

ABSTRACT

To estimate the prevalence of carpal tunnel syndrome among US adults, data from the Occupational Health Supplement of the 1988 National Health Interview Survey were analyzed. Based on a sample of 44 233 households (response rate, 91.5%), an estimated 1.55% (2.65 million) of 170 million adults self-reported carpal tunnel syndrome in 1988. Females and Whites had a higher prevalence of self-reporting carpal tunnel syndrome than males and non-Whites, respectively. Among 127 million adults who worked during the 12 months before the survey, 0.53% (0.68 million) reported that their "prolonged" hand discomfort was called carpal tunnel syndrome by a health care provider. (*Am J Public Health*. 1994;84:1846-1848)

The US Prevalence of Self-Reported Carpal Tunnel Syndrome: 1988 National Health Interview Survey Data

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Introduction

Since the mid-1980s, carpal tunnel syndrome has received wide public attention.¹⁻⁴ This paper reports national estimates of the magnitude and distribution of self-reported and "medically called" carpal tunnel syndrome among US adults and the effects of carpal tunnel syndrome on jobs and activities of daily life.

Methods

In 1988 questions related to hand discomfort and carpal tunnel syndrome were included as part of the Occupational Health Supplement to the National Health Interview Survey (NHIS).^{5,6} At each sampled household, one adult (≥ 18 years) was randomly selected for the interview without a proxy, yielding 44 233 completed interviews (response rate, 91.5%). Nonresponses due to refusal and so forth were adjusted for by statistical weighting.^{5,6}

For this analysis, the US adult population was categorized by work history as "ever worked" and "never worked." An ever-worked person was an adult who reported "... the kind of work he/she has done the longest, not counting work around the house, but including work done while in the Armed Forces, in self-employment, or working without pay in family business or farm..." This population was further divided into "recent workers," who worked anytime during the past 12 months before the interview, and "non-recent workers." Persons categorized as never worked and non-recent workers were not asked some or all of the questions on work history, hand discomfort, and carpal tunnel syndrome.

Two categories of carpal tunnel syndrome were considered: (1) self-reported carpal tunnel syndrome and (2) medically called carpal tunnel syndrome. Respondents were considered to have self-reported carpal tunnel syndrome if they answered "yes" to the question, "During the past 12 months, have you had

a condition affecting the wrist and hand called carpal tunnel syndrome?" They were considered to have medically called carpal tunnel syndrome if they had sought medical care for "prolonged" hand discomfort and the condition was called carpal tunnel syndrome by a health care provider. Hand discomfort was defined as "pain, burning, stiffness, numbness or tingling in the hands, wrists or fingers, which was not entirely due to an injury." Hand discomfort was called prolonged when it was experienced for 7 or more consecutive days or for 20 or more aggregate days during the 12 months before the interview.

Analysis

Data files provided by the National Center for Health Statistics contained both the raw (unweighted) counts and the weights necessary to convert the raw counts to population estimates.⁵ Only the weighted estimates are presented in this report. The 12-month prevalences and their 95% confidence intervals (CIs) were calculated by using Survey Data Analysis (SUDAAN) software.⁷ The two prevalences being compared were considered significantly different when their 95% confidence intervals did not overlap (to be conservative). If the two 95% confidence intervals overlapped, an additional calculation was performed to determine the 95% confidence interval for the difference of the two estimates.⁸ If the resultant 95% confidence interval did not include 0, the difference was considered significant.

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TABLE 1—Age- and Sex-Specific Frequency and Prevalence of Self-Reported Carpal Tunnel Syndrome in 1988 among 170 Million US Adults Who Had "Ever Worked"

Age Group, y	Frequency and Prevalence of Self-Reported Carpal Tunnel Syndrome								
	Female			Male			All		
	Frequency ($\times 10^3$)	% ^a	95% CI	Frequency ($\times 10^3$)	% ^a	95% CI	Frequency ($\times 10^3$)	% ^a	95% CI
18–24	85.6	0.71	0.41, 1.00	33.7	0.28	0.00, 0.60	119.3	0.50	0.28, 0.72
25–34	355.5	1.72	1.33, 2.11	184.3	0.89	0.57, 1.22	539.8	1.30	1.50, 1.56
35–44	415.3	2.42	1.91, 2.93	306.3	1.82	1.30, 2.35	721.6	2.12	1.76, 2.49
45–54	308.3	2.64	2.01, 3.27	232.9	2.03	1.38, 2.68	541.2	2.34	1.90, 2.78
55–64	261.8	2.47	1.76, 3.19	148.9	1.47	0.98, 1.97	410.7	1.99	1.55, 2.42
65 and up	213.1	1.46	1.09, 1.84	99.5	0.84	0.47, 1.21	312.6	1.18	0.92, 1.45
All	1639.7	1.89	1.68, 2.10	1005.6	1.22	1.02, 1.42	2645.3	1.55	1.40, 1.72

^aPrevalence over a 12-month period.

