

Estimates of Pain Prevalence and Severity in Adults: United States, 2012

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Abstract: Using a simple approach for coding pain severity, the present study describes self-reported pain in U.S. adults. Data are included for 8,781 adults who completed the Functioning and Disability Supplement of the 2012 National Health Interview Survey. An internationally piloted pain severity coding system was used to group participants into 5 discrete ordered pain categories based on their pain persistence (days with pain in the last 3 months) and bothersomeness (little, a lot, somewhere in between): pain free and categories 1 (low) to 4 (high). It is estimated that 126.1 million adults reported some pain in the previous 3 months, with 25.3 million adults (11.2%) suffering from daily (chronic) pain and 23.4 million (10.3%) reporting a lot of pain. Based on the persistence and bothersomeness of their pain, 14.4 million adults (6.4%) were classified as having the highest level of pain, category 4, with an additional 25.4 million adults (11.3%) experiencing category 3 pain. Individuals with category 3 or 4 pain were likely to have worse health status, to use more health care, and to suffer from more disability than those with less severe pain. Associations were seen between pain severity and selected demographic variables including race, ethnicity, preferred language, sex, and age.

Perspective: U.S. estimates of pain prevalence are presented using a simple approach for assigning pain severity developed by the Washington Group on Disability Statistics. Concurrent validity is assessed. Although this approach is promising, additional work is required to determine the usefulness of the Washington Group pain categories for pain research or clinical practice.

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Key words: Cross-sectional study, pain frequency, pain severity, language preference, minority groups.

Pain is always subjective.¹⁸ Because there are no objective measures of pain, patient reports are necessarily the primary source of estimates of pain prevalence and severity. Nevertheless, as stated by the Institute of Medicine (IOM),¹⁷ "obtaining a definitive picture of the extent and significance of pain is difficult. Current data on the incidence, prevalence and consequences of pain are not consistent or complete, in part because in many cases pain is treated as a symptom and what is collected is data on underlying conditions or events." The IOM further states: "data weaknesses previously discussed are particularly important when one is examining racial and ethnic disparities."¹⁷

Most available survey data on the prevalence of pain in demographic groups in the U.S. population have focused on the prevalence of chronic or persistent pain (eg, see^{15,21,23}) or health conditions associated with pain (eg, see^{3,8,35,40}). These studies found almost uniformly that whites have higher prevalence rates of chronic pain and painful conditions than minority groups. The picture from surveys that compare pain frequency or intensity across racial/ethnic groups is not so clear: whereas some studies report more pain or greater pain severity in minorities,^{14,16,28,33} others report less pain^{5,21} or no difference.^{36,37} These surveys differed in the population sampled, the definition of pain, the methods to measure pain frequency and severity, and how minorities groups are combined for the analyses. There are few data on Asians and other nonblack, non-Hispanic minority groups in these analyses. Also absent from this literature are age-specific and sex-specific prevalence rates of pain frequency and severity in minority groups.

Data from the 2012 National Health Interview Survey (NHIS) provide a unique opportunity to develop a broader picture of pain within the U.S. adult population. The 2012 NHIS asked participants about the persistence

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(frequency) and bothersomeness (intensity) of pain experienced in the previous 3 months. Questions included in the 2012 NHIS allow a graded assessment of pain severity, using methods developed and validated qualitatively and with mixed-method assessment by the Washington Group on Disability Statistics.^{26,27,29,44} Also available in NHIS is information on an extended list of potentially painful health conditions. The complex sampling design of the NHIS allows some confidence in extrapolations to the U.S. adult population, and the survey is of sufficient size to examine differences among subpopulations.

The purpose of this article is twofold. First, we present data on the concurrent validity of the Washington Group categories of pain severity. We then use these pain categories to investigate whether there is significant heterogeneity in pain status between whites and minority groups. The data presented here begin to answer the IOM's¹⁷ call for national data "to describe the nature and extent of the [pain] problem" and "to identify subpopulations that will benefit more from future interventions."

Methods

Population

The data used in this report are from the 2012 NHIS Sample Adult Core and the NHIS Adult Functioning and Disability Supplement (AFD).³¹ The NHIS is an annual survey of the health of the U.S. civilian, noninstitutionalized population conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention. This in-person survey contains 4 main modules: household, family, sample child, and sample adult. The first 2 modules collect health and sociodemographic information on each member of all families residing within a sampled household. Within each family, additional information is collected from 1 randomly selected adult (the sample adult) aged 18 years or older. Bilingual interviewers or interpreters were recruited to interview all respondents who preferred using a language other than English. A Spanish language version is available for participants who prefer speaking in Spanish. The survey uses a multistage clustered sample design and oversamples black, Asian, and Hispanic populations. When combined with sampling weights derived from the Centers for Disease Control and Prevention, this design allows accurate extrapolation of findings to the civilian, noninstitutionalized U.S. adult population.

For the 2012 interview sample, there were 42,366 households, consisting of 108,131 persons in 43,345 families. The total household response rate was 77.6%. From the households interviewed, 34,525 adults completed interviews, resulting in an overall sample adult response rate of 79.7%. Approximately one-quarter of sampled adults were randomly chosen to participate in the AFD supplement. Almost all chosen adults (8,781) completed the supplement, resulting in a 98% supplement response rate.

The 2012 NHIS was approved by the National Center for Health Statistics Research Ethics Review Board. Verbal consent was obtained from all survey respondents.

Dependent Variable: Assessment of Pain

The AFD collected information on the persistence and bothersomeness of self-reported pain in the previous 3 months. The Washington Group on Disability Statistics, constituted by the United Nations Statistical Commission, developed and validated these questions through cognitive testing and pilot surveys in the United States and internationally.^{26,27,29,44} Respondents were first asked how often they had pain in the previous 3 months: never, some days, most days, or every day. Data from this question provide estimates of the 3-month persistence (period prevalence) of pain. For those who had pain on at least some days, a follow-up question assessing bothersomeness was asked: "Thinking about the last time you had pain, how much pain did you have—a little, between a little and a lot, or a lot." Ninety-six percent of AFD participants completed these pain questions. Given this high response rate, no attempt was made to impute missing data. To compare the present data with the literature on the prevalence of chronic pain (defined here as pain for at least half the days in a 6-month period^{7,32}), individuals who reported having pain every day in the previous 3 months were coded as having chronic pain.

For individuals reporting pain at least some days, the Washington Group²⁹ has suggested a coding scheme that combines persistence and bothersomeness of pain to create 4 discrete categories of increasingly severe pain (Table 1). This coding scheme was tested and validated in a number of countries using a variety of qualitative and mixed-method assessments such as cognitive testing.^{26,27,29,44}

Demographic Variables

Language of Interview, Ethnicity, and Race

Based on self-identified race and ethnicity and on the language of interview as reported by the interviewers, individuals were coded into 16 discrete categories. Data for the following 7 groups are presented in Table 2: 1) non-Hispanic whites (NHW) who preferred English

Table 1. Pain Severity Categories Based on Pain Persistence and Bothersomeness

CATEGORY	PAIN PERSISTENCE (LAST 3 MONTHS)	PAIN BOTHERSOMENESS (LAST TIME YOU HAD PAIN)
Pain free	No pain in last 3 months	Not applicable
Category 1 pain		
Definition	Some days	A little pain
Category 2 pain		
Definition 1	Most or every day	A little pain
or		
Definition 2	Some days	Between a little and a lot
Category 3 pain		
Definition 1	Some days	A lot
or		
Definition 2	Most or every day	Between a little and a lot
Category 4 pain		
Definition	Most or every day	A lot of pain

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