Pain may affect racial and ethnic populations differently, while diminishing their physical and psychological health. Research also shows that the prevalence of pain is increasing in older Americans, yet few studies have examined factors associated with pain in older community-dwelling African Americans. This study examined the relationship between pain intensity, specific arthritis symptoms, and various demographic characteristics (eg, age, gender, education) as well as psychosocial factors (eg, depression) in a sample of older African Americans (N=176). Participants were older community-dwelling African Americans with a mean age of 70.1±9.01 years. Pain located in the knee(s) (77%) was the most frequently reported pain location. Joint pain (95%) was the most frequently reported arthritis symptom. The multivariate analysis showed that reporting more depressive symptoms and experiencing limited joint movement were significant indicators of pain intensity and accounted for 31% of its variation. The results of this study reinforce the importance of examining the relationship between pain, psychosocial factors, and demographic characteristics among older African Americans. Furthermore, this study identifies the need for continued research on the relationship between pain and various social and psychological factors in racially and ethnically diverse aging populations. (Ethn Dis. 2003;13:513-520)

Key Words: African Americans, Arthritis, Depression, Pain

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Approximately 355 million people worldwide1 and nearly 43 million (one out of 6) Americans are afflicted with arthritis or a musculoskeletal disease.² By the year 2020, approximately 7 million African Americans are expected to have some form of arthritis.3 The prevalence of arthritis among African Americans is greater than heart disease, chronic bronchitis, asthma, and diabetes.4 More importantly, the prevalence of arthritis cases is higher for older (65 years of age and older) African Americans (67%), than for aged Caucasian (58%) and Hispanic (50%) adults.5 Given the exponential increase in the number of older adults in the United States, there is growing concern about the adverse impact this chronic medical condition will have on the ability of adults to function physically and psychologically.

Defined as an unpleasant sensory and emotional experience,⁶ the most recognizable manifestation of arthritis is pain.^{7–10} It is estimated that 30% of all Americans have a medical condition that is associated with pain.¹¹ More specifically, approximately 20%–58% of community-dwelling adults, 65 years of age and older,¹² experience some degree of pain (acute or chronic) due to a chronic illness (eg, arthritis, diabetes, osteoporosis), fractures, falls, or other health-related problems associated with aging.^{13–15}

Studies examining the association between pain and arthritis have focused on a diverse set of factors associated with the pain experience. One group of investigations focused on pain associated with the physiological and structural changes of arthritis, which often results from joint damage,¹⁶ tissue inflammation, excessive tension and swelling within the joint capsule, and physical Tamara A. Baker, PhD

activity.10 Other investigations have focused more specifically on the psychosocial factors such as pain control, coping,17 stress,18 work disability,19 physical impairment,7 and personality.13 Lichtenberg²⁰ found that specific psychological variables including hypochondriasis, health behaviors, and financial satisfaction were significant indicators of how pain was perceived among a sample of patients with arthritis. Despite the prevalence of pain and its association with these psychosocial factors, pain is not well-defined or explored among older adults, particularly for persons of diverse racial and ethnic backgrounds.²¹

The Influence of Race and Ethnicity on Pain

Pain is a very complex and inherently subjective phenomenon based on learned values, attitudes, and past experiences with pain.²²⁻²⁴ Although the biological sensations of pain are universal, attitudes toward pain, its attributed meaning and individual responses, may differ across the various ethnic/cultural groups. Many racial and ethnic groups have "specific rituals" that shape an individual's expectations about pain, as well as, strategies to tolerate the experience of pain.25 Research that examines pain across various racial and ethnic groups illustrates the cultural dimensions of the pain experience.²⁶⁻²⁷ For example, Linn, Hunter, and Linn,28 found that African Americans reported greater pain intensity as a result of arthritis and had more difficulty performing certain physical tasks, compared to Caucasian and Cuban adults. Similarly, Jordan, Lumley, and Leisen¹⁷ found that African Americans were more likely to report pain as being more serious and characteristic of arthritis than were Caucasian adults. More recently, however, Johnson-Umezulike,29 found that older CauMore specifically, approximately 20%–58% of community-dwelling adults, 65 years of age and older,¹² experience some degree of pain (acute or chronic) due to a chronic illness (eg, arthritis, diabetes, osteoporosis), fractures, falls, or other health-related problems associated with aging.^{13–15}

casians (53%) were more likely to report experiencing episodes of pain than were older African Americans (47%).

