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Comparison of pain and psychosocial correlates among Hispanic and Non-Hispanic White youth with chronic pain

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Abstract

Introduction: Despite well-documented pain disparities among adults from non-White and Hispanic groups, less is known about pain disparities in non-White and Hispanic pediatric populations.

Objectives: We compare pain and related psychosocial factors at the individual (pain intensity, pain interference, pain catastrophizing, co-occurring symptoms), social (peer relations), and systemic (health insurance) levels among Hispanic and Non-Hispanic White (NHW) youth with chronic pain.

Methods: Eight hundred thirty-seven (71.4% female) Hispanic (n = 268, 32%) and NHW (n = 569, 68%) youth ages 8 to 17 years (M = 14.00; SD = 2.54) completed a survey at their initial visit to a pain clinic. Independent sample *t* tests investigated mean differences in psychosocial factors at the individual and social levels. Chi-squared tests investigated differences at the systemic level. Bivariate correlations for each group were compared using Fisher r-to-z transformations.

Results:. Hispanic youth reported higher levels of pain intensity ($t[811] = -2.75$, $P = 0.006$). Groups did not differ in reports of other individual or social factors. Non-Hispanic White youth were more likely to have private insurance (OR, 5.66). All examined variables were significantly correlated among NHW youth. Correlations were weaker or nonsignificant among Hispanic youth. Fisher r-to-z transformations revealed these group differences to be significant.

Conclusion: Hispanic youth report higher pain levels than NHW counterparts and lower likelihood of having private insurance. Pain and psychosocial factors correlate differently among the 2 groups highlighting a need to better understand the chronic pain experiences of diverse youth because models derived primarily from NHW populations may not generalize across ethnic and racial groups.

Keywords: Pediatric pain, Chronic pain, Health disparities, Ethnicity, Hispanic youth

1. Introduction

Pain is a leading cause of both short-term[56] and long-term disability[49] in the United States (US) with an estimated cost of $560 billion annually when combining direct medical costs, productivity loss, and disability programs.[34] Chronic pain in children and adolescents is relatively common, with estimated prevalence rates ranging from 11% to 38%.[38] Chronic pain in childhood can cause difficulties with school attendance[29] and can have a significant impact in socioemotional and physical functioning.[52,65] In the United States, costs of moderate to severe chronic pain in children and adolescents are estimated to be $19.5 billion annually.[28] Furthermore, pain in children and adolescents may persist for several years[54] and into adulthood.[33,43]

Pain affects all ethnic and racial groups.[57] However, the literature on pain disparities on adult patients indicates patients belonging to systemically underrepresented racial and ethnic minority (URE) groups have a higher prevalence of pain conditions, greater pain intensity, and increased risk for chronic pain.[3,11,34] These disparities are observed at the biological, psychological, cultural, social, and environmental levels.[3,11,26,68] At the biological level, laboratory studies have found ethnic identity to be associated with higher pain sensitivity among URE populations[58] and with differences in pain processing including differences in pain-related biomarkers (eg, cortisol, norepinephrine, oxytocin).[27,44] At the psychological and cultural levels, research has found differences in pain coping, pain catastrophizing, and

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perceived pain control among URE groups, with Hispanic and non-Hispanic Black patients being more likely to use religious coping,[37,45,51] report higher levels of pain catastrophizing,[20,37,45,51,66,69] and lower levels of perceived pain control.[51] At the social level, non-Hispanic Black and Hispanic adults experience higher impact of pain on the social domain than their non-Hispanic White (NHW) counterparts.[36] At the environmental or systemic level, research has found differences in treatment recommendations and access to specialty care.[3,11] Research has suggested many of these differences may be driven by differences in the social determinants of health (SDoH). For example, lower socioeconomic status (SES) has been associated with higher prevalence of pain and a higher impact of pain on functioning in both the pediatric and adult populations across all racial and ethnic groups.[14,36,38] However, URE populations are more likely to experience economic stress and are disproportionally affected by lower income and SES.[57]

