CHRONIC PAIN IN OLDER BLACK AMERICANS: THE INFLUENCE OF HEALTH AND PSYCHOSOCIAL FACTORS

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Chronic pain may differentially affect racial and ethnic minorities while diminishing their mental well-being and physical health. Although the literature documents the impact of chronic pain on physical, psychological, and social well-being in White Americans, the impact of chronic pain in Black Americans has not been extensively investigated. This study examined the relationship between pain intensity, health variables, various demographic characteristics, and psychosocial factors in a sample of older Black Americans ($N=189$). Participants were older, community-dwelling Black Americans with a mean age of 69.8 ± 9.12 years. Results showed that reporting more depressive symptoms, greater physical impairment, and being younger were significant indicators of pain intensity and accounted for 27% ($R=.52$) of its variation. These results suggest that pain adversely affects the psychological and social well-being in some older Black Americans. This investigation emphasizes the need for further studies examining within-group differences of the pain experience. This research may help develop models that assess how social, cultural, environmental, physical and psychological health factors influence the daily experience of pain in racially and ethnically diverse populations. (*Ethn Dis.* 2005;15:179–186)

Key Words: Black Americans, Pain, Race and Ethnicity, Depression, Physical Impairment, Health

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INTRODUCTION

Chronic pain is a common health concern that impairs an individual's physical functioning, psychological health, and social well-being.[1–6] Pain also contributes to lost work productivity and increased healthcare expenditures. Defined as an "unpleasant sensory and emotional experience,"[7] pain affects 20%–58% of community-dwelling adults 65 years of age and older because of certain chronic diseases (eg, arthritis, diabetes, osteoporosis), fractures, falls, or other health-related problems associated with aging.[8–11] The reduction in health status due to pain is a growing public health concern, particularly among older adults. This observation is important, considering the effect pain will have on the ability of older adults to function physically, psychologically, and socially.[12]

While older individuals are more vulnerable and suffer increased morbidity from pain, they are also at an increased risk for the under-treatment of pain.[13–15] More specifically, older adults who are racial or ethnic minorities may be at an increased risk for chronic pain and under-treatment as well.[16–18] Although Black Americans represent 13% of the US population, they are disproportionately diagnosed with more severe and debilitating illnesses.[19–21] They are also more likely to be diagnosed at a younger age with a medical condition and are more incapacitated from similar diseases than White Americans.[19–21] Green and colleagues[22] demonstrated these differences in a sample of older Black chronic pain patients who reported more posttraumatic stress, disability related to pain, depression, and irritability than older non-Hispanic White chronic pain patients. Similarly, younger Black chronic pain patients were found to report more suffering, less control of pain, and were more irritable because of pain than younger non-Hispanic White chronic pain patients.[23] Despite the obvious differences in these comparative investigations, whether the increased psychological perturbations seen in individuals with chronic pain are more pronounced in Black Americans than in White Americans is unknown.[22]

Although limited information exists about the clinical pain experiences of Black Americans in general and older Blacks in particular, emerging literature demonstrates disturbing racial and ethnic disparities in pain management.[24–26] Bernabei et al[27] showed that pain assessment and treatment in older Black Americans living in nursing homes was less than that for older White Americans. Similarly, Cleeland[28] found that racial and ethnic minority persons were at risk for under-treatment of cancer pain. Differences in pain management and treatment by race and ethnicity have also been demonstrated for cardiac catheterization,[29] isolated long-bone fractures,[30] myocardial infarction,[31] and post-operative and cancer pain.[28] Considerable evidence, as reviewed by Green and colleagues,[32] shows disparities in pain experience and management by race and ethnicity in emergency pain care, chronic malignant pain, and pain management in special populations (ie, older adults, persons with sickle cell disease). These reported disparities may be facilitated by differences in healthcare access and utilization, historical and social factors, and physician variability (eg, sex, race).[33]

Despite the significant conceptual and methodologic findings of these investigations, research on chronic pain is limited in several respects. One limita-