Despite the significant findings of these investigations, research identifying the relationship between pain and chronic illnesses is limited in several respects. First, most of these studies are comparative, focusing primarily on differences between Caucasians and African Americans³⁰⁻³¹ or differences between Caucasians and other racial and ethnic groups in chronic pain using experimental models.^{27,32} Second, few studies examine the variation of the pain experience within a racial group. Edwards, Fillingim, and Keefe33 note that even within a given racial or ethnic group, there are biological, social, and psychological factors that may influence the pain experience. Furthermore, a substantial number of studies either do not include a racially and ethnically diverse study sample or do not report on the racial and ethnic composition of the sample.

Paget and Robbins³⁴ highlight important cultural differences (eg, language, socioeconomic status, unique ways of understanding health, infirmity and health care, expression and the meaning of illness, pain, and pain coping strategies) that should be considered in research among racially and ethnically diverse populations. The failure to account for these factors in comparison studies often compromises the ability to generalize the findings to broader population groups. As a consequence of these limitations, a lack of empirical research exists to examine the unique physical, social, and behavioral factors that influence the interpretation and outcomes of pain in older racially and ethnically diverse groups.

As an exploratory analysis, the present study was designed to: 1) determine the association of arthritis symptoms (independently and collectively) to pain intensity; 2) examine the relationship between physical, psychological, and demographic characteristics and pain intensity; and 3) determine the amount of unique variance in pain intensity accounted for by the psychosocial and demographic indicators.

Methods

This investigation was based on a sample of African Americans 50 years of age and older who resided in Baltimore, Maryland. Data for this study were collected as part of the Baltimore Study on Black Aging (BSBA). Included in this extensive database are various physical (eg, physical functioning, chronic illnesses) and behavioral (eg, depression, personality) indicators of older community-dwelling African Americans. This investigation was approved by the Pennsylvania State University's Institutional Review Board (IRB). Written informed consent was obtained prior to the interview with each participant. Each interview lasted approximately 11/2 hour. Respondents were compensated for their participation in the study. Data were collected from October 2000 to February 2001.

Participants

Participants were recruited from 7 urban senior high-rise facilities located in west Baltimore. To solicit participation for the study, an information sheet explaining the purpose of the study was placed in a central location of each facility. Individuals interested in participating were instructed to call and schedule an appointment for an interview. Each session involved a personal interview that was conducted in a designated area or room within each high-rise facility. The purpose of the study was explained to each respondent prior to the beginning of each session, and all questions regarding the study were answered by the interviewer.

Measures

Pain Intensity

The McGill Pain Questionnaire (MPQ) is a quantitative measure of pain perception.35 This study used the Pain Rating Index (PRI) scale, of the MPQ, which consists of 78 words grouped into 20 classes of single-word pain descriptors, with each word ranked by degree of intensity. The scale contains 4 subscales of pain descriptors: sensory, affective, evaluative, and miscellaneous pain. A mean score value was reached by obtaining the sum of the ranked intensities of all the words chosen by the respondent. The internal consistency (.723) assessment for the scale among this group of older African Americans compares favorably with other samples.

Arthritis Symptoms

Five specific arthritis symptoms (joint swelling, joint stiffness, joint pain, muscle weakness, and limited joint movement) were assessed using a selfreporting checklist. Each respondent was asked if he/she had experienced the symptom within the past month. Response choices were coded dichotomously (0=did not experience the symptom; 1=experienced the symptom).

Pain Locations

Respondents used the front and back of a body profile to indicate the specific body location(s) (ie, head, ankles, chest, shoulders, neck, lower-back, knees, hip, hands, and wrists) where they experienced pain. For each body region, pain location was assessed as a dichotomous variable (0=did not experience pain in a particular body region; 1=experienced pain in a particular body region).

Number of Pain Locations

The total number of pain locations was assessed by presenting a picture of the front and back of a body profile. Each participant was instructed to point to or tell the interviewer the area(s) of the body that he/she experienced pain. Each body part marked by the participant was considered one pain location, with the exception of the fingers and toes. For example, if 3 fingers on one hand were marked, this was considered one pain location. However, if 3 fingers on both hands were marked, this was counted as 2 pain locations.

Demographic Variables

Four demographic variables were included in the analyses: age, gender, education, and income. Age was measured in a continuous format ranging from 50 to 96 years of age. Gender was treated as a dichotomous variable (0=males; 1=females). Education was assessed as a continuous variable reflecting the total number of years of formal schooling completed. Income was coded dichotomously (0=earning less than \$1,000 a month; 1=earning \$1,000 or more a month).