Despite the well-documented disparities among adults, less is known about how these same factors affect the prevalence, experience, and treatment of pain in URE youth and whether similar disparities are present in the pediatric population. The existent pediatric literature indicates that youth with chronic pain are more likely to be affected by SDoH including lower family income, higher barriers to health care, and increased exposure to violence and safety concerns, but differences on the impact of these factors on pain may vary by racial or ethnic groups.[70] Other variables, including level of acculturation and language used at home, have also been found to play a role in pain presentation, with Hispanic youth who speak English and who endorse higher levels of acculturation reporting more frequent musculoskeletal pain complaints than their Spanish-speaking counterparts with lower acculturation levels.[78] Additional research with URE pediatric populations is needed as models of care developed with URE adults may not fully apply to children because there is a need for developmentally tailored services,[76] given social factors such as family context are highly relevant to children's experience of pain.[53]

The Hispanic population in the United States is among the fastest growing groups of people in the country with population projections estimating that Hispanic individuals will make up 31% of the total US population by the year 2050.[10] Despite this, the Hispanic population has remained understudied[31] because most pediatric pain research in the United States has been conducted with NHW samples, thus limiting our understanding of potential differences in pain presentation and treatment among Hispanic youth. Given the rapidly growing Hispanic population in the United States, the known pain disparities among URE adults as well as the prevalence,[38] high cost,[28] and persistence into adulthood of pediatric chronic pain,[33,43,54] it is crucial that we better understand the pain experience of Hispanic youth to support better assessment, prevention, and treatment.

This study seeks to understand differences and similarities in pain and other psychosocial factors for Hispanic youth compared with NHW youth with chronic pain presenting to a pediatric tertiary care clinic. The aims of this study are

Aim 1: Examine how Hispanic and NHW youth compare in their reports of pain intensity and other pain-related factors at the individual (pain interference, co-occurring symptoms, pain catastrophizing), social (peer relations), and systemic (health insurance) levels.

Aim 2: Understand how pain-related factors at the individual and social levels relate to each other in Hispanic and NHW pediatric patients and whether these relations differ between ethnic groups.

Although extant research on disparities by ethnicity in pediatric chronic pain is limited, based on the adult literature, we expect

Hypothesis 1: Hispanic youth will report greater pain intensity,[25,57] greater difficulties with peer relations,[36] lower levels of pain interference,[57] greater intensity of co-occurring psychological symptoms (anxiety[25] and depression[19]), and similar or lower rates of co-occurring sleep difficulties.[57] We also expect Hispanic youth to be more likely to have public insurance (Medi-Cal).[9,50,57]

Hypothesis 2: Given previous reports of differential impact of certain factors, such as pain catastrophizing on pain interference,[20,40] we expect correlations between variables at the individual (pain intensity, pain interference, pain catastrophizing, co-occurring symptoms) and social (peer relations) levels to significantly differ between the 2 groups.

2. Materials and methods

2.1. Participants

Inclusion criteria for this study were completing the Peds-CHOIR baseline survey between October 2015 and February 2020 before initial visit to a pediatric pain management clinic in the west coast of the United States, patient being age 8 to 17 years at the time of survey completion, and patient identifying as Hispanic (regardless of race) or NHW. Hispanic ethnicity was defined as belonging to a Latin American or other Spanish culture or origin regardless of race.[17] Youth younger than 8 years and older than 17 years ($n = 256$) were excluded, given measures used in the survey have not been validated for these age groups. Given this study's aims of understanding differences among Hispanic and NHW youth and in line with previous research seeking to better understand pain in Hispanic youth when compared with their NHW counterparts,[78] we excluded youth ages 8 to 17 years identifying with other racial or ethnic groups ($n = 516$). Youth who were unable to complete the survey in English were also excluded because the survey was only available in English at the time of data collection.

