Gaps in the Public's Knowledge About Chronic Pain: Representative Sample of Hispanic Residents From 5 States

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Abstract: Educating the general public about chronic pain and its care is a national health priority. We evaluated knowledge, attitudes, and beliefs (KAB) of a 5-state, population-based sample of Hispanic individuals aged 35 to 75 years without chronic pain, representing more than 8.8 million persons. A Web-based survey assessed KAB using an adapted version of the Survey of Pain Attitudes-Brief and self-reported knowledge about chronic pain (nothing, a little, a lot). In unweighted analyses of participants (N = 349), the mean age was 52.0 (±10.6) years, 54% were women, 53% preferred Spanish, and 39% did not graduate from high school. More participants reported knowing nothing about chronic pain (24%) than a lot (12%). In weighted logistic models with knowing nothing as the reference, knowing a lot was associated with greater KAB for chronic pain-related emotions, functioning, and cure (all *P* < .01) but poorer KAB about pain medications (*P* < .001). Associations were similar for those knowing a little. Men and women preferring Spanish had poorer KAB about pain medications than men preferring English (both *P* < .001). In view of Hispanic individuals' disparities in chronic pain care, these data underscore the need for effective public educational campaigns about chronic pain.

Perspective: In this 5-state representative sample of Hispanic individuals without chronic pain, one-quarter reported knowing nothing about chronic pain and had poorer KAB about multiple aspects of this disease. This study reinforces the need to evaluate and address gaps in the general public's knowledge about chronic pain.

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Chronic pain is among the most common diseases in the United States, with daily pain estimated to affect more than 25 million persons.[18] However, less than 20% of Americans consider chronic pain to be a serious health problem.[25] The need for a broad-based transformation in Americans' understanding about pain and its management was first highlighted in 2011 by the Institute of Medicine (IOM).[12] Specifically, the IOM recommended that educational programs address the general public's myths, misunderstandings, stereotypes, and stigma about pain. In 2016, the U.S. Department of Health and Human Services' (DHHS) National Pain Strategy recommended increasing clinicians' core competencies in pain care and initiating a national public awareness campaign about the effect, severity, and

appropriate treatment of chronic pain.[20] Numerous studies have addressed clinicians' deficiencies and frustrations with chronic pain management[2,6,32,36] but, to our knowledge, no population-based studies have examined the general public's knowledge, attitudes, and beliefs (KAB) about chronic pain. These data are essential to informing educational interventions and other initiatives to increase the understanding of this complex disease, including the value of multimodal, evidence-based approaches to improve pain-related outcomes.

Research on KAB about chronic pain should focus first on populations reported to have the greatest disparities and challenges with chronic pain care. African-American and Hispanic individuals have well documented differences in pain care compared with non-Hispanic white individuals, including much more restricted treatment with opioid analgesics.[10,16] Although limited use of opioids is now understood to be desirable, African-American and Hispanic individuals have also been reported to be less likely to adopt complementary pain management therapies such as yoga and tai chi.[4] Receipt of multimodal chronic pain care is certainly impeded by access as well as cost barriers for Hispanic individuals because nearly one-third of nonelderly Hispanic individuals in the United States are uninsured.[5] Being uninsured also compromises treatment of pain-related conditions such as osteoarthritis.[5,37]

In this study, we studied a general population of Hispanic individuals without chronic pain to identify gaps in KAB regarding multiple aspects of chronic pain that must be addressed to promote more informed consumers of pain care. We asked about overall knowledge regarding chronic pain and examined associations with understanding about diverse aspects of chronic pain including: mental health effects, physical activities, cure, control, function, and medication.[31] We predicted that persons who claimed to have better knowledge about this condition would demonstrate greater KAB. However, in general, we expected to observe important deficiencies in KAB, reflecting a broader lack of understanding by the general public about this condition. This novel, broad-based study of persons without chronic pain about this underappreciated cause of morbidity and mortality in the United States should launch further population-based studies of KAB, with the ultimate goal of improving outcomes of this disease through a more educated general public about the myriad of effects of chronic pain and the need for a multimodal approach to its management.