Chronic Diseases

The Self-Evaluation of Life Function (SELF) Scale³⁶ is a comprehensive assessment of physical, emotional, and social functioning in older adults. This study used the chronic disease checklist subscale to assess the presence of specific chronic diseases by asking participants whether they had any of the following diseases: arthritis, bronchitis, diabetes, cataracts, circulation problems, high blood pressure, stomach ulcers, liver disease, kidney disease, and cancer. A comorbidity score was obtained by a count of the total number of chronic diseases reported by each participant.

Depression

Depression was measured by the Center for Epidemiological Studies-Depression scale (CES-D), which is a 20item instrument consisting of 4 factors: depressive affect, positive affect, somatic signs, and interpersonal distress. Each respondent was asked to indicate how often he/she experienced a given symptom within the past 7 days. The measure yields a composite score that ranges from 0-60, with higher scores indicating more depressive symptoms.37 The internal consistency assessment for the scale among this group of African Americans (.892) compares favorably with other samples.

Statistical Analysis

Data analysis was conducted in 3 stages. First, descriptive statistics were calculated to provide a profile on the sample's demographic characteristics and performance on the measures included in the study. Next, a series of Pearson product-moment correlation coefficients were examined to determine the strength of the relationship between pain intensity and each independent variable. Correlation coefficients were calculated using the pairwise deletion procedure. Using this procedure, each pair of variables was correlated to exclude cases within each pair that had missing values.38 Third, a hierarchical multiple regression model was calculated to assess the amount of unique pain variance that was accounted for by the arthritis symptoms, while controlling for the demographic, health, and behavioral factors. The regression procedure entered the predictor variables in 4 models. Arthritis symptoms were entered first (Model I), followed by the demographic characteristics (age, gender, education, and income) (Model II). Next, depression, the total number of pain locations, and chronic disease totals were entered into the regression equation (Model III). Specific pain locations (shoulders, neck, lower-back, knees, hips, hands, and wrists) were entered as the final set of variables (Model IV). Standardized beta coefficients were reported to describe the relative importance of the predictor variables within the regression model.

RESULTS

Descriptive Statistics

The sample included 176 African Americans. The average age of the total sample was 70.1±9.01 years, with a range from 50 to 96 years. Eighty percent (N=141) of the sample were women. The mean level of education was 10.4±2.77 years. Nearly a fourth (24%) of respondents indicated they had no formal education beyond the 8th grade. More than half (61%) reported completing between 9 to 12 years of formal education, and another 15% reported completing education beyond high school. Nearly 7% of the respondents were married, 22% were divorced, 15% were single/never married, and 48% were widowed. Eighty-two percent of the respondents reported a monthly income of \$1,000 or less.

The mean score for the PRI of the MPQ was 29.02 ± 14.26 , with a score range from 0 to 62. Participants reported a mean of 4.43 ± 1.98 chronic diseases, and an average of 3.57 ± 2.87 pain locations. Scores on the CES-D ranged from 0 to 51, with an average score of 12.34 ± 10.52 (Table 1).

Arthritis Symptoms

Respondents reported an average of 3.55 ± 1.25 arthritis symptoms. Joint pain (95%) was the most frequently reported arthritis symptom, followed by joint stiffness (71%), joint swelling

Table 1.	Means	and	standard	devia-
tions for	study va	riable	es (N=176	5)

Variable	Mean±SD
Age	70.1±9.01
Gender (% female)	80%
Education	10.43 ± 2.77
Income (% <\$1,000	
a month)	82%
Arthritis symptoms	3.55±1.25
Pain intensity*	29.02±14.26
Pain locations	3.57 ± 2.87
Chronic diseasest	4.43±1.98
Depression‡	12.34±10.52
* Pain = average pain sc + Chronic diseases = ave + Depression = average (ore. rage number of disea CES-D score.

(66%), limited joint movement (64%), and muscle weakness (59%) (Table 2).

Pain Locations

Table 2 shows that pain located in the knee(s) (77%) was the most frequently reported pain location. Sixtyone percent reported pain in one or both shoulder(s), while 47% reported pain in one or both hands, followed by pain in the lower-back (42%), hip(s) (21%), and neck (15%). Pain located in the wrist(s) (6%) was the least reported pain location for this sample.

