A Comparison of the Arthritis Foundation Self-Help Program Across Three Race/Ethnicity Groups

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Abstract

Objective—Despite high prevalence rates of pain among older adults, relatively few studies have examined the impact of the Arthritis Foundation Self-Help Program (ASHP) in this age group, particularly older minorities. This study compared the effects of the ASHP on groups of older Hispanic, African American and non-Hispanic whites.

Methods—Individuals age 60 and over with diverse non-cancer pain disorders were recruited from 3 senior centers in New York City. Participants were surveyed before and after course completion (in person) and at 18 weeks (by telephone). Demographic and clinical data were collected at baseline; outcomes included pain, mood, self-efficacy, and number of days per week spent exercising.

Results—A total of 112 (37 African American, 38 Hispanic and 37 non-Hispanic white) participants (mean age = 75 years) enrolled in the program. All 3 groups experienced significant decreases in pain intensity (p 0.05). Significant improvements were also found in mood scores for non-Hispanic white (p=0.01) and Hispanic participants (p=0.03). Hispanic participants also evidenced significant improvement in their confidence to self-manage pain (p=0.003) and reported fewer arthritis-related symptoms (p=0.02). All three race/ethnicity groups reported substantial increases in the number of days spent doing stretching, endurance and relaxation exercises (p 0.01).

Conclusion—Positive results were noted for all 3 race/ethnicity groups, particularly in the areas of pain reduction and uptake of stretching, endurance and relaxation exercises. Our findings support efforts to disseminate broadly the ASHP in community settings that serve older African American, Hispanic and non-Hispanic white adults with persistent pain disorders.

It is estimated that 46 million adults in the U.S. have some form of arthritis, including about half of all individuals over the age of 65 (1). Arthritis and other rheumatic conditions remain the most common cause of disability in the U.S. (2), often producing deleterious effects on individuals' physical activity, quality of life, and daily functioning (2). Arthritis is also common among minority populations (3). Although prevalence studies indicate that the disorder is somewhat less common among African Americans and Hispanics compared to non-Hispanic whites (3), disease-related effects are disproportionately more severe in the first two groups (3).

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Self-management programs have been developed and implemented as a means of helping individuals better manage pain and other arthritis-related symptoms (4). For over two decades, the Arthritis Foundation has disseminated the Arthritis Foundation Self Help Program (ASHP), a community-based, pain management and self-efficacy enhancing course (5). Classes are taught by trained lay leaders or health professionals in diverse community settings (5). The efficacy of the ASHP has been studied extensively (although almost exclusively in non-Hispanic white populations), and the program has been found to improve participants' pain and pain-related symptoms (6). Several studies have found that participants sustain treatment gains over time, reinforcing the program's value (7). Despite this evidence base, these programs have reached few U.S. adults with arthritis or arthritis-related diseases (8).

To date, little research has focused on identifying the barriers associated with translating evidence-based pain programs in diverse community settings. Perceived barriers at the individual level include language concerns, cultural issues, and lack of confidence to exercise. Program-level barriers can include insufficient staff time and competing demands for limited space to offer group-based programs. In an effort to facilitate adoption of the ASHP in diverse cultural settings, we undertook a multi-step adaptation of the ASHP for older adults from three race/ethnicity groups (African American, Hispanic, and non-Hispanic white). The first step in the process involved presenting the original ASHP to members of each group to gather recommendations regarding for possible program adaptation. ASHP outcome data were collected as part of the process.

The current study compares ASHP outcomes in a race-stratified sample of older adults with diverse non-cancer pain disorders. This population (older African American, Hispanic and non-Hispanic adults) is particularly appropriate for study because cultural differences in managing pain may moderate treatment outcomes, and few investigations have examined the effects of the ASHP in older adults (9), particularly older minority adults (3).

METHODS

Study setting and sample assembly

The investigators partnered with the New York City chapter of the Arthritis Foundation and three multi-service senior centers in New York City: 1) a community center serving African American older adults in Harlem, 2) an agency providing services to older Hispanic residents in the Bronx, and 3) an agency that serves older, non-Hispanic whites also located in the Bronx. Participant recruitment was done by center staff and varied by site, but included on-site question and answer sessions with research staff, flyer postings, and individual counseling with center staff. To enroll, participants had to 1) be 60 years of age, 2) have a self-identified pain disorder, and 3) be fluent in Spanish or English. All who expressed interest were enrolled in the study.