Methods

Study Sample

Participants were recruited from an online research panel assembled by GfK Knowledge Networks (KnowledgePanel; GfK Custom Research, New York, NY).[8] The KnowledgePanel has been widely used in population-based surveys, including many other health-related studies.[1,11] To establish a nationally representative panel, KnowledgePanel members are recruited using probability-based sampling with random digit dialing and address-based sampling from the U.S. Postal Service's Delivery Sequence File. This combined approach maximizes population coverage and representation of hard-to-reach individuals, such as those from minority groups. The panel includes households with and without telephones, mobile phones, and home Internet access. Households without Internet access (35% of the sample) are given computer hardware and Internet capability as well as training in their use when they agree to serve on the KnowledgePanel. Census Block Groups with high-density minority communities were oversampled starting in 2009 and others were undersampled. Starting in 2010, sampling was further modified to target high-density Hispanic areas. The sample continues to recruit new members to maintain approximately 55,000 active panel members ready for survey participation.

GfK generates general population samples using an equal probability selection method.[8] First, the entire KnowledgePanel is weighted to the detailed geodemographic benchmarks of U.S. adults from the latest March supplement of the Current Population Survey.[33] This ensures that the weighted distribution of the KnowledgePanel perfectly matches that of U.S. adults. Second, a probability proportional to size procedure is used to select study-specific samples reflecting the measure of size for each panel member. This probability proportional to size methodology applied to the measure of size values produces fully self-weighing samples, for which each sample member can carry a design weight of unity. Where oversampling of specific subgroups is required, departures from an equal probability selection method design are corrected by adjusting the corresponding design weights, again with the Current Population Survey benchmarks serving as reference distributions.[33] Participants for our Web-enabled survey were recruited from all 1,007 KnowledgePanel members who were eligible on the basis of the following characteristics: Hispanic ethnicity, age 35 to 75 years, and residence in 1 of 5 southwestern states (California, Texas, Arizona, Nevada, and New Mexico). The entire sampling frame of persons with these characteristics (including persons with and without chronic pain) represents 11,016,135 U.S. adults. All eligible 1,007 KnowledgePanel members received a link via e-mail that allowed them to access the online survey or visit their online member page. The survey was open for 18 days, by which time response rates had declined rapidly.

More than half of the sample—516 sample members, or 51.2%—responded to the survey invitation. All were considered eligible except for the following exclusions: 1) cancer pain diagnosed by a health care clinician, and 2) neither Spanish nor English speaking. Nearly all of the sample members—486 eligible participants (94%)—were qualified and completed the survey. Respondents were categorized into 3 groups on the basis of responses to survey questions about chronic pain: 1) affected by chronic pain from responses that they had pain on most days or nights for at least 3 months affecting daily activities, 2) caregivers of persons with chronic pain, and 3) members who denied having chronic pain or

being a caregiver. Of 486 respondents, 349 (72%) were classified as not having chronic pain, constituting the focus of this analysis (Table 1). This subgroup of the sample represented 8,810,704 persons. We conducted an analysis of respondents versus nonrespondents with regard to: age, gender, education, income, marital status, Internet access at baseline before enrollment in the panel, work status, and language preference. The only significant difference (P < .05) appeared for mean age which was younger for nonrespondents than respondents (50.02 vs 52.88 years, respectively).

Pain Survey Development

The Web-based survey includes 4 sections: 1) chronic pain characteristics, 2) management of chronic pain, 3) evaluation of potential chronic pain treatment options, and 4) KAB about chronic pain. Questions in the last section about KAB about chronic pain were specifically targeted for completion by persons without chronic pain whereas persons with chronic pain or their caregivers completed the first 3 sections.