Interrelationships of Arthritis Symptoms, Pain Locations, and Pain Intensity

A series of bivariate correlations were calculated to examine the strength and significance of the relationships between pain intensity and measures of depression, pain locations, total number of pain locations, total number of chronic diseases, and selected demographic characteristics. Results showed that pain intensity was significantly associated with joint swelling (r=.22, P<.01), joint stiffness (r=.19, P<.05), muscle weakness (r=.29, P<.001), and limited joint movement (r=.18, P<.05) (Table 3). These coefficients indicate that respondents who experienced greater pain intensity tended to report joint swelling, stiffness, muscle weakness, and limited

Table 2.	Prevalence of arthritis	symp-
toms and	pain locations	

Variable	%
Arthritis symptoms	
Joint stiffness	71%
Joint pain	95%
Joint swelling	66%
Weakness	59%
Movement	64%
Pain locations	
Shoulder(s)	61%
Knee(s)	77%
Hand(s)	47%
Lower back	42%
Hip(s)	21%
Neck	15%
Wrist(s)	6%

joint movement. Table 3 shows that experiencing pain in the hand(s) was significantly related to greater pain intensity (r=.21, P<.01).

Bivariate Associations of Pain Intensity and Psychosocial Variables

Pain intensity was inversely associated with age (r=-.23, P<.01), indicating that respondents who perceived their pain to be more intense tended to be younger. Significant positive coefficients were also found between pain intensity and depression (r=.32, P<.001), total number of pain locations (r=.21, p<.01), and the total number of chronic diseases (r=.17, P<.05). These coefficients suggest that greater pain intensity was significantly associated with reporting more depressive symptoms, pain locations, and chronic diseases.

Multivariate Analysis

A hierarchical multiple regression analysis was calculated to determine the amount of unique variance in pain intensity accounted for by the arthritis symptoms, demographic and other physical health and behavioral variables. Five arthritis symptoms were entered in the first model of the regression analysis. These indicators accounted for 20% of the total pain variance. Model I shows

Table 3. Intercorrelations betweenpain intensity and arthritis symptomsand pain locations

Variable	r
Arthritis symptoms	
Joint swelling	.215†
Joint stiffness	.192*
Joint pain	.094
Muscle weakness	.294‡
Limited joint movement	.179*
Pain locations	
Shoulder(s)	.147
Wrist(s)	.067
Hand(s)	.2051
Hip(s)	.086
Knee(s)	.105
Neck	002
Lower back	.109

that of the 5 arthritis symptoms, only muscle weakness (β =.20) and limited joint movement (β =.24) were significant indicators of pain intensity. The demographic factors were entered in the second model (Model II) of the regression analysis. None of these variables were significant predictors of pain intensity. When the demographic characteristics were entered in the regression model, limited joint movement remained as a significant indicator, while muscle weakness did not. The addition of the third set of indicating variables (depression, total number of chronic diseases, and total number of pain locations) explained an additional 8% of the pain variance (Model III). Depression (β =.22) was the only significant predictor in this set of indicating variables. The effects of limited joint movement were insignificant when the third set of variables were included in the regression analysis. The fourth set of variables (shoulder, wrist, hand, hip, knee, neck, lower back) accounted for another 2% of the unique pain variance (Model IV). The full regression model was significant (F[19,110]=2.17, P<.01) and accounted for 31% of the total variation in pain intensity. When the four models were included in the final regression

analysis, limited joint movement $(\beta = .21)$ and depression $(\beta = .29)$ were the only significant indicators of pain intensity. The standardized betas indicated that respondents with a limitation in joint movement and those who reported more depressive symptoms tended to describe their pain as more intense (Table 4).

DISCUSSION

The literature suggests that the prevalence of pain is increasing in older Americans. Yet, few studies have examined factors associated with pain in older community-dwelling African Americans. Due to the lack of research in this area, the objective of this investigation was to identify specific demographic, physical, and psychological indicators to explain the pain experience in this sample of adults.

As discussed previously, research has focused primarily on differences in the pain experience between Caucasians, African Americans, and other racial and ethnic groups. However, in a recent review, Bonham³⁹ shows that few studies have systematically assessed indicators of pain within samples of older African Americans.

Results from our bivariate analyses indicate that all the arthritis symptoms (joint swelling, joint stiffness, muscle weakness, and limited joint movement), except for joint pain, were significantly related to experiencing greater pain intensity. Our results also found that participants who reported more intense pain tended to be younger, reported more depressive symptoms, experienced more pain in their hand(s), and reported more chronic diseases.