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tion is that the research does not identify the magnitude of intraracial or ethnic group variability. Previous research primarily focused on differences between Black Americans and White Americans[34,35] or differences between White Americans and other racial and ethnic groups in chronic pain, by using experimental models or retrospective data.[36,37] Edwards, Fillingim, and Keefe[38] suggest that even within a given racial or ethnic group, biological, social, and psychological factors may influence the pain experience. More importantly, investigations exploring pain indicators within defined racial and ethnic groups are necessary for developing a body of knowledge that will yield more meaningful and valid comparisons and inferences between different racial and ethnic groups.[39]

Little empirical research identifies the physical, social, and behavioral factors (eg, psychosocial characteristics of pain, symptoms associated with chronic pain, symptom duration, the amount of physical impairment resulting from pain) that influence the experience of chronic pain, pain management, and pain characteristics in racially and ethnically diverse groups. More importantly, the effect of aging among Black Americans with chronic pain is unknown. As an exploration into the pain experience, this study was designed to examine the psychosocial and health determinants of chronic pain in older community-dwelling Black Americans. We hypothesized that specific psychological (depression), health, and demographic characteristics would emerge as significant indicators of pain. The primary objectives of this investigation were to: 1) determine the association of specific health factors (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 psychological, health, and demographic indicators in a sample of older Black Americans.

METHODS

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, depressive symptoms, personality) indicators of older urban community-dwelling Black Americans.

Participants

This investigation was based on a sample of community-dwelling Black Americans ≥50 years of age residing in Baltimore, Maryland. Participants were recruited from seven senior high-rise facilities located in west Baltimore. This investigation was approved by the Pennsylvania State University's Institutional Review Board (IRB). To solicit participation, an information sheet explaining the purpose of the study and the inclusion criteria (≥50 years of age and experiencing pain for ≥3 months) was placed in a central location of each facility. Residents interested in participating in the study and who met the inclusion criteria were scheduled an interview with the research assistant.

During the interview, participants completed a series of questionnaires (eg, demographic characteristics, chronic diseases, medications, pain intensity, pain locations, physical impairment, and depression). At the beginning of each interview, the purpose of the study was explained to each respondent, and all questions regarding the study were answered by the research assistant. Written informed consent was obtained prior to each interview. The interviews were conducted between October 2000 and February 2001. Each interview lasted approximately 1.5 hours. Respondents were compensated for their participation in the study.

Measures

Pain Intensity

Pain intensity was evaluated using the McGill Pain Questionnaire (MPQ), a quantitative measure of the participants' pain perception.[40] The Pain Rating Index (PRI) scale of the MPQ, which consists of 78 words pain descriptors (ranked by degree of intensity), was used to provide an overall pain index. A mean score value was obtained by summing the ranked intensities of all the words chosen by the respondent and then averaged to obtain a single score. A high score indicates greater pain intensity (α=.723).

Chronic Diseases

A subscale of the Self-Evaluation of Life Function (SELF) Scale (a comprehensive assessment of physical, emotional, and social function in older adults) was used to determine the count of chronic diseases.[41] The subscale comprises of a list of chronic diseases assessing if the participant had been doctor-diagnosed with arthritis, bronchitis, diabetes, cataracts, circulation problems, high blood pressure, stomach ulcers, liver disease, kidney disease, or cancer. A comorbidity score was obtained by a count of the total number of chronic diseases.

Demographics

Age was scored in a continuous format. Sex was treated as a dichotomous variable. Education was assessed as a continuous variable reflecting the total number of years of completed formal

Table 1. Means and standard deviations for study variables (*N*=189)

Variable	Mean ± SD
Age	69.8 ± 9.12
Sex (% female)	77%
Education	10.5 ± 2.86
Income (% < $1,000 a month)	79%
Pain intensity*	28.7 ± 14.2
Pain locations	2.91 ± 1.43
Medications	5.41 ± 3.29
Chronic diseases†	2.99 ± 1.66
Depression‡	12.16 ± 10.34

* Pain = average pain score.
† Chronic diseases = average number of diseases.
‡ Depression = average CES-D score.

schooling. Income was coded dichotomously (0=earning >$1,000/month; 1=earning ≤$1,000/month).