Data collection and measure

Participants filled out the 37-item, self-administered Arthritis Foundation pre-course and post-course assessments, which were developed and have been widely employed by the Arthritis Foundation for more than two decades (5). Demographic measures include age, gender, race/ethnicity status, and educational level. Pain etiologies (e.g., osteoarthritis, rheumatoid arthritis, other), pain duration (less than 5 years, 5–9 years, or more than 10 years), perceived health status (very good, good, fair, or poor), and medical co-morbidities are also ascertained.

Outcomes in the instrument include number of days of pain (0–14), average pain intensity (0–10), and mood change in the past two weeks (1–5), as well as level of tension during the

past 30 days (0–20). The instrument also contains a 5-item set of questions focusing on reasons for not exercising; affirmative responses were summed to create a summary score (0–5). Four questions about confidence in managing pain and arthritis symptoms are asked, each using a 10-point response scale (0 = not at all confident to 10 = extremely confident). The 4 items were summed (in the current study) to provide an estimate (0–40) of a participant's self-perceived confidence to manage pain and other arthritis-related symptoms successfully. Other questions include change (over the past 2 weeks) in arthritis symptomatology (1–5), activity limitation (0–16), which captures the extent to which a person's health limits their ability to do certain activities of daily living, fatigue (0–10) and stiffness (0–10). In addition, participants estimated the number of days per week they practiced stretching (0–7 days), endurance (0–7 days), and relaxation (0–7 days) exercises.

Three months after the last class (18 weeks after enrollment), a research team member telephoned participants to determine how many days in the last week they practiced the stretching (0–7 days), endurance (0–7 days), and relaxation (0–7 days) exercises. A bilingual community health worker telephoned Spanish-speaking participants.

Intervention

The ASHP consists of six weekly classes (lasting about 2 hours each) and accommodates up to 15 participants per class (5). Core modules include 1) education regarding pain and its consequences, 2) relaxation skills training, 3) cognitive coping skills training, 4) problem solving, and 5) communication skills training. Weekly "action plan" activities teach participants goal setting skills and enhance feelings of self-efficacy and support. Participants also learn about the importance of stretching, endurance, and relaxation exercises to maintain function and manage pain. The Spanish-language ASHP, implemented at the site serving Hispanic participants, had already been culturally adapted for use by Spanish-speaking individuals. The Spanish program differs from the English program in two ways: 1) each class contains between 15 and 25 minutes of time dedicated to practicing the exercises; and 2) participants are given two instructional CDs, one provides instruction on exercise and the other on relaxation techniques. Both CDs are used during class and participants are instructed to use them at home to assist with practicing the exercises. All participants are given an arthritis education book published by the Arthritis Foundation in English and Spanish.

The program was implemented three times at each center with different groups of participants, consecutively between July, 2008, and March, 2009. All classes were taught by instructors certified by the Arthritis Foundation. Participants were compensated up to a total of 70 dollars for time spent participating in 6 weekly phone interviews and 1 focus group. The study was approved by the Weill Cornell Medical College Institutional Review Board.

Data analysis

Descriptive statistics were calculated for all variables. Outcome variables were analyzed in a general linear mixed model that included fixed classification factors for race/ethnicity status, time (baseline versus follow-up), the interaction of these 2 factors, and individuals as levels of a random classification factor. Because race and center are almost completely confounded, a fixed factor for center could not be included along with the race/ethnicity variable (there were too few centers to include centers as levels of a random factor). The model included 7 additional variables: participant's age, sex, education, pain type (OA versus other), duration of pain, perceived health status, and number of co-morbidities.

Two race/ethnicity contrasts (non-Hispanic white vs. African American and non-Hispanic white vs. Hispanic) were specified *a priori*. A third contrast (Hispanic vs. African American)

is presented as additional information of potential interest. The contrasts are not independent and are not intended to indicate a set of independent results.

We also present effect sizes–calculated as the mean difference between follow-up and baseline groups divided by the baseline standard deviation–for selected outcome variables in the text.

RESULTS

Sample characteristics

One hundred twelve participants enrolled in the program. Non-Hispanic white participants were older (79.4 years) than African American (71.4) and Hispanic (74.5) participants (Table 1). Most participants were female (83%) and lived alone (58%). Significant between-group differences were also present for education, perceived health status, and activity limitation score.