This study further tested a multivariate model to assess the relative contributions of arthritis symptoms, demographic characteristics (age, gender, education, and income), pain locations, and various behavioral and physical health variables in explaining pain in

 Table 4. Hierarchical regression analysis of pain intensity and physical and psychosocial factors

 Models

	Models					
Variable	Model I	Model II	Model III	Model IV		
Arthritis symptoms						
loint swelling	.11	.12	.04	.04		
loint stiffness	.12	.09	.10	.11		
loint pain	.10	.08	.08	.07		
Muscle weakness	.20*	.17	.11	.11		
Limited joint movement	.24†	.23*	.17	.21*		
R	.45					
R ²	.20					
R ² -change	.20					
<i>F</i> -ratio	5.18 ‡					
Demographic factors						
Age		16	12	13		
Gender		03	.01	.03		
Education		04	.03	.03		
Income		04	04	00		
R		.46				
R ²		.21				
<i>R</i> ² -change		.02				
F-ratio		3.03 ⁺				
Comorbidity						
Depression			.28†	.29†		
Total chronic diseases			.01	.04		
Total pain locations			.09	01		
R			.54			
R ²			.29			
R ² -change			.08			
F-ratio			3.39 ‡			
Pain locations						
Shoulder				.04		
Wrist				.10		
Hand				05		
Hip				.01		
Knee				01		
Neck				.10		
Lower back				.01		
R				.56		
R ²				.31		
<i>R</i> ² -change				.02		
F-ratio				2.17 †		
* <i>P</i> <.05; † <i>P</i> <.01; ‡ <i>P</i> <.001.						

In the final regression model, limited joint movement and depression were the most significant indicators of greater pain intensity. tensity. Results of this analysis indicate that after controlling for demographic and behavioral variables, and pain locations, arthritis symptoms accounted for most of the explained variance. In the final regression model, limited joint movement and depression were the most significant indicators of greater pain intensity.

As expected, depression showed a significant relationship to pain. This

ARTHRITIS SYMPTOMS AS INDICATORS OF PAIN - Baker

finding is consistent with previous studies reporting significant relationships between pain and depression^{40–41} and between pain and depression among patients with arthritis.^{15,42} Keefe, Wilkins, Cook, Crisson, and Muhlbaier⁴³ found that depression was an important predictor of pain and pain behavior in a sample of low-back pain patients. Similarly, from a series of population-based studies, Von Korff and Simon⁴¹ found a significant and consistent relationship between pain and depression.

Another important finding was the significant contribution limited joint movement made in explaining the variance in pain intensity. The relationship between pain and physical functioning is evident in a number of studies,^{44–45} particularly for persons with a chronic disease. For example, having a chronic disease is notably one of the leading causes of pain,⁴⁶ and may have a significant impact on one's level of physical functioning.⁸ Of these chronic conditions, arthritis is known for causing considerable pain and physical disability, particularly in older adults.⁴⁷

Although not the primary focus of this investigation, we found that age and gender did not emerge as significant predictors in the context of controls for other factors. Contrary to previous studies, women are more likely than men to experience recurrent, intense, and persistent pain, and tend to report more frequent and severe episodes of pain.48-49 It is unclear why this study had different findings, although one would expect for females to report greater pain intensity than males. An examination of the means and standard deviations for pain intensity by gender did not suggest that the males and females differed on this measure. Since gender was not a significant predictor in the regression model, it may be theorized that intercorrelations between gender and other indictors were complex, and the independent affect of gender was not detected in the multivariate analysis. It is also possible that including the arthritis symptoms

and other behavioral factors in the regression analysis reflects the importance these variables have in the pain experience beyond the influence of gender and other psychosocial variables.

The outcome of pain intensity may also be influenced by other sources of variance not accounted for in the regression model. Several studies have focused on the potential influence that personality has in reporting and experiencing pain.²⁰ McIntosh⁵⁰ suggests that an individual's personality may serve as a mediator for responses to pain. For instance, individuals with an extroverttype personality are known to exaggerate and complain more about the pain experience, are less tolerant of pain, and seek mechanisms to relieve pain sooner. Introverts, however, complain less and are more tolerant of the pain experience. Another possible contributing factor might be the coping style(s) and strategies that individuals use to manage pain. Jordan and colleagues¹⁷ found that African-American women with rheumatoid arthritis were more likely to engage in coping strategies that involved praying, whereas Caucasian women were more likely to ignore their pain. Results from their study suggest that examining cultural influences on coping and the experience of illness and pain may be important in understanding these processes.

