CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

April 23, 1999 / Vol. 48 / No.15

MMWR™
MORBIDITY AND MORTALITY
WEEKLY REPORT

Back Pain Among Persons Working on Small or Family Farms — Eight Colorado Counties, 1993–1996

In the United States, work-related back pain often results in lost wages, reduced productivity, and increased medical costs (*1,2*). However, national surveillance data about these injuries, such as occupationally acquired back pain among workers on small or family farms, are limited (*3*). To characterize back pain in a farming population, researchers at Colorado State University interviewed adult farmers residing in eight northeastern Colorado counties (Larimer, Logan, Morgan, Phillips, Sedgewick, Washington, Weld, and Yuma) during 1993–1996, using the Colorado Farm Family Health and Hazard Survey (CFFHHS). This report summarizes the findings of CFFHHS, which indicate that back pain is common among farmers and most frequently attributed to repeated activities (RAs) (e.g. lifting, pushing, pulling, bending, twisting, and reaching).

University researchers selected a sample of 500 small or family farms (i.e., ≤10 workers) in proportion to the number of Colorado farms in the National Agricultural Statistical Reporting Districts for Crop and Livestock. During the 3-year period using the CFFHHS questionnaire, 759 adults (aged ≥18 years) were interviewed from 458 (92%) farms to determine whether the respondents had experienced daily back pain for ≥1 week during the 12 months preceding the interviews. The p values for comparison of back pain prevalence by sex were calculated using the chi-square test. Most (458 [60%]) respondents were men. Average age of respondents was 50.5 years (range: 24–85 years).

Of the 458 men surveyed, 411 (90%) worked on farms ≥5 days per week; 451 (99%) worked ≥2 days per week. Of the 301 women surveyed, 136 (46%) reported working on farms ≥5 days per week; 227 (66%) worked ≥2 days per week. During the 12 months preceding the interviews, 196 (26%) respondents experienced back pain lasting ≥1 week. The prevalence of back pain among men was slightly higher than among women; both sexes reported that the lower back was the area most often affected (Table 1). Approximately 45% of respondents attributed back pain to RAs; however, 13% of men and 8% of women attributed back pain to single incidents (SIs) such as slipping or falling (Table 1). Approximately one fifth of all respondents attributed back pain to both RAs and SIs. Depression, occupation, and long-term employment in agriculture also had statistically significant associations with back pain (*4*). In all age categories, the prevalence of back pain did not differ significantly among men and

TABLE 1. Sex-specific prevalence of back pain among farmers during the 12 months preceding interviews, by selected characteristics — eight Colorado counties,* 1993–1996†

Characteristic	Men (n=458)			Women (n=301)			p value
	No.	(%)	(95% CI§)	No.	(%)	(95% CI)	
Part of the back affected							
Upper	16	(12.3)	(7.2%–18.5%)	9	(13.6)	(6.5%–22.8%)	0.375
Middle	11	(8.5)	(4.3%–13.9%)	9	(13.6)	(6.5%–22.8%)	
Lower	98	(75.4)	(67.7%–82.4%)	43	(65.2)	(53.4%–76.1%)	
Not reported	5	(3.8)	(1.2%– 7.8%)	5	(7.6)	(2.5%–15.2%)	
Cause of back pain							
Single incident (SI)¶	17	(13.0)	(7.8%–19.3%)	5	(7.6)	(2.5%–15.2%)	0.529
Repeated activities (RA)**	59	(45.4)	(37.0%–54.0%)	29	(43.9)	(32.2%–55.9%)	
Both SI and RA	27	(20.8)	(14.3%–28.2%)	13	(19.7)	(11.1%–30.1%)	
Other	20	(15.4)	(9.7%–22.1%)	18	(27.3)	(17.3%–38.6%)	
Unknown	7	(5.4)	(2.2%– 9.9%)	1	(1.5)	(0.0%– 5.8%)	
Back pain resulted from							
Work	13	(76.5)	(54.2%–93.0%)	2	(40.0)	(6.0%–81.3%)	0.133
Home or recreation site	4	(23.5)	(7.0%–45.8%)	3	(60.0)	(18.8%–94.1%)	
Back pain occurred at							
Work	54	(91.5)	(83.1%–97.2%)	11	(37.9)	(21.4%–56.0%)	0.001
Home or recreation site	5	(8.5)	(2.8%–16.9%)	18	(62.1)	(44.0%–78.6%)	
No. days per week worked on farm††							
0				6	(8.6)	(1.3%–21.3%)	0.872
1–4				10	(11.0)	(2.4%–24.7%)	
5–7				13	(9.6)	(1.8%–22.8%)	
Major changes in work activities because of back pain	49	(37.7)	(29.6%–46.2%)	20	(30.3)	(19.9%–41.9%)	0.306
Previous job stopped or changed because of back pain	13	(10.0)	(5.5%–15.7%)	5	(7.6)	(2.5%–15.2%)	0.579
Total§§	**130**	**(28.4)**	**(24.4%–32.6%)**	**66**	**(22.9)**	**(18.3%–27.8%)**	**0.052**

