
Prevalence, Recognition of Work-Relatedness, and Effect on Work of Low Back Pain Among U.S. Workers

Background: The employment of patients with back pain has implications for both the factors causing or contributing to the pain and its effects, but few estimates of the proportion of back pain that is related to work in the United States are available (1). In 2015, the NHIS (National Health Interview Survey) collected supplemental data about the work-relatedness and the effects on work of back pain—specifically, low back pain (LBP)—among U.S. workers for the first time since 1988.

Objective: To estimate the burden of LBP among U.S. workers, its work-relatedness, and its effect on work.

Methods and Findings: The NHIS is a nationally representative health survey (2). This study was limited to the 19 441 randomly selected adults in the sample who were employed during the week before the interview (that is, workers) and answered an initial question about LBP and supplemental items on LBP and work. Former workers were excluded. Survey items from the NHIS that were used to define LBP, job characteristics, and effects of LBP on ability to work are presented in the **Supplement** (available at [Annals.org](https://annals.org)). Low back pain attributed to work by a health professional was defined as work-related. The final response rate of the 2015 NHIS Sample Adult component was 55.2%.

Overall prevalence was 26.4% for any LBP, 8.1% for frequent and severe LBP, and 5.6% for work-related LBP (**Table 1**). The prevalence of all 3 outcomes was lowest among workers employed in computer and mathematical occupations. The prevalence of any LBP and work-related LBP was highest in construction and extraction occupations, whereas the prevalence of frequent and severe LBP was highest in building and grounds cleaning and maintenance occupations. Workers who reported frequent exertion or standing were more likely than those who did not to report all 3 outcomes.

Approximately 21.4% of workers with any LBP and 23.7% of those with frequent and severe LBP reported being told by a health professional that their LBP was probably work-related (**Table 2**). However, most workers with LBP did not recall ever discussing whether their LBP was work-related with a health professional. Overall, 6.0% of current workers with any LBP, 10.2% of those with frequent and severe LBP, and 18.4% of those with work-related LBP had ever filed a workers' compensation claim.

Regardless of the cause, 16.9% of workers with any LBP and 19.0% of those with frequent and severe LBP missed at least 1 full day of work in the past 3 months because of LBP. Furthermore, 6.1% of workers with any LBP and 10.7% of those with frequent and severe LBP had stopped working,

Table 1. Prevalence of Any LBP, Frequent and Severe LBP, and Any LBP Attributed to Work in the Past 3 Months in the U.S. Working Population, by Demographic and Job Characteristics*