A potential limitation of this study was the use of self-reporting data, because this measure relies on the participants' recall of certain events, situations, and illnesses. Self-reporting is often subject to error and may be particularly problematic when assessing the health of older adults. This observation is important given the concern that self-reporting of health among older adults is largely grounded in their ability to perform certain physical tasks⁵¹ and is often associated with depression and clinically-defined illnesses.52 The inability to determine whether the pain episode was acute vs chronic could contribute to bias, as well. Considering the estimated

prevalence of chronic pain among the elderly in community-based and institutional settings, this differentiation is essential.

Additionally, due to the cross-sectional nature of the study, specifying the causal or temporal order of the relationship between pain intensity and depression or the relationship between pain intensity and chronic diseases was impossible. Longitudinal analyses and the use of structural equation modeling are needed to demonstrate causal relationships among these factors.44 In addition, we did not assess the impact of medication use in this study. Future analyses should include this variable considering the influence certain medications have on physical and psychological health and outcomes.

Despite these limitations, the findings of this study contribute to the literature in several ways. First, this study is one of a few investigations that has examined pain in a sample of community-dwelling African Americans 50 years of age and older. Given that African Americans are disproportionately diagnosed with more severe and debilitating illnesses, are likely to be diagnosed at a younger age with a medical disorder, and are more incapacitated from diseases, it is critical to understand the impact of pain among this group of adults.53-54 Secondly, these findings underscore the importance of continued research on disease processes, as well as, physical and mental health outcomes both within and between diverse groups of older adults.

Research involving more participants from varying racial and ethnic backgrounds is important, particularly research involving various racial and ethnic groups, which may uncover similarities and/or differences in reporting behaviors and patterns of specific chronic diseases, pain locations, depression, and pain intensity. Only a few studies have examined racial differences (specifically between Caucasians and African Americans) in perceptions of painful

ARTHRITIS SYMPTOMS AS INDICATORS OF PAIN - Baker

stimuli.41 However, comparative investigations of this sort should be carefully planned and executed in order to avoid the mistakes of prior research. Future comparative investigations of racial and ethnic groups must be defined in a meaningful and consistent manner across different studies. Further, methodological and study differences such as the use of culturally sensitive pain instruments, quantitative vs qualitative studies,55-56 laboratory testing vs clinical reports of pain,32 and differences in the location of pain measured (eg, facial pain, musculoskeletal pain), may compromise the ability to compare across studies.

The potential benefits of such an approach are significant and could possibly address questions of how socialization patterns and other factors that characterize the racial and ethnic groups under investigation shape the pain experience. Differences in historical, social, economic, political, psychological, and prior healthcare experiences may compromise the comparability of pain perception and responses across older persons from various racial and ethnic groups. These experiences may also influence the interpretation and reporting of symptoms associated with pain and adherence to prescribed medical interventions or regimens.

In summary, we found that reporting more depressive symptoms and experiencing a limitation in joint movement were significantly associated with greater pain intensity among our sample of older African Americans. Investigations that examine the indicators of pain intensity within defined racial and ethnic groups are a necessary first step for developing a body of knowledge that will yield more meaningful and valid comparisons and inferences between different groups.⁵⁷ These research efforts would provide a scientific basis for understanding the physical and psychological implications of pain among older African Americans. More importantly, these initiatives would help develop

models to assess how social, cultural, and environmental factors influence the daily experience of pain among adults from racially and ethnically diverse populations.

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References

- Arthritis Foundation. Arthritis myths and facts. Fact sheet [on-line] 2000. Available at: http://www.arthritis.org/resources/fs/ Myths_and_Facts.asp.
- National Institute of Arthritis and Musculoskeletal and Skin Diseases. January 1998. Questions and answers about arthritis pain [on-line]. Available at: http://www.nih.gov/ niams/healthinfo/arthpain.htm.
- Arthritis Foundation. 1998. Arthritis and African Americans fact sheet [on-line]. Available at http://www.arthritis.org/resources/fs/ Myths_and_Facts.asp.
- Centers for Disease Control and Prevention (CDC). Current trends prevalence of disabilities and associated health conditions—United States, 1991–1992. MMWR. 1994;43: 737–739.
- Federal Interagency Forum on Aging Related Statistics. Older Americans 2000: Key Indicators of Well-Being. 2000.
- International Association for the Study of Pain. In: Crombie IK, Croft PR, Linton SJ, LeResche L, Von Korff M, eds. *Epidemiology* of Pain. IASP Press; 1999.
- Hagglund KJ, Haley WE, Reveille JD, Alarcón GS. Predicting individual differences in pain and functional impairment among patients with rheumatoid arthritis. *Arthritis Care Res.* 1989;32:851–859.
- Kazis LE, Meenan RF, Anderson JJ. Pain in the rheumatic diseases. *Arthritis Rheum.* 1983; 26:1017–1022.
- Keefe FJ, Bonk V. Psychosocial assessment of pain in patients having rheumatic diseases. *Pain Manage Rheum Dis.* 1999;25:81–103.
- Skevington SM. Psychological aspects of pain in rheumatoid arthritis: a review. *Soc Sci Med.* 1986;23:567–575.
- Arnstein P, Caudill M, Mandle CL, Norris A, Beasley R. Self efficacy as a mediator of the relationship between pain intensity, disability, and depression in chronic pain patients. *Pain.* 1999;80:483–491.