Ninety four participants (84%) finished the course and completed a post-course evaluation. Participants dropped out for a variety of reasons, including a lack of interest in the program (n=8) and illness (n=4). Of the drop outs, 8 were African Americans and 10 were non-Hispanic whites. There were no significant differences between drop outs and completers, with the exception that drop outs reported more education (some college or higher) than completers (100% vs. 49%, p<.01).

Overall attendance rate, defined as the total number of classes attended divided by the total number of possible classes (6 per participant) was 84%. Fifty-five (49%) participants attended all six classes and 30 (27%) completed five classes. The mean number of classes attended was 5.0 (range 1–6), with Hispanic participants evidencing a slightly higher mean attendance compared with African American and non-Hispanic white participants (5.2 vs 5.0 vs 4.9, p=0.61).

Outcomes

All 3 groups experienced significant decreases in pain intensity (Table 2). Significant improvements were also found in mood scores for non-Hispanic white (p=0.01, effect size (es) = 0.54) and Hispanic participants (p=0.03, es = 0.41). Hispanic participants also evidenced significant improvement in their confidence to self-manage pain (p=0.003, es = 0.49) and reported experiencing significantly fewer arthritis-related symptoms (p=0.02, es = 0.49) after taking the course.

Of the 94 participants interviewed at week 6, 90 (96%) were reinterviewed three months later and asked about their use of stretching, endurance, and relaxation exercises as a means of managing pain. All three groups reported substantial increases in their use of the exercises, with the greatest changes occurring in the Hispanic group (Table 3).

DISCUSSION

Our results suggest that the ASHP confers benefits in the area of pain reduction for older adults irrespective of race/ethnicity status. Significant increases in the number of days spent doing stretching, endurance and relaxation exercises were noted for all 3 groups. Although physical exercise is widely recommended for the treatment of arthritis-related pain (10), it is infrequently employed by older adults with arthritis or other pain-related disorders (10). Given that prior studies have documented infrequent use of cognitive methods (e.g., relaxation) as a means of managing pain in this age group (11), our results further suggest

that the ASHP may be particularly helpful at introducing and reinforcing use of these pain management techniques.

Improvement in other domains was variable. Hispanic participants demonstrated the greatest number of positive outcomes following program completion, particularly in the areas of mood, total arthritis symptoms, and confidence managing pain and other arthritis-related symptoms. The greatest gains occurred in the use of both physical and cognitive exercises as a means of managing pain, with substantial increases noted in the number of days Hispanic participants spent doing stretching (95% increase, effect size (es) = 0.85), endurance (98% increase, es = 0.85) and relaxation (216% increase, es = 1.35) exercises. Although the English and Spanish programs share the same core concepts, programmatic differences exist. The Spanish program has participants practice the aerobic exercises for up to 25 minutes in each class. In addition, Spanish speaking participants receive two CDs for use at home, which helps to reinforce both exercise and relaxation practice. These differences could have contributed to the superior outcomes observed in the Hispanic group. Consideration should be given to adapting the English-language ASHP program, by adding exercise practice during class along with provision of the practice CDs for use at home.

Cultural factors might also explain some of the observed differences. Hispanics have been found to use passive styles of coping, especially praying and hoping, more than non-Hispanic whites (12). The ASHP teaches participants a variety of active coping techniques such as exercise, relaxation, and distraction, and encourages them to become more confident in their ability to constructively respond to pain. For Hispanics who use passive coping when facing pain, it is possible that teaching active coping and self-efficacy could lead to more positive outcomes than those seen in the other 2 groups.

Our results add to the limited literature on the program's effects in minority adults. Prior research has demonstrated positive outcomes associated with the ASHP among African American (13) and Hispanic adults (14) where the latter group received the Spanish Arthritis Empowerment Program, which is a cultural adaptation of the ASHP. Moderate treatment effects were found in the areas of self-efficacy for managing pain and self-care behaviors, including use of the stretching and aerobic exercises (13,14). A prior meta-analysis of self-management pain programs (that included studies of the ASHP and other programs as well) found small, short-term treatment effects in the area of pain and disability (15). However, ongoing use of self-care behaviors (e.g., physical and cognitive exercises) may well lead to improvements in pain and function over time that would not be detected in short-term studies. Efforts to determine the programs' long-term effects on levels of pain, function and quality of life are therefore needed.