This study used data from 837 children and adolescents between the ages 8 and 17 years ($M = 14.00$; $SD = 2.54$). Of the 837 youth, 569 (68%) identified as NHW and 268 identified as Hispanic (32%). It is worth noting that race and ethnicity were self-reported by participants and that participants could select more than one race and specify their race as a free-text response. Of those identifying as Hispanic, 36 (13.4%) participants specified their nationality or country of origin as their race (eg, "Mexican" or "El Salvador"), 11 (4.1%) participants selected "other" as their race but did not provide further information, and 26 (9.7%) participants left the race question blank. The demographic characteristics of the sample are presented in **Table 1**. Hispanic and NHW patients did not differ based on age ($t[835] = -0.24$, $P = 0.81$) or sex ($\chi^2[2, N = 836] = 1.09$, $P = 0.58$). The education level of youth's primary caregiver differed significantly between the 2 groups ($\chi^2[6, N = 830] = 162.53$, $P < 0.001$); differences are further presented in **Table 1**.

2.2. Data source

The pediatric adaptation of the Collaborative Health Outcomes Information Registry (Peds-CHOIR) was fully implemented in October 2015 and is an open source, flexible learning healthcare system incorporating classical testing theory-based measures (eg, Pain Catastrophizing Scale) and item-response theory-based measures administered through computer adaptive tests (eg, NIH Patient-Reported Outcomes Measurement Information

Table 1

Demographic characteristics of the sample.

	Full sample		**NHW**		**Hispanic**	
	Number	**%**	**Number**	**%**	**Number**	**%**
Sex						
Male	237	28.3	166	29.2	71	26.5
Female	598	71.4	402	70.7	196	73.1
Nonbinary	1	0.1	1	0.2	—	—
Age						
8–12	250	29.9	173	30.4	77	28.7
13–17	587	70.1	396	69.6	191	71.3
Race						
White	717	85.7	569	100	148	55.2
Black	11	1.3	—	—	11	4.1
Asian	13	1.6	—	—	13	4.9
American Indian	17	2.0	—	—	17	6.3
Hawaiian Native or Pacific Islander	6	0.7	—	—	6	2.2
Other or no race reported	73	8.7	—	—	73	27.2
Insurance						
Private	612	73.1	479	84.2	133	49.6
Public	216	25.8	84	14.8	132	49.3
Parental education level						
Less than high school	31	3.7	4	0.7	27	10.3
Some high school	21	2.5	3	0.5	18	6.9
Finished high school or equivalent	74	8.9	30	50.6	44	16.8
Some college or AA degree	228	27.5	140	24.6	88	33.6
College degree	220	26.5	185	32.6	35	13.4
Postgraduate degree	230	27.7	194	34.2	36	13.7
Other	26	3.1	12	2.1	17	5.3
Primary reason for referral to pain clinic						
Abdominal pain	149	17.8	105	18.5	44	16.4
Back pain	58	6.9	40	7.0	18	6.7
Complex regional pain syndrome	76	9.1	59	10.4	17	6.4
Ehlers danlos syndrome	21	2.5	14	2.5	7	2.6
Fibromyalgia or pain amplification syndrome	48	5.7	32	5.6	16	6.0
Headache	125	14.9	85	14.9	40	14.9
Joint pain or arthralgias	34	4.1	18	3.2	16	6.0
Juvenile arthritis	12	1.4	6	1.1	6	2.2
Lower extremity pain	37	4.4	25	4.4	12	4.5
Musculoskeletal pain	28	3.3	17	3.0	11	4.1
Neck pain	16	1.9	10	1.8	6	2.2
Pain related to cancer	1	0.1	1	0.1	0	0
Post concussive syndrome	16	1.9	13	2.3	3	1.1
Upper extremity pain	11	1.3	6	1.1	5	1.9
Other	205	24.5	138	24.3	67	25.0
	Mean (SD)	**Range**	**Mean (SD)**	**Range**	**Mean (SD)**	**Range**
Age in years	14.00 (2.54)	8–17	13.99 (2.26)	8–17	14.02 (2.24)	8–17

NHW, Non-Hispanic White.