Demographic and Job Characteristics	Total Workers, n	Any LBP		Frequent and Severe LBP		Any LBP Attributed to Work by a Health Professional	
		Workers, n	Weighted Prevalence (95% CI), %	Workers, n	Weighted Prevalence (95% CI), %	Workers, n	Weighted Prevalence (95% CI), %
All workers	19 441	5272	26.4 (25.5–27.3)	1652	8.1 (7.6–8.6)	1205	5.6 (5.2–6.1)
Sex							
Men	9661	2533	25.6 (24.5–26.8)	747	7.5 (6.8–8.2)	684	6.4 (5.7–7.1)
Women	9780	2739	27.3 (26.1–28.5)	905	8.8 (8.0–9.6)	521	4.8 (4.3–5.4)
Age							
18–29 y	3987	878	20.5 (18.8–22.3)	254	5.8 (4.8–6.9)	161	3.8 (3.1–4.7)
30–44 y	6511	1722	25.5 (24.2–26.9)	527	7.8 (6.9–8.7)	377	5.3 (4.6–6.1)
45–64 y	7609	2281	30.3 (28.9–31.7)	742	9.6 (8.7–10.5)	601	7.3 (6.5–8.1)
≥65 y	1334	391	29.2 (25.8–32.7)	129	8.6 (6.8–10.7)	66	3.8 (2.7–5.2)
Race and ethnicity							
Non-Hispanic white	12 131	3490	28.0 (26.9–29.1)	1136	8.8 (8.1–9.5)	727	5.3 (4.7–5.9)
Non-Hispanic black	2446	630	24.5 (22.3–26.8)	181	6.9 (5.7–8.2)	156	6.3 (5.1–7.7)
Other	1451	292	18.8 (16.1–21.8)	77	4.6 (3.3–6.2)	79	5.2 (3.7–7.0)
Hispanic	3413	860	24.7 (22.8–26.7)	258	7.5 (6.4–8.7)	243	6.7 (5.6–8.0)
Occupational category†‡							
Management	1910	473	25.4 (22.7–28.2)	124	6.9 (5.4–8.7)	89	4.2 (3.0–5.5)
Business and financial operations	979	224	25.4 (21.4–29.7)	48	6.1 (4.2–8.5)	39	4.5 (3.0–6.5)
Computer and mathematical	627	117	17.2 (13.8–21.1)	31	4.6 (2.7–7.2)	17	2.8 (1.5–4.7)
Architecture and engineering	370	80	23.8 (18.1–30.3)	\$	\$	8	2.1 (0.7–4.6)
Life, physical, and social science	229	63	26.0 (18.1–35.3)	\$	\$	\$	\$
Community and social services	428	119	24.5 (18.7–31.0)	39	6.2 (3.6–9.9)	\$	\$
Legal	247	59	26.3 (19.1–34.6)	\$	\$	\$	\$
Education, training, and library	1279	302	24.8 (21.5–28.4)	85	5.7 (4.1–7.7)	43	3.4 (2.2–5.0)
Arts, design, entertainment, sports	418	106	23.6 (18.6–29.2)	27	4.9 (2.7–8.1)	22	6.0 (3.3–9.9)
Health care practitioners and technical	1117	338	29.4 (26.0–33.0)	92	7.5 (5.8–9.6)	75	6.6 (4.7–8.9)
Health care support	493	145	27.7 (22.5–33.4)	58	10.8 (7.4–15.1)	45	7.9 (5.1–11.6)
Protective service	353	103	25.8 (19.8–32.5)	31	6.6 (4.1–10.0)	36	8.3 (5.0–12.8)
Food preparation and serving	999	284	25.3 (21.4–29.5)	91	8.2 (6.1–10.7)	74	4.9 (3.5–6.6)
Building and grounds cleaning and maintenance	843	265	30.3 (26.2–34.6)	98	11.4 (8.7–14.6)	83	7.6 (5.4–10.3)
Personal care and service	675	206	30.0 (25.4–35.0)	79	9.9 (7.3–13.0)	50	9.1 (5.9–13.2)
Sales and related	1786	470	24.3 (21.7–27.0)	168	8.5 (6.9–10.3)	91	4.2 (3.1–5.6)
Office and administrative support	2369	679	29.1 (26.6–31.7)	226	9.8 (8.2–11.6)	112	4.8 (3.7–6.2)
Farming, fishing, and forestry	179	33	17.8 (10.8–26.8)	\$	\$	10	2.6 (0.9–5.7)
Construction and extraction	960	312	31.6 (27.5–35.9)	99	9.9 (7.5–12.8)	121	12.3 (9.3–15.8)
Installation, maintenance, and repair	616	192	29.9 (25.1–35.1)	69	10.4 (7.2–14.3)	60	8.8 (6.0–12.3)
Production	1171	329	26.3 (22.9–29.9)	111	10.5 (7.9–13.6)	79	5.8 (4.2–7.7)
Transportation and material moving	1063	319	29.3 (25.6–33.2)	106	9.0 (6.9–11.4)	113	9.1 (7.0–11.6)
Frequent exertion at work‡							
Yes	8056	2661	32.1 (30.7–33.6)	926	11.1 (10.2–12.0)	798	8.9 (8.0–9.8)
No	11 360	2604	22.4 (21.3–23.5)	723	5.9 (5.3–6.5)	405	3.3 (2.9–3.8)
Frequent standing at work‡			<i>P</i> < 0.001		<i>P</i> < 0.001		<i>P</i> < 0.001
Yes	12 919	3746	27.9 (26.8–29.0)	1230	8.9 (8.2–9.6)	959	6.6 (6.0–7.2)
No	6498	1521	23.5 (22.1–25.0)	419	6.5 (5.7–7.4)	244	3.7 (3.2–4.3)

CI = Korn-Graubard 95% confidence interval; LBP = low back pain; NHIS = National Health Interview Survey.