This study has several limitations that warrant consideration. First, the positive results may be due to factors other than the intervention given the absence of a control condition. Senior centers provide a strong social support network for clients, which could have reinforced the impact of the ASHP. Finally, participants were given $10 for each session they attended as compensation for time spent doing the weekly telephone interviews and focus group after the 6th and final class, which likely contributed to the high attendance rate.

Our study suggests that the ASHP is an effective tool for helping older Hispanic, African American, as well as non-Hispanic white adults self-manage pain and arthritis symptoms and perhaps most importantly to increase their level of physical activity. Adaptation of the English-language version of the ASHP to include adding exercise practice during class should also be considered. Because disparities in pain management continue to exist with respect to minority status (3), increased efforts should be directed towards implementing this program in settings that serve older adults, particularly older minority adults.

Acknowledgments

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Table 1

Characteristics of Study Population

	African American (n = 37)	Hispanic (n = 38)	Non-Hispanic -white (n = 37)	All (N = 112)	p-value
Demographic					
Mean (sd) age in years	71.4 (9.4)	74.5 (6.5)	79.4 (9.1)	75.0 (8.0)	<.01
Female, n (%)	32 (86)	30 (79)	31 (84)	93 (83)	.52
Education level					<.01
High school or less, n (%)	18 (49)	29 (78)	10 (27)	57 (51)	
Some college or higher, n (%)	19 (51)	8 (22)	27 (73)	54 (49)	
Lives alone, n (%)	25 (68)	20 (53)	19 (53)	64 (58)	.33
Retired not due to ill health (vs. all others), n (%)	24 (65)	31 (82)	31 (84)	86 (77)	.13
Pain etiologies					.02
Osteoarthritis (OA), n (%)	14 (44)	11 (35)	24 (69)	49 (50)	
Other, * n (%)	18 (56)	20 (65)	11 (31)	49 (50)	
Pain duration					.27
< 5 years, n (%)	11 (34)	14 (41)	11 (31)	36 (36)	
5–9 years, n (%)	9 (28)	10 (29)	13 (37)	32 (32)	
10 years, n (%)	12 (38)	10 (29)	11 (31)	33 (33)	14
Perceived health status					<.01
Very good, n (%)	3 (8)	0 (0)	5 (14)	8 (8)	
Good, n (%)	14 (39)	4 (11)	16 (44)	34 (32)	
Fair, n (%)	17 (47)	28 (80)	14 (39)	59 (55)	
Poor, n (%)	2 (6)	3 (9)	1 (3)	6 (6)	
Mean (sd) activity limitation † (0–16)	9.4 (4.6)	8.1 (5.4)	7.5 (3.7)	8.35 (4.7)	<.01
Medical comorbidities					
High blood pressure, n (%)	25 (76)	10 (61)	25 (71)	70 (69)	
Diabetes, n (%)	10 (30)	13 (39)	9 (26)	32 (32)	
Heart disease, n (%)	4 (12)	5 (15)	9 (26)	18 (18)	
Asthma, n (%)	4 (12)	8 (24)	2 (6)	14 (14)	
Hypercholesterolemia, n (%)	4 (11)	5 (13)	3 (8)	12 (11)	

	African American (n = 37)	Hispanic (n = 38)	Non-Hispanic -white (n = 37)	All (N = 112)	p-value
Mean (SD) number of comorbidities ◆	1.9 (1.4)	2.1 (1.2)	2.3 (1.3)	2.1 (1.3)	.45

*
Other reported causes of pain included back pain/spinal stenosis, fibromyalgia, gout, osteoporosis, and rheumatoid arthritis.

†Higher scores indicate less activity limitation.

