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Environmental Research 101 (2006) 175–183
Environmental Research
www.elsevier.com/locate/envres

Gender differences in respiratory symptoms—Does occupation matter?

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Received 9 July 2004; received in revised form 10 January 2005; accepted 24 February 2005
Available online 5 April 2005

Abstract

Little attention has been given to gender differences in respiratory health, particularly in occupational settings. The purpose of this paper was to evaluate gender differences in respiratory morbidity based on surveys of hospitality workers, radiographers, and respiratory therapists. Data were available from mail surveys of 850 hospitality industry workers (participation rate 73.9%; 52.6% female), 586 radiographers (participation rate 63.6%; 85% female), and 275 respiratory therapists (participation rate 64.1%; 58.6% female). Cross-tabulations by gender were evaluated by χ^2 analysis and logistic regression with adjustment for personal and work characteristics. Women consistently had greater respiratory morbidity for symptoms associated with shortness of breath, whereas men usually had a higher prevalence of phlegm. There were few differences in work exposures apart from perception of exposure to ETS among hospitality workers. Gender differences in symptoms were often reduced after adjustment for personal and work characteristics but for respiratory therapists there were even greater gender disparities for asthma attack and breathing trouble. Population health findings of elevated symptoms among women were only partially supported by these occupational respiratory health surveys. The influence of differential exposures and personal factors should be considered when interpreting gender differences in health outcomes.
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Keywords: Gender; Questionnaires; Surveys; Respiratory symptoms; Hospitality workers; Radiographers; Respiratory therapists

1. Introduction

Despite having a longer life expectancy than men, women generally have comparatively greater hospitalization rates, prevalence of chronic conditions, and disability (Women's Health Bureau, 2003). According to the comprehensive US National Health Interview survey (Lucas et al., 2004) women typically report more symptoms, more acute conditions, more days of restricted activity due to illness, and more doctor visits than men. For many diseases including respiratory conditions, population health surveys show that women tend to have greater physiological and psychological morbidity in comparison to men (Waldron, 1983). A review of more than 60,000 subjects with asthma in a large health care organization revealed that women between the ages of 23 and 64 compared to men required more inhaled corticosteroids (75% vs. 72%), more routine clinic visits (67% vs. 56%), more emergency department visits (12.2% vs. 10.7%), and hospitalizations (2.8% vs. 1.7%) (Camargo and Schatz, 2003).

Publications concerning occupational health research have been based either on the total working population, without distinguishing gender, or on the dominant sex (usually males). Greenberg and Dement (1994) reported that there were almost 40% fewer occupational health articles listed on "MedLine" that addressed the effects of occupational exposures on the lung health of women compared to that of men.

Comparatively little attention has been given in the scientific literature to the effects of sex or gender upon

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doi:10.1016/j.envres.2005.02.008

respiratory morbidity, although gender differences in lung function are well recognized. For instance, all predictive equations of lung function parameters include the variable of sex (American Thoracic Society, 1991). There is a tendency to control for gender rather than examine gender-based influences on health. As a result, there is limited understanding of how gender affects occupational exposures and respiratory outcomes.

Analyses of data from three occupational health studies of workers at risk for asthma and respiratory health effects were undertaken in order to determine whether there were gender differences in exposures and in reporting of respiratory symptoms attributed to the work environment.

2. Methods

2.1. Study designs

Ethical approval to conduct the study was granted by the Clinical and Behavioural Sciences Research Ethics Board at the University of British Columbia.

All surveys were cross-sectional in design, using mail-out questionnaires. Occupational groups surveyed included: (1) hospitality workers from the Greater Vancouver region who were employed in the food and beverage industry and hotels, (2) radiographers working in British Columbia, and (3) respiratory therapists from British Columbia.

2.1.1. Hospitality workers

The initial mail-out survey of hospitality workers took place in February 1997 and involved employees from 17 municipalities of the Greater Vancouver Regional District. Membership lists containing address and telephone information for 2183 members were obtained from a local union of bar workers, restaurant servers, and hotel workers. Repeat mail-outs of reminder cards and questionnaires were undertaken. The response rate for 1163 eligible subjects who could be contacted was 73.9%. Of the 860 participants, 52.6% were women (Dimich-Ward et al., 2005).

2.1.2. Radiographers

All radiographers working in British Columbia who were registered in their health professional association in 1998 were contacted by mail in the Spring of 1999. Details of the protocol have been described previously (Dimich-Ward et al., 2003). Using the seniority list of the professional association, 1036 subjects were contacted by mail. The mail-out included a letter of invitation explaining the study, a support letter from the professional association, a self-addressed, stamped return envelope, and a 2-page double-sided questionnaire. The covering letter presented the questionnaire as a general survey on the respiratory health of health care workers.

In total, 586 radiographers currently employed in acute care hospitals and clinics in British Columbia returned the questionnaires. Of those eligible for the study, the participation rate was 63.6%. The radiographers were predominantly women (85%).

2.1.3. Respiratory therapists

All respiratory therapists (527) registered with their professional organization in British Columbia were initially contacted by mail in October 2000 (Dimich-Ward et al., 2004). Mail-based procedures similar to that of the radiographers study were used. For the 275 respiratory therapists the participation rate was 64.1% of eligible respondents. Of the total, 58.6% were women.

2.2. Questionnaire

The questionnaires for all studies were based on the International Union Against Tuberculosis and Lung Diseases questionnaire for asthma-like symptoms (Burney and Chinn, 1987) supplemented by questions on irritant symptoms as well as personal and employment characteristics. Additional questions concerned work exposures and tasks unique to the specific occupation. Questions were derived through literature reviews, pilot testing, and consultation with health care professionals.

Never smokers were categorized as those who responded that they had never smoked tobacco. Exsmokers were defined as those who answered "yes" to ever having smoked and "no" to "do you now smoke." Current smokers gave an affirmative answer to both questions.

The following terms were used for questions on respiratory symptoms occurring at any time in the last 12 months. The descriptions contain the exact wording from the essential part of the survey question. Not all questions on symptoms/conditions were asked at each survey.

Asthma attack	Had an attack of asthma
Wheeze	Had wheezing or whistling in chest when did not have a cold
Chest tightness	Woken up with a feeling of tightness in chest
Nocturnal cough	Been woken by an attack of coughing
Woken by dyspnea	Been woken by an attack of shortness of breath
Daytime dyspnea	Attack of shortness of breath that came on during the day when you are not doing anything strenuous

Other symptoms or conditions include

Usual (chronic) cough	Usually have a cough (at least 3 months of the year)

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