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Focus Article

Prevalence of Persistent Pain in the U.S. Adult Population: New Data From the 2010 National Health Interview Survey

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Abstract: Published adult prevalence estimates of chronic pain in the United States vary significantly. A more consistent pain measure is needed to assess unmet need for pain management in the general population. In this study, secondary analyses of the 2010 Quality of Life Supplement of the National Health Interview Survey are used to calculate the point prevalence of "persistent pain," which we defined as constant or frequent pain persisting for at least 3 months. Rates of persistent pain are also calculated by risk group, chronic condition, and disability status. Findings show that about 19.0% of adults in the United States report persistent pain. Rates of persistent pain are higher among women, adults aged 60 to 69, adults who rate their health as fair or poor, adults who are overweight or obese, and those who were hospitalized 1 or more times in the preceding year. Most adults who report conditions such as arthritis, carpal tunnel syndrome, or back or joint pain do not describe their pain as "persistent." Of the estimated 39.4 million adults who report persistent pain, 67.2% say their pain is "constantly present," and 50.5% say their pain is sometimes "unbearable and excruciating."

Perspective:* *Persistent pain, defined as self-reported pain "every day" or "most days" in the preceding 3 months, is a useful way to characterize health-related quality of life in the general population, and policy makers should consider including this core measure in ongoing health surveys like the National Health Interview Survey and the Medical Expenditure Panel Survey, the authors conclude.

Key words: *Chronic pain, persistent pain, National Health Interview Survey, health-related quality of life.*

National estimates of chronic pain prevalence in the United States vary significantly, depending on the operational definition of chronic, as well as the survey methodology.[13] For this study, we use "persistent pain," defined as frequent or constant pain lasting longer than 3 months (ie, the typical healing period), as a precise and consistent measure of pain in the general population. This measure is consistent with current recommendations from the International Association for the Study of Pain and the American College of Rheumatology.[2,7,10,11,15,19,22,24,29] The specific aims of this new analysis of the 2010 Quality of Life/Functioning and Disability (QOL) Supplement[18] to the National Health Interview Survey (NHIS), are to 1) identify groups at higher risk of persistent pain; 2) identify body sites, chronic conditions, and disabilities associated with persistent pain; 3) assess the relationship between persistent pain and anxiety, depression, and fatigue; and 4) describe the individual experience of persistent pain.

Three large federal health surveys have previously been used to study the epidemiology of pain: the Medical Expenditure Panel Survey (MEPS), the National Health and Nutrition Examination Survey, and the NHIS. However, each of these surveys has a variety of limitations, including inconsistent reference periods for describing pain experience and a relatively narrow focus on musculoskeletal pain by body site.

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The MEPS, administered by the Agency for Healthcare Research and Quality, interviews about 15,000 households 5 times over 2 calendar years.[8] The survey includes items on moderate and severe pain during the past 4 weeks (based on the Short Form-12 Health Survey), as well as items asking about joint pain, swelling, or stiffness in the past 12 months. In the 2011 Institute of Medicine report *Relieving Pain in America*,[13] respondents to the 2008 MEPS were considered to have chronic pain if reporting 1 or more of the following: 1) a diagnosis of arthritis (estimated n = 53.4 million); 2) joint pain in the past 12 months (estimated n = 70.3 million); 3) moderate (estimated n = 21.3 million) or severe (estimated n = 22.6 million) pain in the past 4 weeks that interfered with work or housework; or 4) any work or housework disability (estimated n = 24.7 million). An estimated 47.4% of U.S. adults were considered to have chronic pain under these criteria.[9]

The National Health and Nutrition Examination Survey, administered by the National Center for Health Statistics, combines interviews and physical examinations of approximately 5,000 participants each year. From 1999 to 2004, the adult interview included the Miscellaneous Pain Questionnaire, which asked respondents if they had pain within the last month that lasted at least 24 hours and was not "fleeting or minor." Persons who responded yes to this question were asked about the duration and location(s) of their pain. Defining chronic pain as "current nonminor pain lasting longer than 3 months," an estimated 11.0% of adults had persistent regional pain, and an additional 3.6% had widespread pain.[10]

The NHIS, also administered by the National Center for Health Statistics, interviews about 35,000 households annually. The core survey includes pain questions by body region (ie, neck, lower back, face or jaw, and head) and "pain, aching, or stiffness in or around a joint" (excluding back or neck), but the reference periods for these questions are too short to measure persistent pain. The survey also asks about diagnoses of conditions frequently associated with chronic pain, and researchers have used these to profile adults with arthritis,[12] temporomandibular joint disorder,[14,21] migraine headache,[26] and carpal tunnel syndrome.[1]

The core NHIS is augmented by periodic topical surveys on issues of public health interest, including disability[3,27] and occupational health.[17] The National Center for Health Statistics, in partnership with the Washington Group on Disability Statistics and the United Nations' Budapest Initiative on Measuring Health Status, has tested new disability questions on a quarter of the NHIS adult respondents in the 2010 QOL Supplement. These measures focused primarily on symptoms associated with chronic illness and disability, including pain, fatigue, anxiety, and depression. This analysis uses data from the NHIS 2010 QOL Supplement to derive current and consistent information on the size and composition of the adult population with persistent pain in the United States.

Methods

Data Source

The NHIS is conducted continuously throughout the calendar year and uses a multistage area probability approach with deliberate oversampling of racial and ethnic minorities. NHIS households are sampled from all states and the District of Columbia. Interviews are conducted in the household by representatives from the Bureau of the Census. The survey is widely regarded as the most comprehensive and current source of population data on health in the United States and provides nationally representative estimates of key population attributes, including health, function, and disability status.[4]

Study Sample

The 2010 NHIS included 89,976 individuals from 35,117 families. An adult and child (if a child is present in the household) are randomly selected for a more extensive interview—the Sample Adult (n = 27,157) and Sample Child (n = 11,277) surveys. Roughly 25.0% of sample adults (n = 6,775) were randomly selected to complete the NHIS 2010 QOL Supplement.

Defining Persistent Pain

This 2010 QOL Supplement includes the following question: "In the past 3 months, how often did you have pain?" Possible responses were never (sample n = 2,631), some days (n = 2,289), most days (n = 486), or every day (n = 709). We defined persistent pain as frequent (most days) or constant (every day) pain (n = 1,195). Responses of pain some days or never were classified as no persistent pain (n = 4,920), and respondents who did not know, refused to answer the question, or missed this question were omitted (sample n = 660) from all subsequent comparisons.[18] Supplementary analyses (available on request) indicate that this missing group was slightly older and more likely to be African American than the study group, but there were no significant differences in gender, ethnicity, education, marital status, self-assessed health, depression, obesity, or disability status.

Data Analysis

Special population weights included with the QOL Supplement were used to derive national population estimates. To adjust for the complex, multistage sampling in the NHIS, we used SUDAAN software (release 10.0; RTI International, Research Triangle Park, NC)[23] and standard Taylor Series linearization methods to compute standard errors (SEs) and confidence intervals (CIs). We first compared relative rates of persistent pain by age, gender, marital status, ethnicity, race, level of education, self-assessed health status, body mass index, and recent hospitalization and then simultaneously entered these variables in a logistic model to derive adjusted odds ratios (AORs) and CIs for all population risk factors. We then compared relative rates of persistent pain among respondents with disabilities, chronic conditions, and site-specific pain. We also assessed rates of persistent pain among adults who