*Larimer, Logan, Morgan, Phillips, Sedgewick, Washington, Weld, and Yuma.
†n=759.
§Confidence interval.
¶For example, slipping or falling.
**For example, lifting, pushing, pulling, bending, twisting, or reaching.
††Women respondents only.
§§Total number reporting back pain.

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women, except among those aged 30–39 years (36% versus 21%, respectively; p=0.044).

For men, work-related RAs were more likely than nonwork-related RAs to cause back pain; for women, nonwork-related RAs were more likely to cause back pain. Compared with women, men experienced back pain more often at work than at other locations, but this difference was statistically significant only for RA-related back pain. The overall prevalence of RA-related back pain among women was slightly greater among those who performed farm work than those whose duties were restricted to work in the home, but this difference was not statistically significant. Because of back pain, 38% of men and 30% of women had made "major" changes (undefined in the survey) in work activities; 10% and 8%, respectively, either changed or stopped their work permanently (Table 1).

Dairy farmers were substantially more likely to report back pain (43%) than farmers who produced field crops (27%; p=0.058) or raised livestock (25%; p=0.054). The prevalence of back pain among farmers working on large farms (i.e., annual sales ≥$100,000) was slightly higher than that of those working on small farms (29% versus 24%, respectively; p=0.15).

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Editorial Note: Many risk factors for occupational and nonoccupational back pain have been proposed (*5*), with general agreement that overexertion and chronic whole-body vibration are important risk factors for work-related back pain (*6*). CFFHHS confirmed that back pain is a major health problem among farmers in eight Colorado counties working on small or family farms.

Surveillance information about injuries among small and family farmers might be inadequately represented in national data. Two national data sources are available to estimate the prevalence and characteristics of work-related back pain in the United States: the Bureau of Labor Statistics (BLS) Annual Survey and the 1988 Occupational Health Supplement (OHS) in the National Health Interview Survey (NHIS). The BLS Annual Survey is based on sampled employers' reporting on occupational injuries and illnesses. In 1996 (the most recent year for which data are available), incidence of nonfatal injury or illness affecting the back and involving lost work days was 75.1 (0.8%) per 10,000 full-time agricultural workers (*7*): 1.1% among dairy farmers, 1.0% among workers in livestock production, and 0.7% among workers in crop production. BLS data excluded self-employed farmers and farms with <11 employees.

The OHS samples U.S. civilian noninstitutionalized adults aged ≥18 years (*8*). Although farm size was not considered in NHIS sampling, OHS data excluded people who "only worked around the house"; in comparison, CFFHHS did not exclude small farms or homemakers. In 1988, OHS/NHIS (*9*) included questions about back pain during the 12 months preceding the interviews among adult respondents who had worked during that time (*8*). During 1988, the national prevalence of back pain (defined as lasting ≥1 week, excluding menstrual back pain) was 17.6% (22.4 million cases; 149 million lost work days) (*9*). Among major* occupation categories for men, "farmers except horticultural" ranked fifth in the prevalence of back pain attributed to

*For this analysis, a "major" occupation was defined as an occupation constituting >0.5% of the total sex-specific working population (*9*).

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work-related activities, with 213,000 cases. Women farmers ranked 20th among major occupations, with 21,000 cases.

Data from CFFHHS revealed aspects of back pain that are not readily available in national data. CFFHHS indicated that back pain among men was associated closely with work. Among women farmers, daily domestic activities (e.g., cleaning house and caring for children) may be risk factors for back pain.

CFFHHS results have at least four limitations. First, on small farms, it may be difficult to distinguish between work-related and domestic activities. Second, the survey covered only a section of Colorado, which may have unique regional and farming characteristics; therefore, the findings may not be generalizable to other regions, states, or the rest of the country. Third, responses to the survey were self-reported and may be subject to recall biases. Finally, 27% (108) of the eligible women within a responding family unit did not participate in the survey.

The Colorado survey results verify that back pain is a major work-related health issue. The survey also suggests that regional and state-based surveillance for work-related disorders could supplement the national surveillance system for a population underestimated or excluded. Findings from the Colorado survey pointed to an area that warrants further investigations. Other states, such as California, Iowa, Kentucky, and New York, have conducted similar surveys under the FFHHS program, and their findings may provide insight about back pain among small and family farmers.

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