- Tait RC. Assessment of pain and response to treatment in older adults. In: Lichtenberg PA, ed. *Handbook of Assessment in Clinical Gerontology.* New York, NY: John Wiley & Sons Inc; 1999:555–584.
- Lichtenberg PA, Skehan MW, Swensen CH. The role of personality, recent life stress, and arthritic severity in predicting pain. J Psychosom Res. 1984;28:231–236.
- Mobily PR, Herr KA, Clark MC, Wallace RB. An epidemiologic analysis of pain in the elderly. J Aging Health. 1994;6:139–154.
- Won A, Lapane K, Gambassi G, Bernabei R, Mor V, Lipsitz LA. Correlates and management on nonmalignant pain in the nursing home. J Am Geriatrics Soc. 1999;47:936–942.
- Charter RA, Nehemkis AM, Keenen MA, Person D, Prete PE. The nature of arthritis pain. *Br J Rheumatol.* 1985;24:53–60.
- Jordan MS, Lumley MA, Leisen JCC. The relationships of cognitive coping and pain control beliefs to pain and adjustment among African-American and Caucasian women with rheumatoid arthritis. *Arthritis Care Res.* 1998; 11:80–88.
- Radnov BP, Frost SA, Schwarz HA, Augustiny KF. Experience of pain in rheumatoid arthritis—an empirical evaluation of the contribution of developmental psychosocial stress. *Acta Psychiatr Scan.* 1996;93:482–488.
- Fifield J, Reisine ST, Grady K. Work disability and the experience of pain and depression in rheumatoid arthritis. *Soc Sci Med.* 1991; 33:579–585.
- Lichtenberg PA, Swensen CH, Skehan MW. Further investigation of the role of personality, lifestyle, and arthritic severity in predicting pain. J Psychosom Res. 1986;30:327–337.
- Roy R. A psychosocial perspective on chronic pain and depression in the elderly. *Soc Work Health Care.* 1986;12:27–36.
- Anderson LP, Rehm LP. The relationship between strategies of coping and perception of pain in three chronic pain groups. *J Clin Psychol.* 1984;40:1170–1177.
- 23. Baszanger I. Pain: its experience and treatments. *Soc Sci Med.* 1989;29:425–434.
- Garron DC, Leavitt F. Demographic and affective covariates of pain. *Psychosom Med.* 1979;41:284–290.
- Villarruel AM, de Montellano BO. Culture and pain: a Mesoamerican perspective. Adv Nurs Sci. 1992;15:21–32.
- Wolff BB, Langley S. Cultural factors and the response to pain: a review. *Am Anthropol.* 1968;70:494–501.
- Faucett JA, Gordon N, Levine J. Differences in postoperative pain severity among four ethnic groups. *J Pain Symptom Manage*. 1994;9: 383–389.
- Linn MW, Hunter KI, Linn BS. Self-assessed health, impairment and disability in Anglo, Black, and Cuban Elderly. *Med Care.* 1982; 18:283–288.
- 29. Johnson-Umezulike JM. A comparison of

ARTHRITIS SYMPTOMS AS INDICATORS OF PAIN - Baker

pain perception of elderly African Americans and Caucasians. *Nurs Conn.* 1999;12:5–12.