The questions in the KAB section were adapted from the Survey of Pain Attitudes-Brief (SOPA-B), which was selected after a review of potential surveys that could be administered to persons without chronic pain.[31] The SOPA-B includes 30 statements about key dimensions of chronic pain self-care and management but many statements reflect personal reactions to pain. After review by a community advisory board (CAB) of persons without chronic pain, 15 general statements were identified that addressed diverse aspects of chronic pain including: emotional effects, physical activity, ability to control pain, functioning with pain, and pain cure. Statements were changed from personal experiences (eg, "I can control my pain I feel by changing my thoughts") to impersonal (eg, "A person can control their chronic pain by learning how not to think about it"). Response options for the SOPA-B used a 5-point scale from very untrue to very true but included a "does not apply" option. We modified this into a 4-point Likert scale and our CAB judged that level of agreement with statements was easier for respondents to assess than truth ("do not agree," "somewhat agree," "agree," and "completely agree").

Because the SOPA-B does not address risks of pain medications, we included statements adapted from a questionnaire for family members about cancer pain medications (ie, over time, people with chronic pain need stronger medication; pain medications are

Table 1. Characteristics of the Study Sample and Self-Reported Knowledge of Chronic Pain

CHARACTERISTIC	TOTAL N (COLUMN %)	How Much Would You Say You Know About Chronic Pain?			P
		NOTHING, n (ROW %)	A LITTLE, n (ROW %)	A LOT, n (ROW %)	
Total	349 (100)	83 (23.8)	224 (64.2)	42 (12.0)	
Age, mean ± SD, y	52 ± 10.61	50 ± 10.2	53 ± 10.7	54 ± 10.4	.11
Sex					
Female	189 (54.2)	44 (23.3)	123 (65.1)	22 (11.6)	.93
Male	160 (45.8)	39 (24.4)	101 (63.1)	20 (12.5)	
Survey language					
English	165 (47.3)	31 (18.8)	108 (65.4)	26 (15.8)	.031
Spanish	184 (52.7)	52 (28.3)	116 (63)	16 (8.7)	
Language-sex					
Spanish-female	110 (31.5)	29 (26.4)	72 (65.4)	9 (8.2)	.26
English-female	79 (22.6)	15 (18.9)	51 (64.6)	13 (16.5)	
Spanish-male	74 (21.2)	23 (31)	44 (59.5)	7 (9.5)	
English-male	86 (24.6)	16 (18.6)	57 (66.3)	13 (15.1)	
Employment status					
Paid employee	185 (53)	41 (22.2)	121 (65.4)	23 (12.4)	.75
Not working	164 (47)	42 (25.6)	103 (62.8)	19 (11.6)	
Annual household income					
$9,999 or less	35 (10.0)	13 (37.1)	17 (48.6)	5 (14.3)	.010
$10,000 to $34,999	122 (35)	39 (32)	73 (59.8)	10 (8.2)	
$35,000 to $74,999	98 (28)	16 (16.3)	66 (67.4)	16 (16.3)	
$75,000 or more	94 (27)	15 (16)	68 (72.3)	11 (11.7)	
Education					
Less than high school	113 (32.3)	39 (34.5)	69 (61.1)	5 (4.4)	<.0001
High school	102 (29.2)	24 (23.5)	66 (64.7)	12 (11.8)	
Some college	68 (19.5)	10 (14.7)	41 (60.3)	17 (25)	
Bachelor's degree or higher	66 (18.9)	10 (15.2)	48 (72.7)	8 (12.1)	
Marital status					
Yes	238 (68.2)	49 (20.6)	160 (67.2)	29 (12.2)	.12
No	111 (31.8)	34 (30.6)	64 (57.7)	13 (11.7)	
Health insurance					
Yes	252 (72.2)	51 (20.2)	164 (65.1)	37 (14.7)	.006
No	97 (27.8)	32 (32.9)	60 (61.9)	5 (5.2)	

