risk for exposure to substances that cause or exacerbate asthma.[6] The original JEM was developed for the European Community Respiratory Health Survey using the European Commission Alphabetical Index for Classifying Occupations. We adapted this JEM for the US Census 2000 occupation codes.

Employment History and Work Disability

The survey included employment status questions that were patterned after items from the Bureau of Labor Statistics Current Population Survey.[29] On the basis of these questions, we defined current employment as working *or* employed but not at work because of temporary factors, such as illness or vacation. Past employment was defined as a history of labor force participation but not current employment. Both current and past occupation and industry were ascertained.

The primary study outcomes were "complete" and "partial" work disability resulting from asthma, which were defined using items that we previously adapted from the Current Population Survey, the National Health Interview Survey, and the Migraine Work and Productivity Loss Questionnaire for use in asthma.[4,29-31] Complete work disability was defined as leaving the workforce altogether because of asthma, breathing difficulties due to air quality or temperature, or physical exertion required by the job. Among persons who were currently employed, partial work disability was defined as missed complete or partial work days because of asthma during the past 4 weeks, a significant change in work duties because of asthma, or decreased self-rated job effectiveness because of asthma (<90%).

Disability Payments

We developed interview items to ascertain receipt of disability payments during the past year, including Social Security Disability Benefits, Supplemental Security Income, State Disability Insurance payments, and private disability insurance payments. The interview also assessed whether subjects had received Workers' Compensation benefits for a temporary or permanent disability. These items were added after study inception and completed by a subset of 355 subjects (76%). All subjects who were asked to complete these items did so.