- Chapman WP. Measurements of pain sensitivity in normal control subjects and in psychoneurotic patients. *Psychosom Med.* 1944;6: 252–257.
- Edwards RR, Doleys DM, Filligim RB, Lowery D. Ethnic differences in pain tolerance: clinical implications in a chronic pain population. *Psychosom Med.* 2001;63:316–323.
- 32. Weisenberg M, Kreindler ML, Schachat R, Werboff J. Pain: anxiety and attitudes in Black, White, and Puerto Rican patients. *Psychosom Med.* 1975;37:123–135.
- 33. Edwards CL, Fillingim RB, Keefe F. Race, ethnicity, and pain. *Pain.* 2001;94:133–137.
- Paget SA, Robbins L. Issues in cross-cultural research: an overview. *Arthritis Care Res.* 2001;45:109–110.
- Melzack R. The McGill Pain Questionnaire: major properties and scoring methods. *Pain*. 1975;1:277–299.
- Linn MW, Linn BS. Self-Evaluation of Life Function (SELF) Scale: a short, comprehensive self-report of health for elderly adults. J Gerontol. 1984;39:603–612.
- Radloff LS. The CES-D Scale: a self-report depression scale for research in the general public. *Appl Psychol Meas.* 1977;1:385–401.
- Newton RR, Rudestam KE. Your Statistical Consultant: Answers to Your Data Analysis Questions. Thousand Oaks, Calif: Sage Publications Inc; 1999.
- Bonham VL. Race, ethnicity, and pain treatment: striving to understand the causes and solutions to the disparities in pain treatment. *J Law Med Ethics*. 2001;29:52–68.
- 40. Averill PM, Novy DM, Nelson DV, Berry

LA. Correlated of depression in chronic pain patients: a comprehensive examination. *Pain.* 1996;65:93–100.

- Von Korff M, Simon G. The relationship between pain and depression. *Br J Psychiatry*. 1996;168:101–108.
- Watkins KW, Shifren K, Park DC, Morrell RW. Age, pain, and coping with rheumatoid arthritis. *Pain*. 1999;82:217–228.
- Keefe FJ, Wilkins RH, Cook WA, Crisson JE, Muhlbaier LH. Depression, pain, and pain behavior. J Consult Clin Psychol. 1986;54: 665–669.
- Parker JC, Wright GE. The implication of depression for pain and disability in rheumatoid arthritis. *Arthritis Care Res.* 1995;8: 279–283.
- Roberts BL, Matecjyck M, Anthony M. The effects of social support on the relationship of functional limitations and pain to depression. *Arthritis Care Res.* 1996;9:67–73.
- US Department of Health and Human Services. *Health, United States, 1999: Health and Aging Chartbook.* DHHS Publication No. PHS 99-1232-1.
- Manton KG, Patrick CH, Johnson KW. Health differentials between Blacks and Whites: recent trends in mortality and morbidity. *Milbank Q.* 1987;65:129–199.
- Sheffield D, Biles PL, Orom H, Maixner W, Sheps DS. Race and sex differences in cutaneous pain perception. *Psychosom Med.* 2000; 65:517–523.
- 49. Unruh AM. Gender variations in clinical pain experience. *Pain.* 1996;65:123–167.
- McIntosh IB. Psychological aspects influence the thresholds of pain. *Geriatr Med.* 1990;20: 37–41.

- 51. Harper MS, Alexander CD. Profile of the Black elderly. In: Harper MS, ed. *Minority Aging: Essential Curricula Content for Selected Health and Allied Health Professions.* Washington, DC: Health Resources and Services Administration, Department of Health and Human Services; 1990. DHHS Publication No. HHS (P-DV-90-4).
- Leibson CL, Garrard J, Nitz N, Waller L. The role of depression in the association between self-rated physical health and clinically defined illness. *Gerontologist.* 1999;39:291–298.
- Barzagan M, Hamm-Baugh VP. The relationship between chronic illness and depression in a community of urban Black elderly persons. J Gerontol. 1995;50B:119–127.
- Gibson RS, Jackson JS. The health, physical functioning, and informational supports of the Black elderly. *Milbank Q.* 1987;65:421– 456.
- Lipton JA, Marbach JJ. Ethnicity and the pain perception. Soc Sci Med. 1984;19:1279– 1298.
- Greenwald HP. Interethnic differences in pain perception. *Pain.* 1991;44:157–163.
- Whitfield KE, Baker-Thomas TA. Individual differences in aging among African Americans. *Int J Aging Hum Dev.* 1999;48:73–79.

AUTHOR CONTRIBUTIONS

Design and concept of study: Baker Acquisition of data: Baker Data analysis and interpretation: Baker Manuscript draft: Baker Statistical expertise: Baker Acquisition of funding: Baker Administrative, technical, or material assistance: Baker Supervision: Baker