System [PROMIS]).[1,5] Patients complete the Peds-CHOIR baseline survey within 7 days before the initial evaluation at clinic. Families receive a secure URL link to complete the Peds-CHOIR assessment on registration for their appointment. This baseline survey assesses demographic information, pain intensity, and socioemotional functioning. All study procedures were approved by the university's Institutional Review Board as a retrospective patient chart review, and informed consent was not required because data were collected within standard clinical care. Other publications have used Peds-CHOIR data to investigate research questions.[5,6,8,21,22,59–61,63,77]

2.3. Variables of interest

This study used a variety of measures including a numeric rating scale for pain, classical testing theory-based measures (Pain Catastrophizing Scale), data from the electronic medical record (EMR), and PROMIS pediatric measures for anxiety, depression, pain interference, and peer relations. The PROMIS measures were developed by NIH Roadmap Medical Research Initiative to provide clinicians and researchers with validated patient-reported measures of health and well-being.[1] Patient-Reported Outcomes Measurement Information System measures are normed against the US general population in addition to multiple disease populations. The instruments are measured on a Likert scale (1 = "never or not able to do" to 5 = "almost always or with no trouble"). Computer Adaptive Testing (CAT) versions using item response theory (IRT) were used for this study. Computer Adaptive Testing administers questions from item banks based on the responses to earlier items, optimizing the number of questions answered by patients and limiting patient burden.[24] Although the number of items and exact questions answered by patients may differ based on their responses, IRT yields final results as T-scores and assumes invariance in their underlying construct. T-scores enable comparisons across populations or studies, and within and between reporters, as scores yielded from IRT are assumed to reflect the same underlying construct. Scores are based on T-score distribution with a mean of 50 points and a standard deviation of 10. Pediatric PROMIS measures have been validated in children aged 8 to 17 years.[16]

2.4. Individual factors

2.4.1. Pain intensity

Patients were asked to rate their average pain over the past 7 days on an 11-point numeric rating scale (NRS) from 0 (no pain) to 10 (worst pain). The NRS-11 has demonstrated validity and reliability for self-report of pain intensity in children and adolescents.[7]

2.4.2. Pain interference

The PROMIS Pediatric Pain Interference CAT–administered questionnaire evaluates the impact of children's pain on physical, psychological, and social functioning over the past 7 days. An example item is "It was hard to have fun when I had pain." A higher score indicates greater interference of pain on child functioning.[2] Established reliability coefficient of $\alpha = 0.90$ was used for this study.[72]

2.4.3. Co-occurring anxiety symptoms

The PROMIS Pediatric Anxiety CAT–administered questionnaire examines a child's worries over the past 7 days. Sample items include "I felt like something awful might happen." Higher scores demonstrate greater reported symptoms of anxiety. Established reliability coefficient of $\alpha = 0.85$ was used for this study.[35]

2.4.4. Co-occurring depression symptoms

The PROMIS Pediatric Depression CAT–administered questionnaire assesses a child's negative affect, self-perceptions, and social cognition over the past 7 days with items such as "I felt sad" and "I felt alone." A higher score demonstrates a higher level of depressive symptoms. Established reliability coefficient of $\alpha = 0.85$ was used for this study.[35]

2.4.5. Co-occurring sleep disturbance

The PROMIS Pediatric Sleep Disturbance Short Form (8 items) assesses a child's self-perceived quality, depth, and restoration associated with sleep.[23] Sample items include "I had difficulty falling asleep," and "my sleep was restless." This scale uses a 5-point Likert scale (1 = "Not at all" to 5 = "Very much"), with higher total scores reflecting higher levels of disturbed sleep. Scores for this measure differ from other PROMIS indices because T-score transformations are in development. Sleep disturbance scores in this study are reported as raw scores ranging from 8 to 40. Internal consistency was considered to be appropriate for use in this overall sample ($\alpha = 0.93$), for both Hispanic and NHW youth. Of note, this measure was added to the Peds-CHOIR survey on April 2017, and therefore, a smaller number of patients (**Table 1**) completed this measure compared with the other measures in this study.