Table 2. Mean Scores of Pain Attitude Domains and Statements on Survey

Domain	Statement	Mean (SE)*	Mean (SE)	Cronbach α
Emotions and pain			2.97 (.04)	.73
	Anxiety or stress makes chronic pain worse	2.99 (.05)		
	Depression (feeling blue) makes chronic pain worse	2.90 (.06)		
	People often feel emotional (eg, upset) about their pain	3.00 (.04)		
Physical activity benefits			2.78 (.05)	.70
	Exercising and moving are good for people with chronic pain	2.81 (.06)		
	When people do not exercise regularly chronic pain gets worse	2.74 (.06)		
Controlling pain			2.16 (.04)	.70
	A person can control their chronic pain by learning how not to think about it	2.02 (.05)		
	People can affect how much chronic pain they feel	2.35 (.06)		
	Meditation helps relieve chronic pain	2.41 (.06)		
	People can control their chronic pain by what they do	2.20 (.05)		
	People with chronic pain can do things almost as well as they did before they had pain	1.82 (.06)		
Function and pain			2.82 (.05)	.61
	People with chronic pain have trouble moving and/or exercising	2.85 (.05)		
	Chronic pain allows people to have an active life	2.79 (.06)		
Reliance on pain medication			2.28 (.05)	.75
	People with chronic pain almost always have to take medication for it (reverse coded)	2.28 (.06)		
	Over time, people with chronic pain need stronger medication (reverse coded)	2.72 (.06)		
Single Statement†				
Cure for pain	There is no cure for chronic pain	2.06 (.07)		
Risk of exercise	Exercising makes chronic pain worse (reverse coded)	3.25 (.05)		
Control from pain medications	Pain medication alone is enough to treat chronic pain (reverse coded)	3.23 (.05)		
Risk of pain medication	Pain medications are dangerous for people with chronic pain	2.25 (.06)		

Abbreviation: SE, standard error.
*Statements answered on a 4-point Likert scale from do not agree to completely agree.
†Statements analyzed separately due to low Cronbach α when combined with other domains.

dangerous for people with chronic pain; people with chronic pain almost always have to take medication for it).[24] The cancer pain medication survey used a 10-point scale anchored by "agree" and "disagree" that the CAB recommended we simplified to a 4-point scale to match the KAB questions from SOPA-B. Last, we developed a global chronic pain knowledge question in consultation with our CAB: "How much would you say you know about chronic pain?" Response options included: "nothing," "a little," or "a lot." These 3 options offer clear distinction between extremes of knowledge and our CAB selected "a little" as an intermediate option. The survey was translated into Spanish and back-translated. The finalized version was available in English as well as Spanish.

Before conducting the Internet survey, pilot testing was completed by 38 Hispanic KnowledgePanel members, followed by revisions to address: programming inconsistencies, confusing content, reducing missing data, and abbreviating questions to decrease completion time. The reading level of our questionnaire was fifth grade on the basis of the Flesch-Kincaid readability formula.[23] The complete 18 survey statements about chronic pain are shown in Table 2. All study protocols were reviewed by the University of Texas Health San Antonio Institutional Review Board before data collection (IRB#20140064N). Because anonymous survey data were analyzed, no informed consent was required of study subjects.

Dependent Variables

Responses to survey domains were examined using Cronbach α to evaluate internal consistency. This function has been used in other studies to evaluate validity and reliability of the SOPA-B.[21] After conducting factor analyses using the iterated principal factor method with 2 commonly used rotation methods (orthogonal varimax and oblique promax) and comparing results with the SOPA-B,[31] 5 domains were created as follows: emotions and pain (statements 1–3, Cronbach α = .73), physical activity benefits (statements 4 and 6, Cronbach α = .7), controlling pain (statements 9–12 and 14, Cronbach α = .7), function and pain (statements 7 and 13, Cronbach α = .61), and reliance on pain medication (statements 15 and 18, Cronbach α = .75). Most had Cronbach α of .7 or greater whereas one domain with 2 statements was somewhat lower (.6).[3,27,29] In addition, the following 4 single-item statements were considered: medical cure, risks of exercise, control with pain medications, and risks of pain medication. The scores for statements 5, 15, 16, and 18 were reverse

coded such that higher scores signified greater KAB. An average score was calculated for each participant's response to the following 5 domains where statements that end with a letter 'r' were reverse coded: emotion (statements 1 + 2 + 3)/3, physical activity (statements 4 + 6)/2, control (statements 9 + 10 + 11 + 12 + 14)/5, function (statements 7 + 13)/2, and medication (statements 15r + 18r)/2.