Depression

The Center for Epidemiological Studies-Depression scale (CES-D) was used to assess depressive affect, positive affect, somatic signs, and interpersonal distress.[42] The measure yields a composite score that ranges from 0–60; higher scores indicate more depressive symptoms (α=.892).

Pain Locations

The total number of pain locations was assessed by asking participants if they experienced pain in one of the following locations: head, chest, knees, ankles, hips, shoulders, lower back, wrists, elbows, and hands. A total pain location score was determined by a count of the total number of body locations identified by the participant.

Physical Impairment

The Arthritis Impact Measurement Scale 2 (AIMS2) was used to measure physical impairment.[43] The total score includes 25 items from the mobility, walking and bending, hand and finger function, arm function, self-care, and household tasks subscales of the AIMS2. A high score (range=0–10) indicates more physical impairment (α=.901).

Medication

A brief checklist of medications (eg, high blood pressure, diabetes, chest pain), listed on the Medication Use Inventory Scale, was used to assess the total number of medications (category of medications) taken by each participant. A medication score was obtained by the total number of categories of medications reported by each participant.

Statistical Analysis

Data analysis was conducted in three stages. First, descriptive statistics were calculated to provide a profile of 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 the pain index and each independent variable. Correlation coefficients were calculated by using the pairwise deletion procedure.[44] Third, a hierarchical multiple regression model was calculated to assess the amount of unique pain variance accounted for by pain locations, chronic diseases, and medications, while controlling for demographic and behavioral factors. The regression procedure entered the predictor variables in three models. The demographic characteristics (ie, age, sex, education, income) were entered first (Model I), followed by depressive symptoms and physical impairment (psychosocial variables, Model II). The health variables (ie, chronic diseases, pain locations, medications) were entered as the final set of indicating variables (Model III). Standardized beta coefficients were reported to describe the relative importance of the predictor variables within the regression model. All statistical analyses were performed by using (SPSS Version 10.0, SPSS Inc., Chicago, Ill).

RESULTS

Descriptive Statistics

The data in this study derive from face-to-face interviews with 189 Black Americans, with a mean age of 69.8±9.12 years (range=50 to 96 years). Seventy-seven percent of the sample (*N*=146) were women. The mean level of education was 10.5±2.86 years. Over half (59%) of the sample reported formal education at or below the eighth grade level. Less than one third (29%) of the participants completed between 9 to 12 years of education, while 16% reported some education beyond high school. Nine percent of the respondents were married, 22% were divorced, 15% were single/never married, and 46% were widowed. Seventy-nine percent of the respondents reported a monthly income ≤$1,000.

Respondents reported an average of 2.99±1.66 chronic diseases, 5.41±3.29 medications, and 2.91±1.43 pain locations. The mean score for the pain rating index (PRI of the MPQ) was 28.70±14.2, with scores ranging from 0 to 62. The total sample had an average CES-D score of 12.16±10.34, with scores ranging from 0–51 (Table 1).

Interrelationships of Pain Intensity and Independent Variables

A series of bivariate correlations was calculated to determine the strength and significance of the relationships between pain intensity and measures of depres-

Table 2. Intercorrelations between pain intensity and physical and psychosocial variables

Variable	*r*
Age	−.22†
Sex	−.00
Education	−.07
Income	−.07
Chronic diseases	.22†
Pain locations	.27†
Medications	.27†
Depression	.26†
Physical impairment	.39†

† $P<.01$.