2.4.6. Pain catastrophizing

The Pain Catastrophizing Scale for Children (PCS-C) assesses children and adolescents' catastrophic thoughts related to pain (eg, "When I am in pain, it is awful and I feel that it overwhelms me").[12] The PCS-C is a 13-item measure that uses a 5-point Likert scale (0 = "Not at all" to 4 = "Extremely"), with higher total scores reflecting increased tendency to catastrophize. Pain Catastrophizing Scale for Children scores between 15 and 25 are considered moderate, whereas scores ≥26 are considered high. The total PCS-C score has demonstrated appropriate internal consistency of $\alpha = 0.87$.[12] Reliability of the PCS-C in the current overall sample was appropriate ($\alpha = 0.91$), with appropriate reliability for Hispanic ($\alpha = 0.90$) and NHW ($\alpha = 0.92$) youth.

2.5. Social factors

2.5.1. Peer relations

The PROMIS Peer Relations CAT–administered questionnaire evaluates the quality of a child's relationships with peers. Items include "I was able to count on my friends" and "I felt good about my friendships." These scores were inverse coded for consistency and ease of interpretation with higher scores representing greater levels of dysfunction. Established reliability coefficient of $\alpha = 0.90$ was used for this study.[15]

2.6. Systemic factors

2.6.1. Health insurance

Insurance information was extracted from the patient EMR. A binary insurance variable was coded to reflect patients having either public (ie, Medi-Cal) or private insurance. Medi-Cal is California's Medicaid program that provides health coverage to individuals with limited income. All other types of insurance were considered to be private because they were not funded by the state or federal government.

2.7. Data analysis

All analyses were conducted using IBM SPSS Statistics version 26,[11] with the exception of Fisher r-to-z transformations, for which the online calculator provided by Lowry (2015)[41] (http://vassarstats.net/rdiff.html) was used. Pairwise deletion was used to address missing data. Please refer to **Table 2** for additional information about missing data per measure.

Aim 1: Independent samples t tests were conducted to identify mean differences in reporting between the Hispanic and NHW youth in measures of pain intensity and pain-related factors at the individual (pain interference, pain catastrophizing, and co-occurring symptoms of anxiety, depression, and sleep disturbance) and social (peer relations) levels. To identify differences in systemic-level factors (insurance), Pearson χ^2 analyses were used to identify whether frequencies of insurance type differed by the ethnic group.

Aim 2: Bivariate correlations were examined separately for each of the 2 ethnic groups (**Table 2**). The 2 sets of correlations were then compared using Fisher r-to-z transformations (**Table 3**).

3. Results

3.1. Aim 1

Regarding pain-related factors, Hispanic youth and NHW youth only differed in pain intensity. The results for the *t* tests are presented in **Table 3**. Chi-square analyses revealed a significant difference in insurance type by the ethnic group ($\chi^2[1, N = 828] = 113.77$, $P < 0.001$), with NHW youth having a higher likelihood of having private insurance (odds ratio = 5.66)—NHW youth were less likely to have public insurance (14.8% vs 49.3%) and more

Table 2

Missing data by measure.

	Non-Hispanic White	Hispanic	Total
Pain intensity	15	13	28
P-CAT pain interference	15	14	29
PCS-C	14	12	26
P-CAT peer relations	15	14	29
P-CAT anxiety	15	14	29
P-CAT depression	15	15	30
P-S sleep disturbance*	217	109	326
Insurance type	6	3	9
Sex	0	1	1

P-CAT PROMIS measure administered through Computer Adaptive Testing (CAT), *P-S* PROMIS measure administered as short form, *PCS-C* the Pain Catastrophizing Scale for children.