* NHIS items on LBP and its relatedness to work are presented in the Supplement. Analyses were performed using SAS-callable SUDAAN software, version 11.0 (RTI International), and weighted using final NHIS sample adult weights to achieve national representation.

† Results are not reported for the military-specific occupational group because the NHIS sample is based on the civilian population.

‡ Row totals may not sum to the total sample size because of missing data for specific questions.

\$ Estimate does not meet standards of precision.

changed jobs, or made a major change in work activities in the past 3 months because of LBP. The proportions of workers with work-related LBP who missed work (20.1%) or changed jobs or activities (11.0%) were only slightly higher than the proportion of all workers with frequent and severe LBP.

Discussion: In 2015, we found that the 3-month prevalence of any LBP among U.S. workers was approximately 26.4%, representing almost 40 million workers. Many of these cases were attributed to work by a health professional, but most workers affected did not discuss work-relatedness with

Table 2. Recognition of Work-Relatedness and Effect on Work Among Employed U.S. Adults With LBP*

Variable	Any LBP (n = 5272)†		Frequent and Severe LBP (n = 1652)†		Any LBP Attributed to Work by a Health Professional (n = 1205)†	
	Workers, n	Weighted Proportion (95% CI), %	Workers, n	Weighted Proportion (95% CI), %	Workers, n	Weighted Proportion (95% CI), %
Recognition of work-relatedness						
Told by a health professional that LBP was probably work-related	1205	21.4 (19.8–23.1)	446	23.7 (21.0–26.5)	–	–
Ever discussed with a health professional whether LBP was probably work-related, but not told LBP was work-related	400	7.9 (6.9–8.9)	154	10.3 (8.3–12.6)	–	–
Never discussed with a health professional whether LBP was probably work-related	3646	70.7 (68.9–72.4)	1042	66.0 (62.9–69.0)	–	–
Ever filed a workers' compensation claim for LBP	349	6.0 (5.1–6.9)	170	10.2 (8.3–12.4)	236	18.4 (15.5–21.6)
Missed >1 full day of work in the past 3 mo because of LBP	901	16.9 (15.5–18.3)	327	19.0 (16.5–21.7)	234	20.1 (17.1–23.4)
Stopped working, changed jobs, or made a major change in work activities in the past 3 mo because of LBP	321	6.1 (5.3–7.0)	176	10.7 (8.7–12.9)	135	11.0 (8.8–13.5)

CI = Korn-Graubard 95% confidence interval; LBP = low back pain; NHIS = National Health Interview Survey.

* NHIS items on LBP and its relatedness to work are presented in the **Supplement**. Analyses were performed using SAS-callable SUDAAN software, version 11.0, and weighted using final NHIS sample adult weights to achieve national representation.

† Row totals may not sum to the total sample size because of missing data for specific questions.

their providers. We also found that LBP had affected many current workers' ability to work. However, our study may greatly underestimate the total occupational effect of LBP in the population because of the short recall period and exclusion of former workers, some of whom may have left the workforce because of work-related LBP.

This study had several limitations. First, the data were cross-sectional. Second, the accuracy and reliability of assessing occupational causality of health conditions through respondent reports are unknown. Third, relying on reported attribution of LBP to work by a health professional likely underestimates work-relatedness. The main strength of this study was its large, nationally representative sample of U.S. workers.

Low back pain has been linked to both physical and psychosocial occupational factors in many studies (3, 4). Diagnosing an occupational cause may improve the chances of a patient's recovery if an occupational exposure precipitating the pain can be reduced or eliminated and may allow the patient to apply for workers' compensation to cover medical costs and lost wages (5).

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