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EDITORIAL

Occupational Health Surveillance: Contributions From the National Health Interview Survey

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More than a decade ago, a congressional committee concluded that occupational illness data collection in the United States was ''fragmented, unreliable, and seventy years behind communicable disease surveillance'' [U.S. Congress, 1984]. The committee report spotlighted what many of us in the field knew, that we have limited data available to estimate the prevalence of occupational illness among our nation's workforce. Since that time, the National Institute for Occupational Safety and Health (NIOSH) has formed partnerships with other federal and state agencies, academic institutions, and labor unions to improve surveillance systems and statistical programs for occupational illness. One result of these partnerships was to implement one of the recommendations of the Congressional Committee by adding the Occupational Health Supplement (OHS) to the 1988 National Health Interview Survey (NHIS). This important one-time supplement to the NHIS is a rich source of data that has provided some answers to our questions about the magnitude and severity of several potentially work-related health outcomes, including on-the-job injuries [Landen and Hendricks, 1992, 1995], dermatitis [Behrens et al., 1994], carpal tunnel syndrome [Tanaka et al., 1994, 1995], back pain [Behrens et al., 1994; Guo et al., 1995], and lung diseases [NIOSH, 1994]. The OHS has also provided information about the prevalence of cigarette smoking among various occupational groups [Nelson et al., 1994a,b], discomfort from worksite exposure to environmental tobacco smoke [CDC, 1992], and the relationship between heavy drinking and risk of occupational injury [Dawson, 1994].

In a recent issue of the *Journal*, Blanc et al. [1996] demonstrate the value of the OHS data in an analysis of work disability among persons with self-reported carpal tunnel syndrome. The OHS was conducted in 1988 as part of the yearly NHIS household survey, which is based on a representative sample of the U.S. civilian, noninstitutionalized population. For the OHS, interviewers questioned a subset of 30,074 recently employed adult NHIS respondents about several conditions that were thought to be common and often attributable to work. In addition, the conditions were chosen because they were especially suitable for collection of data through self-reports on interviewer-administered questionnaires [Park et al., 1993]. Questions were included to help characterize potential job-related risk factors (e.g., use of hand-held vibrating tools), and severity of the conditions (e.g., workdays missed or cessation of employment due to the condition).

Blanc and colleagues found that, based on the OHS data, work disability is common among persons with CTS, and that repetitive bending of the hand or wrist may increase the likelihood of a change in job or a job loss attributed to CTS. These investigators note that, while the annual compensation cost of work-related cumulative trauma disorders of the upper extremity was recently estimated at $563 million [Webster and Snook, 1994], little is known about the prevalence of work disability, and its risk factors, among persons with CTS. Blanc's analysis of the OHS data adds to our knowledge in this area and provides us for the first time with an estimate of 240,578 persons with CTS-related work disability in the United States.

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The OHS had many design strengths, as compared to other occupational health and safety data sources. The OHS used a scientific method of sampling U.S. households, permitting the estimation of parameters for the entire U.S. workforce. The Bureau of Labor Statistics (BLS) Annual Survey of Illness and Injury, which is based on employer records, excludes self-employed individuals, farms with fewer than 11 employees, and government employees [USDOL, 1995]. Workers' compensation data are limited by variations in eligibility requirements from state to state [U.S. Congress, HR98-1144, 1984]. Also, the OHS includes a wealth of information about demographics and lifestyle that can be incorporated into its analysis. Some demographic information is obtained through the BLS survey, but only for cases of work-related injury or illness that resulted in the employee missing one or more days of work. These employer-reported data may be less complete and accurate than the employee-reported data in the OHS. Unlike the BLS survey data, the OHS data are available on public-use datasets and, although the OHS has a complex survey design, suitable software is available for analyzing the data on a personal computer.[1] While the OHS was conducted one time in 1988, the capability exists to repeat it on a periodic basis to provide up-to-date statistics and to permit researchers to monitor trends.

The OHS data are not without potential limitations. Interview data rely on the respondent's knowledge and recall of information about their health status and the source of health problems, and this may lead to over- or underestimates of the disease prevalence, depending on the health outcome being measured [NCHS, 1987]. When compared to other sources of occupational health data, such as workers' compensation claims, physician reports, or employer records, personal interview data may tend to provide disease estimates at the high end of the scale. This does not mean that interview data necessarily provide an inflated estimate. Workers' compensation claims, physician reports, and employer records are each subject to their own limitations, but all suffer from underreporting [U.S. Congress, 1984].