* This measure was fully implemented on April 2017 (missing data for this measure include participants who completed the survey before April 2017).

likely to have private insurance (84.2% vs 49.6%) than Hispanic youth.

3.2. Aim 2

The results (**Tables 4 and 5**) highlighted significant differences in correlations between the study variables for the NHW and the Hispanic groups. Regarding pain intensity, significant differences in its correlation with pain catastrophizing, peer relations, anxiety, depression, and sleep disturbance symptoms were observed within the 2 groups. Pain intensity was significantly and positively correlated with pain catastrophizing in the NHW group, but this correlation was nonsignificant in the Hispanic group. Similarly, pain intensity was significantly correlated with peer relations, co-occurring anxiety symptoms, co-occurring depression symptoms, and co-occurring sleep disturbance in the NHW group, but these correlations were nonsignificant in the Hispanic group.

The results also highlighted group differences in correlations of pain interference with pain catastrophizing and peer relations. Although pain interference was positively and significantly correlated with pain catastrophizing in both groups, the correlation was significantly stronger for the NHW group. Pain interference was positively and significantly correlated with peer relations in the NHW group, but this correlation was nonsignificant for the Hispanic group; this difference was significant.

Significant differences between the 2 ethnic groups were found in the correlations of pain catastrophizing with peer relations, co-occurring anxiety symptoms, co-occurring depression symptoms, and co-occurring sleep disturbance. Pain catastrophizing was significantly and positively correlated with peer relations in the NHW group, but this relation was nonsignificant in the Hispanic group. The correlations between pain catastrophizing and co-occurring anxiety symptoms, co-occurring depression symptoms, and co-occurring sleep disturbance were significant in both groups but were significantly stronger in the NHW group. Similarly, the correlations between peer relations and co-occurring anxiety symptoms and co-occurring depression symptoms were significant in both groups but significantly stronger in the NHW group.

4. Discussion

Research with adults highlights significant pain disparities among URE populations, with URE patients reporting greater pain intensity, increased risk for developing chronic pain, and unequal treatment of pain.[3,11,34,47] These disparities emerge at multiple levels including at the biological, psychological, cultural, social, and systemic levels. Research understanding whether similar disparities exist in pediatric populations, however, is scant. This study sought to explore this important gap in the pediatric pain literature by examining whether Hispanic and NHW youth differ in their reports of pain intensity and other pain-related factors at the individual (pain interference, co-occurring symptoms, pain catastrophizing), social (peer relations), and systemic (health insurance) levels and whether associations between these factors differ between the 2 groups.

In this sample, Hispanic youth reported higher pain intensity than their NHW counterparts, which is consistent with findings of national surveys indicating Hispanic adults report more severe pain[31] and experimental study findings showing Hispanic adults report greater pain sensitivity and lower pain tolerance than NHW adults.[58] Our study also highlighted differences in the likelihood of having public vs private insurance with NHW youth being more likely than Hispanic youth to have private insurance, a finding consistent with previous literature indicating Hispanic populations are more likely to have public insurance, be uninsured or underinsured.[9] The significant differences in likelihood to have private insurance between Hispanic and NHW youth may suggest differences in access to healthcare and socioeconomic position (SEP) between the 2 groups, both of which have been associated with disparities in pain prevalence and treatment in URE adults.[62] For example, previous research has shown that individuals with private insurance are more likely to have access to provider-assisted complementary and alternative medicine treatments,[42] which have been shown to be efficacious for treating pediatric chronic pain.[71,73] Although it is beyond the scope of this study, future research should further examine the role SEP, insurance type, and access to healthcare play in pain presentation and treatment among URE youth. Future studies should also aim to explore differences in pain reporting in diverse healthcare settings because patient samples from tertiary care clinics, like the one in this study, may overrepresent patients with private insurance.