Independent Variables

Participant demographic characteristics included: age, gender, language preference (English or Spanish on the basis of language selected for completion of the survey), employment status (employed full- or part-time vs unemployed), annual household income (low: <$9,999; moderately low: $10,000–34,999; moderately high: $35,000–74,999; and high: >$75,000), education (less than high school, high school, some college, Bachelor's degree or higher), marital status (married vs other), insurance (yes vs other), and self-reported knowledge about chronic pain (how much would you say you know about chronic pain: nothing, a little, a lot). We purposefully selected knowing "a lot" as the reference group for our analysis as the 'gold standard' group.

Analyses

Participants' characteristics were summarized according to a self-reported knowledge category about chronic pain using mean and SD for continuous variables and count and proportion for categorical variables. The design weights were provided by the GfK group using their patented methodology (see the section on Study Sample) and an iterative proportional fitting (ranking) procedure to ensure that final weights are simultaneously aligned with regard to all study benchmark distributions and adjusted for survey nonresponse as well as under- or overcoverage imposed by the study-specific sample design.[8] To account for the survey's sampling design, weighted mean and corresponding standard error were computed to describe each statement within each domain. Additionally, weighted mean and corresponding standard error were computed to summarize each domain. Separate weighted linear regression models were used to examine predictors of each of the 5 domains and a single question addressing whether pain can be cured, which was a domain in the SOPA-B. Examination of collinearity showed only one to be significant (P < .05) between income with education status (P < .001), so we elected to exclude income from the regression models. We also found a significant interaction between sex and language preference so results are reported using a 4-level combined variable.

The results of the multivariable analysis should be interpreted as point scores on the 4-point Likert agreement response scale so that higher values indicate better KAB about chronic pain and lower points indicate poorer KAB. Results were weighted to account for the sampling design of this survey except as noted (Table 1). Descriptive and multiple regression analyses were conducted using Stata/SE (version 14; StataCorp LP, College Station, TX). This study involved only persons without chronic pain who responded to the survey, so the subpopulation svy command option in Stata was used to ensure the standard error of the estimates could be calculated correctly.

Results

The 5-state, population-based sample of Hispanic individuals without chronic pain represents 8,810,704 persons. In unweighted analyses of the participant sample (N = 349), the mean age was 52 years (SD = 10.6), 54% were female, 53% preferred Spanish language, and 53% were employed (Table 1). Forty-five percent of participants had a low family income, with 10% earning <$10,000,[34] whereas an additional 35% earned <$35,000 (Table 1). Over 30% did not graduate from high school and 28% were uninsured.

Table 1 shows participants' unweighted demographic characteristics categorized according to self-reported knowledge about chronic pain as: "nothing" (24%), "a little" (64%), and "a lot" (12%). Before adjustment, greater self-reported knowledge about chronic pain was significantly (P < .05) associated with the following participant characteristics: English language preference, higher income, college education or graduation status, and having health insurance. For example, 16% of participants who preferred English language reported knowing "a lot" about chronic pain versus 9% of those preferring Spanish language (P = .03). In addition, 15% of participants with a bachelor's degree or higher education reported knowing "nothing" about chronic pain compared with 35% of those with less than a high-school education (P < .001).

Participants' level of agreement on a 4-point Likert scale with each survey statement about chronic pain generally ranged from 2 ("somewhat agree") to 3 ("agree"; Table 2). In this scale, higher mean responses signify better KAB. Among the 5 domains, the highest mean rating of 2.97 was observed for the domain of emotions and pain, suggesting a better understanding of their bidirectional effects. Participants also had relatively good agreement with statements relating to 2 domains: physical activity and pain (mean = 2.78) and functioning despite pain (mean = 2.82). Overall, the agreement was lowest for the domain regarding controlling pain through mindfulness, mediation, and similar approaches (mean = 2.16). The domain about reliance on pain medication also had a lower agreement level (mean = 2.28), indicating poorer KAB.