Results

Ninety-six percent of US adults were classified as ever worked; the prevalence of self-reported carpal tunnel syndrome in this group was 1.55% (2.65 million). The overall prevalence was higher in females than males, with the highest prevalence among 45- to 54-year-olds for both sexes (Table 1). The prevalence among Whites was 1.8 times that among non-Whites. When age, sex, and race were included in a single logistic regression model, race had the highest adjusted odds ratio (OR) (Whites had 1.8 times the odds of non-Whites; 95% CI = 1.43, 2.19), followed by sex (women had 1.6 times the odds of men; 95% CI = 1.37, 1.75) and age (the odds increased by 1.01 times per year of age increase; 95% CI = 1.006, 1.014).

The relationship among hand discomfort, self-reported carpal tunnel syndrome, and disability could be examined only for recent workers. Of 127 million recent workers, 21.6% (27 million) reported experiencing 1 or more days of hand discomfort during the preceding 12 months. Among those with hand discomfort, 5.9% (1.62 million) reported self-reported carpal tunnel syndrome.

Among those who had prolonged hand discomfort, 5.8% (0.68 million) reported that their hand discomfort was called carpal tunnel syndrome by a medical person. Thus, the prevalence of medically called carpal tunnel syndrome among recent workers was 0.53% (95% CI = 0.42, 0.65). Logistic regression analysis showed that being White (OR = 6.3; 95% CI = 5.20, 7.30), female (OR = 1.7; 95% CI = 1.25, 2.09), or of older age

(OR = 1.02 per year; 95% CI = 1.01, 1.03) increased the odds of reporting medically called carpal tunnel syndrome. The White to non-White ratio was about five times higher for medically called carpal tunnel syndrome (97% vs 3%) than for self-reported carpal tunnel syndrome (86% vs 14%).

Individuals reporting medically called and self-reported carpal tunnel syndrome experienced a median of 12 weeks of consecutive hand discomfort, whereas those with only self-reported carpal tunnel syndrome reported a median duration of 1 week. Persons with medically called carpal tunnel syndrome had the highest percentage of sleep disturbance (73%), missing work (21%), and changes in work activities (18%) and changing jobs (17%) as a result of hand discomfort. Compared with the group reporting hand discomfort only, the group with medically called carpal tunnel syndrome was approximately three times more likely to report these symptoms and consequences.

Discussion

The primary limitation of the carpal tunnel syndrome data in the 1988 Occupational Health Supplement to the NHIS is that cases were self-reported and not medically validated. Although underreporting might have occurred if respondents were not familiar with the term "carpal tunnel syndrome," the heightened awareness among people about carpal tunnel syndrome¹⁻⁴ could result in overreporting. Nonetheless, the age- and sex-specific prevalences of self-reported carpal tunnel syndrome in this analysis

generally agreed with previous reports^{9,10} in that females had a higher prevalence of carpal tunnel syndrome than males and middle-aged persons had a higher prevalence than persons of other ages.

These results also revealed that Whites had a higher prevalence of self-reported carpal tunnel syndrome than non-Whites and also had a higher proportion of medically called compared with self-reported carpal tunnel syndrome than non-Whites. The factors that underlie this racial difference are not well known but may include differences in the degree of awareness of carpal tunnel syndrome, in employment at jobs requiring repetitive manual work, or in health care access (especially for medically called carpal tunnel syndrome).

For the estimated 0.68 million cases of medically called carpal tunnel syndrome among recent workers (0.53%), the likelihood of overestimation is considered minimal, because the respondents (in the absence of any leading questions) stated that their hand discomfort was called carpal tunnel syndrome by a medical person.

Public health surveillance for carpal tunnel syndrome has been difficult and inadequate for various reasons.¹¹ Nationally, the Bureau of Labor Statistics compiles data from employer records of disorders associated with repeated trauma.¹² However, its annual report lacks specificity for diagnosis or the body parts involved. Based on several regional surveillance efforts, the prevalence of carpal tunnel syndrome ranged from an annual rate of 0.1% in a tertiary health care facility,¹⁰ to an incidence rate of

occupational carpal tunnel syndrome of about 0.2%,¹³ based on a state workers' compensation database, to 0.6% by a special telephone survey of health care providers.¹⁴ Although the severalfold disparity among these rates may be explained by differences in study populations and methods, the 0.53% annual prevalence of medically called carpal tunnel syndrome in this report seems to be similar in magnitude.

Carpal tunnel syndrome is an important cause of disability and a source of lost productivity, as indicated by the large proportions of respondents who reported sleep disturbance, missed work, changed jobs, and major modifications in their work activities. By extrapolation, it can be estimated that close to one million US adults annually may have medically called carpal tunnel syndrome, requiring medical care and leaving them at least temporarily disabled. Carpal tunnel syndrome represents a large national loss both in economic terms and in individual suffering. Improvement of carpal tunnel syndrome surveillance, identification of preventable (particularly work-related) carpal tunnel syndrome, and development of interventions should be major objectives in coming years. The issue of the work-relatedness of carpal tunnel syndrome

and its prevalence among US workers will be addressed in a subsequent report.¹⁵ □

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