Contrary to our hypotheses, no mean differences were found in variables commonly associated with pain between the 2 groups including no mean differences in pain interference, pain catastrophizing, co-occurring anxiety symptoms, co-occurring depression symptoms, co-occurring sleep disturbance, and peer relations. Previous literature indicates variability in Hispanic youth's reports of pain[78] and mental health vulnerabilities[4,74]

Table 3

Independent sample *t* tests results for aim 1.

	NHW		Hispanic		
	M	SD	M	SD	*t* test
1. Pain intensity	5.71	2.34	6.19	2.34	−2.75**
2. P-CAT pain interference	59.39	8.45	60.22	7.56	−1.35
3. PCS-C	27.53	11.32	28.78	10.99	−1.48
4. P-CAT peer relations	52.85	10.05	54.05	9.68	−1.61
5. P-CAT anxiety	53.59	10.94	52.84	9.74	0.94
6. P-CAT depression	55.14	10.89	53.64	10.60	1.83
7. P-S sleep disturbance	24.43	8.44	20.03	8.29	0.76

P-CAT PROMIS measure administered through Computer Adaptive Testing (CAT), *P-S* PROMIS measure administered as short form, *PCS-C* the Pain Catastrophizing Scale for children.

$^{*}P < 0.05$; $^{**}P < 0.01$; $^{***}P < 0.001$.

NHW, non-Hispanic White.

Table 4

Bivariate correlations between pain intensity and related psychosocial factors.

	1.	2.	3.	4.	5.	6	7.
1. Pain intensity	—	0.44***	0.38***	0.12**	0.28***	0.23***	0.33***
2. P-CAT pain interference	0.34***	—	0.53***	0.26***	0.46***	0.45***	0.59***
3. PCS-C	0.12	0.38***	—	0.27***	0.63***	0.52***	0.41***
4. P-CAT peer relations	−0.06	0.02	0.09	—	0.35***	0.51***	0.22***
5. P-CAT anxiety	0.08	0.37***	0.49***	0.18**	—	0.75***	0.41***
6. P-CAT depression	0.04	0.33***	0.35***	0.36***	0.72***	—	0.42***
7. P-S sleep disturbance	0.13	0.50***	0.22**	0.04	0.40***	0.44***	—

Coefficients appearing above the diagonal correspond to the NHW sample (n = 569); coefficients below the diagonal correspond to the Hispanic sample (n = 268).

P-CAT PROMIS measure administered through Computer Adaptive Testing (CAT), *P-S* PROMIS measure administered as short form, *PCS-C* the Pain Catastrophizing Scale for children.

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

NHW, non-Hispanic White.

based on language and nativity, respectively. It is possible that intraethnic variability obscured group differences in this sample. Future nuanced investigation on disparities in the above factors is warranted to better understand whether disparities emerge among Hispanic (who speak Spanish vs English and who are native vs foreign born) and NHW youth.

The second aim of this study was to understand whether the associations between pain and related psychosocial factors differed between ethnic groups. Correlation comparisons between the 2 groups highlighted significant differences in how variables associate with each other. Overall, correlations within the NHW sample were consistent with correlations found in the broader pediatric pain literature (eg, pain intensity with pain catastrophizing[55] and pain intensity[46] with anxiety[30] and depression[39]), but these correlations were weaker or not present in the Hispanic sample. These differences by ethnicity are consistent with previous findings in nationally representative samples indicating youth of different ethnic and racial groups are differentially affected by risk factors for pain.[70] The results are also consistent with findings in the adult literature indicating pain catastrophizing is associated with higher pain severity in NHW adults but not in Hispanic adults.[18] The correlational differences observed in this study may also emerge due to cultural differences in the meaning ascribed to pain and its role in one's life as well as the presence of inherent protective or risk factors associated with these ascriptions. For example, Hispanic adults are more likely than NHW to use religious coping[31] as a way to understand and accept pain.[67] Unfortunately, most pediatric pain research in the United States has been conducted with NHW samples which has resulted in poor understanding of the constructs and relationships that influence pain and functioning in URE groups.

