Group differences in pain interference, psychiatric disorders, and general medical conditions among Hispanics and whites in the U.S. general population

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A R T I C L E   I N F O

A B S T R A C T

The cross-sectional retrospective study examined whether ethnicity moderates relationships between pain interference and both psychopathology and general medical conditions among Hispanic and non-Hispanic white adults. Participants comprised 32,574 (14% Hispanic; 86% white) National Epidemiologic Survey on Alcohol and Related Conditions respondents. While Hispanic respondents were less likely than white respondents to report severe pain interference (11.4% vs. 11.9%) or moderate pain interference (5.7% vs. 7.8%), and were more likely to report no or low pain interference (82.9% vs. 80.3%), the magnitude of these ethnic group differences was relatively small. Pain interference was associated with multiple past-year Axis-I psychiatric disorders and general medical conditions in both Hispanic and white respondents. Stronger relationships were observed in Hispanic compared to white respondents between moderate pain interference and any heart condition, tachycardia, and hypertension, and between severe pain interference and any mood disorder. Stronger relationships were observed in white compared to Hispanic respondents between severe pain interference and both social phobia and any stomach condition. Differences between Hispanic and white respondents on the prevalence of pain interference and on the strength of the associations between pain interference and specific psychiatric disorders and general medical conditions underscore the complexity of ethnic health disparities and suggest the importance of further study of underlying mechanisms.

1. Introduction

It is estimated that over 100 million adults in the U.S. experience problems with pain (Institute of Medicine, 2011). Pain interference, the perceived disruption in functioning resulting from physical pain, is an important focus of pain assessment and treatment (Kalliomäki et al., 2008). Higher levels of pain interference are associated with increased risk of psychopathology and general medical conditions (Barry et al., 2012), and can attenuate treatment response for anxiety and depression (Kroenke et al., 2008; Means-Christensen et al., 2008; Teh et al., 2009). Although Hispanic individuals comprise about 17% of the U.S. population (U.S. Census Bureau, 2015), few studies have systematically examined their pain experiences. Research comparing Hispanic and white individuals on pain interference has focused on individuals with

chronic pain (i.e., non-cancer-related pain lasting at least three months). A national survey study of adults with chronic pain found that Hispanic and white respondents had comparable levels of pain interference, but white respondents were more likely to visit a physician for pain (Portenoy et al., 2004). In a study of treatment-seeking patients with chronic pain, Hispanic and white participants exhibited similar levels of psychiatric symptoms (Edwards et al., 2005). Few studies have examined ethnic group differences in pain among non-clinical samples in the U.S. In the 2000 Health and Retirement Study, which included community-dwelling adults aged 51 years or older, Hispanic and white respondents did not differ significantly on rates of moderate or severe pain interference (Reyes-Gibby et al., 2007). One laboratory study of healthy adults examined ethnic group differences in response to pain-related cold and heat, and found that Hispanic subjects exhibited lower

pain tolerance than their white counterparts (Rahim-Williams et al., 2007).

Researchers have largely ignored an examination of pain interference and associated psychiatric or medical morbidity among Hispanic and white individuals in the general U.S. population. Epidemiological databases frequently omit variables targeting pain and ethnicity or contain insufficient samples of minority members to facilitate ethnicity-based comparisons (Tait et al., 2004). One notable exception is the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative survey, which over-sampled Hispanic respondents and assessed pain interference as well as both psychopathology and general medical conditions. The purpose of the current study was to extend prior work on pain interference by comparing levels of pain interference and associated psychopathology and general medical conditions in Hispanic and white NESARC respondents. Given that white respondents were more likely to seek help for pain while experiencing similar levels of pain interference (Portenoy et al., 2004), we hypothesized that Hispanic respondents would have weaker relationships between pain interference and both general medical as well as psychiatric conditions.

2. Methods

2.1. Sample

The NESARC was conducted by the National Institute on Alcohol Abuse and Alcoholism and the U.S. Census Bureau, and recruited a nationally representative sample of non-institutionalized U.S. citizens and non-citizens aged 18 years and older (Grant et al., 2003a, 2004a). To facilitate the investigation of alcohol use in ethnic minority and young populations, the NESARC over-sampled Hispanic households and individuals 18–24 years of age. Multi-stage cluster sampling was used to identify respondents: Census sampling units, households, and then members of households were sequentially sampled. Individuals residing in hospitals, jails, or prisons were excluded. The sample was augmented with residents of group living environments, such as shelters, dormitories, group homes, and facilities for housing workers. Weights have been calculated to adjust standard errors for these over-samples, the cluster sampling strategy, and non-responses (Grant et al., 2003b).