For the conditions included in the OHS, it is impossible to know whether the respondents over- or underreported, but the data provide some clues. According to the OHS data on CTS, an estimated 1.87 million persons who were employed in the 12 months prior to the survey reported CTS, while 1.1 million persons reported both CTS and prolonged hand discomfort, and a subset of these, 675,000 persons, stated that the condition was called carpal tunnel syndrome by a medical person [Tanaka et al., 1995]. Heightened media coverage of CTS could have resulted in overreporting [Horowitz, 1992]. However, the prevalence of self-reported medically diagnosed CTS based on the OHS data (0.5% of workers employed in the last twelve months) is consistent with incidence rates of CTS based on other data sources such as workers' compensation claims or employer-based survey data [Tanaka et al., 1994]. For back pain, another health outcome assessed in the OHS, self-reported data may be a better source for determining prevalence, compared to other sources [Guo et al., 1995]. Although back pain symptoms are subjective, their existence is usually accepted since no medical test can definitely refute them.

Owing to its sample size, the OHS is most suitable for estimating the prevalence of common or moderately frequent health conditions. Certain types of conditions are not included in the OHS for a variety of reasons. For example, cancer and many other chronic conditions with long latency may be poor candidates for inclusion. Conditions that cannot easily be attributed to work exposure by either the worker or the worker's physician would result in underreporting on a survey such as the OHS. Information about work-related injuries was collected in the OHS; however, the data are limited because a 12-month recall period was used. A shorter recall period of 2-4 weeks and a larger sample size would produce more reliable injury estimates [Landen and Hendricks, 1995].

A limitation in the design of the OHS may also contribute to an undercount of cases. Because of the way the questionnaire was designed, the OHS did not assess the occurrence of back pain, medically diagnosed CTS, dermatitis, and other outcomes among persons who had not been employed during the 12 months prior to the survey. This might have the effect of excluding some of the more serious work-related cases in persons who had left the workforce. Also, there is no information collected for the nonworking population, which might be useful for comparison purposes. Future surveys could be designed to avoid these limitations.

Another potential limitation of the OHS is the possible misclassification of the respondent's industry and occupation and associated risk factors. The OHS includes an entire section of questions devoted to the respondent's work history. Most studies based on the OHS have reported disease prevalence according to the respondent's current or most recent job during the past 12 months. The outcomes reported in the OHS were those that occurred during the past 12 months that tend to have a short latency between exposure and onset of symptoms or disease. Thus, the respondent's current or most recent job is likely to give an accurate picture of the occupation and industry of employment at the time the exposure occurred.

Specific questions about work-related risk factors such as use of hand-held vibrating tools are linked to the current job. Some questions were restricted to exposures occurring within the past 12 months, while other questions referred to exposures extending back in time for the duration of the job.

[1]For additional information regarding access to the OHS data, contact the Scientific and Technical Information Branch, National Center for Health Statistics, 6525 Belcrest Road, Room 1064, Hyattsville, MD 20782, Phone: (301)-436-8500.

Differential awareness of occupational hazards among various occupational or industrial groups may result in under- or overreporting of exposure to risk factors [Behrens and Brackbill, 1993].

The wealth of information collected through the OHS can, and should, be more fully explored by interested researchers. In addition to self-contained analyses directed to specific research questions, the data can also be used as reference data for comparing specific industrial study populations to the U.S. workforce as a whole. The value of the survey to date argues for a periodic repetition of the OHS, to provide up-to-date statistics, and to permit us to monitor trends. Before another OHS is planned, the survey instrument and other design issues should be evaluated and modified. Some consideration should be given to adding other health outcomes, or even addressing issues such as work- related stress. Recent modifications to the core NHIS questionnaire might even permit one or more occupational conditions to be included annually in the NHIS. Given the lack of a comprehensive surveillance system for occupational illness in the United States, the OHS fills a large gap by providing the only comprehensive national estimates of the prevalence, characteristics, and impact of carpal tunnel syndrome, back pain, dermatitis, and other conditions.

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