Table 5

Correlation coefficient differences between NHW and Hispanic samples using Fisher r-to-z transformation.

	1.	2.	3.	4.	5.	6.
1. Pain intensity	—					
2. P-CAT pain interference	1.52	—				
3. PCS-C	3.64***	2.55*	—			
4. P-CAT peer relations	2.36*	3.33***	2.43*	—		
5. P-CAT anxiety	2.81**	1.51	2.79**	2.38*	—	
6. P-CAT depression	2.52*	1.93	2.80**	2.53*	0.76	—
7. P-S sleep disturbance	2.18*	1.40	2.26*	1.91	0.10	−0.22

Correlation coefficients in the 2 samples were compared using Fisher r-to-z transformation (http://vassarstats.net/rdiff.html).

P-CAT PROMIS measure administered through Computer Adaptive Testing (CAT), *P-S* PROMIS measure administered as short form, *PCS-C* the Pain Catastrophizing Scale for children.

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

NHW, non-Hispanic White.

To the best of our knowledge, this is the first study to use data from a large clinical registry to explore whether pain disparities exist between Hispanic and NHW youth. Current study strengths include a large sample size of 837 youth of which 268 identified as Hispanic, which is a larger sample of Hispanic youth than many research studies in pediatric pain.[13,75] The clinical representation of the study population is further strengthened by including a sample that exemplifies the complexities and psychosocial comorbidities of patients commonly seen at tertiary centers treating children with chronic pain without exclusionary criteria often implemented in clinical trials.

Although being one of the first studies to explore disparities in pain and related factors in a large clinical sample of Hispanic and NHW youth, findings should be interpreted within the context of the study's limitations. First, given that this study is a retrospective analysis of data collected as a part of an existing clinical registry, proxy indices for individual-level, social-level, and system-level factors were selected based on available data and precluded the inclusion of other potentially important domains that can affect pain, particularly in Hispanic youth, including acculturation, language, nativity, and SEP. Second, the Peds-CHOIR surveys were only available in English at the time when data were collected precluding Spanish-speaking youth from completing the questionnaire. Thus, this sample may overrepresent Hispanic youth who are fluent in English therefore limiting the generalizability of findings to Spanish-speaking Hispanic youth. The lack of available variables assessing country of origin, culture, and language fluency prevents disaggregation of data among different Hispanic subgroups. Previous research has found significant intraethnic variability in pain and health status profiles among Hispanic adults,[48] and research in pediatric populations with other health conditions (eg, asthma[64]) shows significant variability in incidence and morbidity among Hispanic subgroups. Given the sample in this study represents patients presenting to one clinic in the west coast of the United States, it may not be representative of Hispanic pediatric patients across the country or of community samples of Hispanic youth who experience pain but face barriers to specialized pain care.[70] Future research should aim to collect data prospectively from a larger and more representative sample of Hispanic pediatric patients who experience chronic pain and should strive to collect more nuanced data on country of origin, language, acculturation, and SEP. Although this study used the age range for which the measures used were validated, future studies should also aim to characterize whether disparities differ by age group to provide further insights into the role developmental stage plays in pain disparities in the pediatric population.

Despite its limitations, this study advances our understanding of pain in Hispanic youth as compared with NHW youth. Findings are consistent with previous literature showing URE youth are disproportionally affected by SDoH because Hispanic youth in our sample were much more likely to have public insurance than NHW youth. Findings of this study add to a growing body of the literature suggesting differences in pain, pain-related factors, and the association between these factors among ethnic groups, underscoring a need to better understand the experiences of URE pediatric patients who experience chronic pain separately from those of NHW patients to support the assessment and treatment of pediatric pain within a culturally informed framework.

Disclosures

The authors have no conflict of interest to declare.

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