Table 2

Outcomes by Race/Ethnicity Status

		African American (n=29)	Hispanic (n=38)	Non-Hispanic white (n=27)	White vs. African American	White vs. Hispanic	African American vs. Hispanic
Pain							
Number of days with pain in past two weeks*	Time 1	9.74	5.82	12.24	2.50	6.42	-3.92
	SE	1.16	1.21	1.10	1.59	1.72	1.50
	Time 2	7.04	3.61	11.24	4.20	7.63	-3.43
	SE	1.27	1.24	1.19	1.74	1.81	1.59
	T2–T1	-2.70	-2.21	-1.00	1.70	1.21	0.49
	p	.04	.06	.38	.32	.46	.78
Pain intensity (0 – 10)*	Time 1	7.04	5.14	7.41	0.37	2.27	-1.90
	SE	.65	.70	.63	0.88	0.98	0.82
	Time 2	4.91	4.06	6.55	1.64	2.48	-0.85
	SE	.69	.70	.65	0.94	1.01	0.85
	T2–T1	-2.13	-1.08	-0.86	1.27	0.21	1.05
	p	<.001	.02	.05	.05	.73	.11
Affective							
Mood in past two weeks (1 – 5)*	Time 1	2.39	2.22	3.08	0.69	0.86	-0.18
	SE	.24	.25	.23	0.32	0.35	0.31
	Time 2	2.70	1.59	2.35	0.28	0.76	-0.48
	SE	.27	.28	.24	0.36	0.39	0.36
	T2–T1	0.31	-0.63	-0.73	-0.41	-0.10	-0.30
	p	.28	.03	.01	.30	.80	.45
Level of tension (0 – 20)†	Time 1	11.23	11.18	10.61	-0.62	-0.56	-0.06
	SE	.88	.93	.85	1.21	1.32	1.14
	Time 2	12.31	10.93	11.98	-0.33	1.05	-1.39
	SE	.98	.96	.91	1.34	1.39	1.23
	T2–T1	1.08	-0.25	1.37	0.29	1.61	-1.33

		African American (n=29)	Hispanic (n=38)	Non-Hispanic white (n=27)	White vs. African American	White vs. Hispanic	African American vs. Hispanic
	p	.28	.79	.13	.83	.21	.33
Attitudes about exercise							
Reasons for not exer-cising (0–5)*	Time 1	1.64	2.09	2.52	0.88	0.42	0.45
	SE	.41	.44	.38	0.54	0.60	0.54
	Time 2	0.87	1.50	2.02	1.15	0.52	0.63
	SE	.43	.45	.39	0.58	0.63	0.55
	T2–T1	−0.77	−0.59	−0.49	0.28	0.10	0.18
	p	.07	.17	.18	.62	.86	.76
Confidence to self manage pain/arthritis symptoms							
Summary confidence score (0 – 40)†	Time 1	28.44	25.64	24.04	−4.40	−1.60	−2.80
	SE	2.04	2.16	1.97	2.79	3.06	2.64
	Time 2	29.88	32.02	25.38	−4.50	−6.64	2.14
	SE	2.29	2.22	2.11	3.11	3.22	2.85
	T2–T1	1.44	6.38	1.34	−0.10	−5.04	4.94
	p	.52	.003	.50	.97	.08	.10
Other outcomes							
Change in arthritis symptoms in past two two weeks (1–5)*	Time 1	2.85	2.23	3.18	0.34	0.95	−0.61
	SE	.19	.21	.18	0.26	0.29	0.26
	Time 2	2.41	1.62	2.97	0.57	1.36	−0.79
	SE	.23	.22	.20	0.30	0.31	0.29
	T2–T1	−0.44	−0.61	−0.21	0.23	0.41	−0.18
	p	.10	.02	.37	.51	.24	.63
Level of fatigue (0 – 10)*	Time 1	5.93	4.13	5.72	−0.21	1.60	−1.80
	SE	.62	.67	.58	0.82	0.91	0.80
	Time 2	5.04	4.15	5.34	0.30	1.19	−0.89
	SE	.69	.66	.62	0.92	0.95	0.86
	T2–T1	−0.89	0.02	−0.38	0.51	−0.41	0.91

		African American (n=29)	Hispanic (n=38)	Non-Hispanic white (n=27)	White vs. African American	White vs. Hispanic	African American vs. Hispanic
	p	.22	.97	.54	.60	.66	.36
Level of stiffness (0 – 10)*	Time 1	6.18	3.28	5.22	−0.96	1.94	−2.90
	SE	.71	.76	.68	0.96	1.06	0.91
	Time 2	4.72	3.15	5.08	0.36	1.94	−1.57
	SE	.76	.77	.71	1.03	1.11	0.95
	T2–T1	−1.46	−0.13	−0.14	1.32	0.00	1.33
	p	.02	.82	.81	.12	1.00	.13

*
Lower scores indicate desirable outcome;

†
Higher scores indicate desirable outcome; Time 1 = baseline; Time 2 = 6-week follow-up.