As shown in Table 2, several statements could not be combined in these 5 domains. Most participants believed that there was a medical cure for chronic pain (mean = 2.06 after reverse coding), suggesting a more limited understanding of this disease. However, participants had better KAB about 2 statements that were also reverse coded, addressing exercise and pain severity (mean = 3.25) and use of pain medications alone for chronic pain (mean = 3.23). Participants only somewhat agreed with the statement that pain medications were dangerous for persons with chronic pain (mean = 2.25).

Table 3. Weighted Adjusted Regression Analysis of Participants' Demographic Characteristics and Agreement Domains of Statements About Effects and Management of Chronic Pain

	EMOTION		PHYSICAL ACTIVITY		CONTROL		FUNCTION		MEDICATION	
PREDICTOR	POINT* (SE)	P	POINT (SE)	P	POINT (SE)	P	POINT (SE)	P	POINT (SE)	P
Knowledge about pain										
A lot	.55 (.17)	.002	.38 (.20)	.054	−.03 (.13)	.81	.77 (.16)	<.001	−.67 (.19)	<.001
A little	.31 (.09)	.001	.14 (.12)	.22	−.08 (.08)	.33	.33 (.11)	.002	−.26 (.16)	.028
Nothing	Reference									
Language-sex										
English-male	Reference									
Spanish-female	.33 (.12)	.007	−.05 (.16)	.77	.26 (.11)	.02	.16 (.13)	.24	−.82 (.16)	<.001
English-female	.15 (.11)	.17	.08 (.13)	.54	.14 (.10)	.16	.24 (.11)	.036	−.26 (.14)	.063
Spanish-male	.16 (.14)	.25	.02 (.16)	.91	.04 (.12)	.73	.25 (.14)	.071	−.59 (.16)	<.001
Age										
1-Y increase	.004 (.004)	.39	.01 (.005)	.086	.005 (.003)	.18	.01 (.004)	.17	−.004 (.005)	.36
Employed	.19 (.08)	.028	.11 (.11)	.34	.09 (.08)	.26	.14 (.11)	.18	−.18 (.10)	.078
Education										
Less than high school	Reference									
High school	−.17 (.09)	.057	−.02 (.13)	.88	.06 (.10)	.55	−.10 (.12)	.42	.07 (.12)	.56
Some college	−.17 (.12)	.16	−.20 (.16)	.22	−.08 (.11)	.45	−.35 (.13)	.008	.22 (.16)	.18
Bachelor's degree or higher	−.06 (.14)	.66	−.08 (.17)	.63	−.001 (.14)	.99	−.34 (.13)	.013	.32 (.17)	.055
Married	−.02 (.09)	.80	.12 (.11)	.29	.04 (.08)	.66	.09 (.10)	.37	.08 (.10)	.43
Health insurance	.19 (.10)	.049	.15 (.12)	.21	−.17 (.09)	.072	.16 (.11)	.15	−.08 (.11)	.44

Abbreviation: SE, standard error.
*Point indicates calculated regression coefficient for the difference in score on the 4-point Likert scale between the group with the indicated characteristic and the reference group.

Table 3 shows weighted, adjusted associations of participant demographic characteristics and 3 categories of self-reported knowledge about chronic pain with each of the 5 KAB domains. Each regression coefficient represents the difference in point ratings on a 4-point Likert scale between participants with a specific characteristic and the reference group, with higher values indicating greater KAB. Compared with participants who reported knowing nothing about chronic pain, those who reported knowing a lot had significantly greater KAB for 3 domains including: emotions (.55 points), physical activity (.38 points), and function (.77 points; all $P \leq .01$). However, persons claiming to know a lot incorrectly endorsed relying on pain medication (−.67 points) compared with those knowing nothing ($P < .001$). Participants claiming to know a little about chronic pain also had significantly greater KAB about emotion and function (.31 and .33 points, respectively; both $P \leq .001$) but, conversely, poorer KAB regarding reliance on pain medication versus those who reported that they know nothing (−.26 points, $P = .028$).

