Introduction

In 2006, an estimated 2.1 million farm operations existed in the United States, and at least one primary farm operator managed the day-to-day decisions on these farms. Many agricultural studies have shown elevated rates of respiratory symptoms and diseases, and their findings have suggested that these respiratory effects are attributed to exposure from activities involving farming operations.

The use of respiratory protective equipment can be used to protect individuals from exposure to dust, fumes, smoke, and vapors found on a farm. However, there is very little information about the use of respirators among farm operators, especially among those with a respiratory condition such as asthma.

Objectives

To estimate prevalence of respirator/dust mask use among U.S. primary farm operators with asthma.

To estimate this prevalence by operator and farm characteristics.

Methods

Data source

The 2006 Farm and Ranch Safety Survey conducted by the U.S. Department of Agriculture, National Agricultural Statistics Service.

Survey sample included 25,000 farms and information from 14,159 (57%) farms were collected; 12,788 (87%) were actively farming and included in the analysis. Adjusted survey response rate was 75%.

Definitions

Current asthma (coded as yes/no)

Have you or the farm operator ever been told by a doctor, nurse, or other health professional that you or he/she had asthma? AND Do you or the farm operator still have asthma?

Respirator/dust mask use (coded as yes/no)

In the last 12 months, have you (or the farm operator) used a respirator or dust mask on your farm or ranch?

Region

North: Connecticut, Maine, Massachusetts, New Jersey, New Hampshire, New York, Rhode Island, Vermont

Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin

South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia

West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Oregon, Utah, Washington, and Wyoming

Farm type

Crops: Corn, Cotton, Tobacco, Cotton & cotton seed, Vegetables, melons, potatoes & sweet potatoes, Fruit, tree nuts & berries, and Other crops

Livestock: Cattle; horses; pigs; calves; milk & other dairy products, Sheep, goats & products, Hogs, poultry & eggs, and Other animals & animal products

Analysis

Estimated population percent (%), estimated prevalences, prevalence differences (PD) between groups, and corresponding 95% confidence intervals (CI) were calculated. Sample weights were used to account for the complex sample design. SAS software version 9.2 (SAS Institute Inc., Cary, NC) was used. PROC SURVEYREG with an ESTIMATE statement was used to test whether the PD=0. Statistical significance was achieved if P-value<0.05.

Data collection

In 2006, an estimated 2.1 million farm operations existed in the United States, and at least one primary farm operator managed the day-to-day decisions on these farms.

Table 1. Operator and farm characteristics, and prevalence of current asthma and respirator/dust mask use

| Characteristics | All operators | Age group (years) | Male | Female | Two job | No information
date format

<table>
<thead>
<tr>
<th>Respirator/dust mask use</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current asthma</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>No</td>
<td>6,663</td>
<td>50.0</td>
</tr>
<tr>
<td>Male</td>
<td>10,885</td>
<td>88.1</td>
</tr>
<tr>
<td>Female</td>
<td>1,381</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Table 2. Prevalence of respirator/dust mask use by operator and farm characteristics

<table>
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<th>Region</th>
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Table 3. Prevalence of respirator/dust mask use among operators with current asthma

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Results

In 2006, an estimated 2.1 million farm operations existed in the United States, and at least one primary farm operator managed the day-to-day decisions on these farms. Many agricultural studies have shown elevated rates of respiratory symptoms and diseases, and their findings have suggested that these respiratory effects are attributed to exposure from activities involving farming operations.

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Two job (coded as yes/no)

Have/Has you or the farm operator ever been told by a doctor, nurse, or other health professional that you or he/she had asthma? AND Do you or the farm operator still have asthma?

Gender

Male

Female

Age group (years)

16–34

35–64

65

Farm type

Crops

Livestock

Other

Region

North

Midwest

South

West

Analyses

Prevalence of respiratory/dust mask use was significantly greater among operators with current asthma than among operators without asthma (P-value<0.001). Prevalence of respiratory/dust mask use was significantly greater among those who experienced an asthma attack while doing farm work than those who had not experienced an asthma attack (P-value<0.001).

Prevalence of respiratory/dust mask use was greater for specific subgroups (e.g., males, 35-year-olds, and South and Midwest operators) (Table 2).

These findings contribute to the limited information on respirator use and asthma among farm operators. Further studies are needed to evaluate respiratory protection programs and asthma management among farm operators.

Conclusions

Data self-reported and not independently verified by "on-farm" hazard assessment.

No information on whether the respirator/dust mask was used at the time of exposure and/or prior to asthma attacks.

No information to distinguish between the use of a respirator versus a dust mask.

Download the full PDF for more details.