Table entries in the first 3 columns and 2 rows for each outcome represent adjusted mean scores. Mean differences for Time 2 minus Time 1 and the probability for the test of difference are given in the third row for each outcome. Mean differences for contrasts of race/ethnicity and probabilities for the tests of differences appear in the 3 rightmost columns. The second entries in each cell are standard errors in the cells for means and Ps in the cells for mean differences. The entries in the third row and 3 rightmost columns give the tests of the time×ethnicity interactions (the 2 degrees of freedom for ethnicity partitioned into single-d.f. interactions with time). All results are from models that adjust for participants' age, sex, education, pain type (OA versus other), duration of pain, perceived health status, and number of comorbidities.

Table 3

Number of days spent doing the stretching, endurance, and relaxation exercises at baseline, 6 and 18 weeks

		African American (n=29)	Hispanic (n=34)	Non-Hispanic white (n=27)	White vs. African American	White vs. Hispanic	African American vs. Hispanic
Stretching	Time 1	3.49	2.59	3.02	−0.47	0.43	−0.90
	SE	.51	.53	.48	0.69	0.74	0.67
	Time 2	5.06	4.24	4.09	−0.97	−0.14	−0.83
	SE	.56	.54	.52	0.76	0.77	0.71
	Time 3	5.83	5.30	4.81	−1.03	−0.49	−0.54
	SE	.58	.55	.54	0.76	0.79	0.73
	T2–T1	1.58	1.65	1.08	−0.50	−0.57	0.07
	p	.01	.01	.06	.56	.49	.93
	T3–T1	2.35	2.71	1.79	−0.56	−0.92	0.36
	p	<.001	<.001	.003	.53	.28	.68
Endurance	Time 1	3.51	2.63	3.03	−0.38	0.50	−0.88
	SE	.49	.50	.46	0.66	0.71	0.64
	Time 2	5.22	3.96	4.17	−1.05	0.21	−1.26
	SE	.53	.51	.49	0.72	0.74	0.67
	Time 3	5.60	5.18	5.20	−0.40	0.02	−0.42
	SE	.53	.51	.49	0.70	0.73	0.67
	T2–T1	1.71	1.33	1.04	−0.67	−0.29	−0.37
	p	.003	.02	.05	.39	.69	.64
	T3–T1	2.09	2.55	2.07	−0.02	−0.48	0.46
	p	.001	<.001	<.001	.98	.52	.56
Relaxation	Time 1	3.15	1.83	2.30	−0.85	0.47	−1.32
	SE	.48	.49	.45	0.65	0.69	0.63
	Time 2	5.25	4.26	4.58	−0.67	0.32	−0.99
	SE	.52	.50	.48	0.71	0.72	0.66
	Time 3	5.29	5.79	5.31	0.02	−0.48	0.50
	SE	.53	.50	.47	0.68	0.70	0.67

	African American (n=29)	Hispanic (n=34)	Non-Hispanic white (n=27)	White vs. African American	White vs. Hispanic	African American vs. Hispanic
T2–T1	2.10	2.43	2.28	0.18	−0.15	0.33
p	.001	<.001	<.001	.83	.85	.69
T3–T1	2.14	3.96	3.01	0.88	−0.94	1.82
p	.001	<.001	<.001	.29	.22	.03

Time 1 (T1) = baseline; Time 2 (T2) = 6-week follow-up; and Time 3 (T3) = 18 week follow-up.

Table entries in the first 3 columns and 3 rows for each outcome represent adjusted mean scores. Mean differences for Time 2 minus Time 1 and for Time 3 minus Time 1 and the probability for the tests of differences are given in the first 3 columns and 3 rows for each outcome. Mean differences for contrasts of race/ethnicity and probabilities for the tests of differences appear in the 3 rightmost columns. The second entries in each cell are standard errors in the cells for means and Ps in the cells for mean differences. The entries in the third and fourth rows and 3 rightmost columns give the tests of the time × ethnicity interactions (the 2 degrees of freedom for ethnicity partitioned into single-d.f. interactions with time). All results are from models that adjust for participants' age, sex, education, pain type (OA versus other), duration of pain, perceived health status, and number of co-morbidities.