With regard to participant demographic characteristics, Spanish language preference for women was associated with greater KAB (by .33 points), regarding the role of emotions in chronic pain and controlling pain through mindfulness and other mind-body control approaches (by .26 points) versus men preferring English language (both $P \leq .02$). However, compared with men who preferred English, women and men who preferred Spanish language had much poorer KAB (by −.82 and −.59 points, respectively; both $P < .001$) about not relying on pain medications whereas the KAB of women preferring English was somewhat lower ($P = .06$). Participants who were employed or insured had a greater KAB (both by .19 points) for emotional effects of chronic pain (both $P < .05$). Greater level of education—college or higher—was associated with poorer KAB about functioning with chronic pain (−.35 and −.34 points, respectively; both $P < .02$) versus less than high school education. However, more educated participants tended ($P = .06$) to have greater KAB about not relying on pain medications. Age and marital status were not associated with level of agreement for any of the domains.

With regard to the statement that there is no cure for pain (results not shown), participants who reported knowing nothing or a little about chronic pain had markedly lower agreement (−.75 and −.64 points, respectively), meaning they believed in a cure, compared with those reporting they knew a lot about chronic pain (both $P < .02$). In addition, women who preferred Spanish as well as women preferring English had greater KAB (.55 and .32 points, respectively) about the lack of a cure than men who preferred English (both $P < .05$).

Discussion

This study revealed, to our knowledge, for the first time, marked deficiencies in the general public's knowledge about diverse aspects of chronic pain. In this 5-state, population-based sample of Hispanic individuals without chronic pain, representing more than 8.8 million persons, one-quarter reported knowing nothing about chronic pain. Because of the significant morbidity and mortality associated with chronic pain and especially its

management with opioids,[18] these data reinforce the need for public awareness and educational programs on chronic pain. The survey reveals worrisome misinformation and misperceptions about the role and benefit of pain medications and nonpharmacologic approaches to managing chronic pain. Although most study participants agreed that pain medicines alone are not enough to treat chronic pain, those reporting that they know a lot about chronic pain had poorer understanding about relying on pain medications. It is possible that, through personal experience or exposure to others with chronic pain, they came to believe that these drugs are the mainstay of chronic pain care. Small studies have shown that persons prescribed opioids for chronic pain strongly endorse their benefits,[26] despite experiencing stigma and frustrations with access.[28] A national educational initiative is needed to shift the focus of pain care away from drug therapy to a greater emphasis on the value and role for evidence-based, nonpharmacologic management.

Furthermore, survey participants only somewhat agreed with the statement that pain medications are dangerous. In contrast, a national survey conducted by Stat and Harvard T.H. Chan School of Public Health in 2016 revealed that 41% of U.S. adults reported personally knowing someone who had abused prescription painkillers in the past 5 years but, in that survey, Hispanic individuals were less likely to respond that they knew such a person than non-Hispanic individuals (30 vs 46%, respectively).[9] These data suggest that Hispanic individuals may be less aware of the threat of prescription drug abuse in the United States, possibly because they are less likely to be treated with opioids for chronic pain than non-Hispanic white individuals, similar to other minority groups.[16] In this population-based Hispanic study, men as well as women who preferred Spanish had significantly poorer KAB about pain medications than men who preferred English. Thus, it is important for educational programs to be offered to Spanish speakers.