The NESARC sample consisted of 43,093 respondents with an overall response rate of 81%. For the purposes of the present study, we restricted the sample to 32,574 respondents who self-identified as Hispanic or non-Hispanic white and provided information about their level of pain interference. Respondents provided informed consent. The current cross-sectional retrospective study of publicly accessible, population-based, de-identified data from the NESARC was presented to the Yale Human Investigations Committee, and was exempted from IRB review.

2.2. Measures

2.2.1. Sociodemographics

Respondents provided information about their gender (male, female), ethnicity/race (Hispanic or Latino, white), marital status (married, previously married, never married), education (less than high-school, high-school graduate, some college, college or higher), employment (full-time, part-time, not working), age, and household annual income.

2.2.2. Psychiatric disorders

Trained lay interviewers collected information on specific DSM-IV Axis-I psychiatric disorders using the Alcohol Use Disorder and Associated Disability Interview Schedule-DSM-IV version (AUDADIS-IV) (American Psychiatric Association, 2000; Grant et al., 2003a). The AUDADIS-IV is a structured diagnostic interview with demonstrated test-retest reliability and has been found to be useful for detecting psychiatric disorders in community samples (Grant et al., 2003a). The NESARC did not assess all DSM-IV Axis-I psychiatric disorders because of concerns about respondent burden and time constraints (Grant et al., 2005). Consistent with prior research (Grant et al., 2009), we used the following psychiatric disorders and categories (accessible at http://pubs.niaaa.nih.gov/publications/NESARCDRM/NESARCDRM.htm): mood disorders (major depression, dysthymia, mania, hypomania); anxiety disorders (panic disorder without agoraphobia, panic disorder with agoraphobia, social phobia, specific phobia, generalized anxiety disorder); and substance-use disorders (alcohol abuse or dependence, nicotine dependence, drug abuse or dependence). Past-year Axis-I diagnoses with general-medical-condition and substance-use exclusions were used; thus, research diagnoses can be viewed as primary or orthogonal as per DSM-IV/DSM-IV-TR guidelines (American Psychiatric Association, 2000; Desai and Potenza, 2008).

2.2.3. Pain interference

Pain interference was assessed using a subscale from the 12-item short form self-report scale (SF-12) of health-related quality of life (HRQL) (Ware et al., 1996). Similar to previous studies, respondents' answers to the 5-point item: "During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)" were used to classify them into one of three groups: a) "no or low pain interference" (i.e., those reporting their pain interference as "not at all" or "a little bit"); b) "moderate pain interference" (i.e., those reporting their pain interference as "moderate"); and c) "severe pain interference" (i.e., those reporting their pain interference as "a lot" or "extreme") (Barry et al., 2012; Novak et al., 2009).

2.2.4. General medical conditions

Respondents were asked whether they had experienced in the past year any of the following 11 general medical conditions: angina, tachycardia, myocardial infarction, other heart disease, cirrhosis, other liver disease, stomach ulcer, gastritis, arthritis, arteriosclerosis, and hypertension. For each condition reported, respondents were asked whether a physician or other medical professional had diagnosed it. Only general medical conditions which respondents reported were diagnosed by a physician or other medical professional were considered positive (Goldstein et al., 2009).

2.3. Data analysis

The primary research question concerned differences among Hispanic and white respondents in the association between past-month pain interference and psychiatric disorders or general medical conditions. Data analyses proceeded in multiple steps. First, using chi-square tests (χ^2), we examined the associations between pain interference and sociodemographics (gender, marital status, education, employment, age, and household annual income), stratified by ethnicity (Hispanic and white). Second, we examined unadjusted weighted rates of psychiatric disorders and general medical conditions according to levels of pain interference (i.e., no or low pain interference [NPI], moderate pain interference [MPI], severe pain interference [SPI]), stratified by ethnicity. Third, we fitted a series of multivariable logistic regression models to examine the relationships between any Axis-I psychiatric disorder and any general medical condition and pain interference within ethnicity/race. We conducted subsequent analyses with sub-groupings and individual disorders or conditions to determine the provenance of significant findings. We adjusted for potentially confounding sociodemographic variables (i.e., gender, marital status, education, employment, age, and household annual income). The NPI category was used as a reference level for two sets of adjusted odds ratios: MPI versus NPI and SPI versus NPI. Interaction odds ratios were calculated to assess whether the adjusted odds ratios for Hispanic respondents were significantly different from those for white respondents.