Fortunately, most participants generally agreed that pain medications alone were insufficient to manage this disease. However, compared with participants who reported that they knew a lot about chronic pain, those who reported knowing nothing had significantly poorer KAB with regard to: emotional effects, functioning with chronic pain, and the value of physical activity. To implement the U.S. DHHS National Pain Strategy and its recommendations that nonpharmacologic care should be provided first for pain,[20] these misperceptions will need to be addressed. In addition, persons with no or only a little knowledge about chronic pain were significantly more likely to agree with the statement that chronic pain could be cured. The IOM's monograph, *Relieving Pain in America*, emphasizes that chronic pain can be improved but a cure is "unlikely" for most patients.[12] Naiveté about the prognosis of chronic pain may lead families and friends to encourage persons with chronic pain to search for a cure instead of learning self-management strategies to maximize function with this chronic disease. In a national survey, the probability of working despite having chronic pain was significantly lower for persons who believed in a medical cure for pain.[13]

Greater self-reported knowledge about chronic pain was associated with higher income, greater educational attainment, and health insurance. In a systematic review,[15] improved self-management behaviors for chronic diseases has been associated with greater health literacy, which, although not assessed in this study, is correlated with higher education.[7,19] However, in the weighted, fully adjusted analysis, more educated participants had significantly poorer KAB about functioning with pain despite tending to have better knowledge about not relying on pain medications. Our study of Hispanic individuals residing in 5 states suggests that health literacy is relatively low for chronic pain in most of the general population who do not have chronic pain.

An interaction between sex and language preference revealed differences in KAB about chronic pain. Women who preferred using Spanish language had significantly better knowledge about emotions and pain than men who preferred English. Because many studies document that women are more likely to demonstrate empathy than men,[17,22,30,35] it is somewhat surprising that we did not observe a similar effect for women who prefer English. In addition, women who prefer Spanish language were significantly more likely to believe that pain can be managed by meditation and similar mind-body approaches. If Spanish language preference serves an indicator of acculturation, this may reflect reports of healthier behaviors in Hispanic individuals who are less acculturated.[14] Finally, regardless of language preference, women were more likely to appreciate that chronic pain may not be cured than men who preferred English.

The study has several limitations to acknowledge. First, our population-based sample included only Hispanic individuals from 5 states. However, addressing disparities in racial-ethnic minorities is a health priority of the U.S. DHHS National Pain Strategy[20] and Hispanic individuals are the fastest growing minority group in the United States. Second, the survey instrument was adapted from SOPA-B, which has been validated in persons who suffer from chronic pain,[31] but has not been evaluated in other populations. We conducted factor analyses and examined Cronbach α to assess whether the domains reflected more robust constructs. However, the modifications that we made to this instrument likely changed its psychometric properties. Therefore, this revision needs to be studied further in other populations to examine its performance and for comparison with our results. Third, although to our knowledge this is the largest study to examine the general public's KAB about multiple aspects of chronic pain, we had a relatively small sample. For example, only one-quarter of the respondents (unweighted n = 83) reported knowing nothing about chronic pain. However, sampling weights from our collaborator GfK, Inc permits generalization of these results to a far larger sample of Hispanic residents in

these 5 states, as in other studies with KnowledgePanel members.[1,11] Last, self-reported measures are subject to reporting errors but all survey items were pilot-tested and revised to reduce errors.

Conclusions

This population-based sample of Hispanic individuals without chronic pain from 5 southwestern states demonstrated significant deficits in KAB about this highly prevalent condition. One-quarter of our survey participants reported knowing nothing about this disease and this was supported by their poorer KAB about multiple aspects of this disease. More than 60% reported knowing only a little and they too had poorer KAB about several domains. However, participants who believed that they knew a lot about this condition had poorer KAB regarding relying on pain medications, suggesting they have come to believe that these drugs are central components of pain care. Furthermore, highly educated participants were not better informed about chronic pain. These data in a population-based sample of Hispanic individuals should heighten the urgency of developing educational programs to address pervasive misperceptions and limited KAB of the general public about chronic pain. Educational initiatives need to shift the social norms for chronic pain care from using primarily pain medications to manage this condition to increased self-management with evidence-based, nonpharmacologic approaches.

Acknowledgments

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