Table 3. Hierarchical regression analysis of pain intensity and health and psychosocial factors

	Models		
Variable	Model I	Model II	Model III
Demographics			
Age	−.24*	−.23†	−.21*
Sex	−.02	−.02	−.04
Education	−.11	.01	.04
Income	−.04	−.01	−.01
R	.25		
R^2	.03		
R^2-change	.06		
F-ratio	2.01		
Psychosocial			
Depression		.02*	.18*
Physical impairment		.36‡	.32†
R		.51	
R^2		.26	
R^2-change		.19	
F-ratio		6.87‡	
Health			
Chronic diseases			.11
Pain locations			.04
Medications			.01
R			.52
R^2			.27
R^2-change			.02
F-ratio			4.85‡

* $P<.05$; † $P<.01$; ‡ $P<.001$.

sion, pain locations, chronic diseases, medications, physical impairment, and selected demographic characteristics. Table 2 shows that pain intensity was significantly associated with age ($r=-.22$, $P<.01$), chronic diseases ($r=.22$, $P<.01$), medications ($r=.27$, $P<.01$) pain locations ($r=.27$, $P<.01$), physical impairment ($r=.39$, $P<.01$), and depression ($r=.26$, $P<.01$). These coefficients indicate that respondents who experienced greater pain intensity were younger, were doctor-diagnosed with more chronic diseases, experienced pain in more body locations, were more physically impaired, and reported more depressive symptoms.

Multivariate Analysis

A hierarchical multiple regression analysis was calculated to determine the amount of unique variance in pain intensity accounted for by the health, demographic, and psychosocial variables. Age, sex, education, and income (demographic variables, Model I) were entered in the first model of the regression analysis. These indicators accounted for 6% of the total pain variance. Age ($\beta=-.24$, $P<.05$) was the only significant demographic indicator of pain intensity. Depression and physical impairment (psychosocial variables, Model II) were entered in the second model. Both depression ($\beta=.20$, $P<.05$) and physical impairment ($\beta=.36$, $P<.001$) were significant and accounted for 19% of the total pain variance. The effect of age ($\beta=-.23$, $P<.01$) remained significant when the second set of variables were included in the regression analysis. The third set of variables (health variables, Model III) accounted for another 2% of the pain variance; however, none of the variables were significant. The effect of age, depression, and physical impairment remained significant when the health variables were included in the analysis. The full regression model was significant (F [9, 123]=4.85, $P<.001$) and accounted for 27% (R=.52) of the total variation in pain intensity. When the three models were included in the final multivariate analysis, depression ($\beta=.18$, $P<.05$), physical impairment ($\beta=.32$, $P<.01$), and age ($\beta=-.21$, $P<.05$) were the only significant indicators of pain intensity. The standardized betas indicated that respondents who reported more depressive symptoms, greater physical impairment, and were younger tended to describe their pain to be more intense (Table 3).

DISCUSSION

Recent areas of pain research have focused more on differences between racial and ethnic groups.[22,23,45] Although much of the literature documents the effect of pain on the physical, psychological, and social well-being among White Americans, the psychosocial effect of pain in Black Americans in general and older Black Americans in particular has not been thoroughly examined. Considerable variability of physical and mental health exists within racial and ethnic groups. Black Americans, for example, are an extremely diverse population with considerable historical, social, economic, political, and health differences.[46] Yet, what remains unclear is the amount of observed within-group variability in older Black Americans with chronic pain.

In this study we attempted to determine the psychosocial and health indicators of chronic pain in a sample of older, community-dwelling Black Americans. Our results showed that age was a significant indicator of pain intensity, which suggests that younger participants reported greater pain intensity than older participants. Several possible explanations for this finding exist. Older adults may be more likely than their younger counterparts to develop more effective coping skills when encountered with varied mental and physical health issues.[47] These strategies may allow the older patient to effectively adjust and respond to pain. The older adults may have learned to implement various strategies (eg, medication use and informal and formal support systems) that prove beneficial in decreasing psychological distress and physical illness while improving their overall quality of life.[48] Finally, older adults may have acclimated to higher pain thresholds and developed lower expectations concerning their physical abilities.[49] Similarly, relationships have been found between active coping (eg, John Henryism), hypertension, and bodily pain in a normative sample of Black Americans.[50] John Henryism (a pattern of active coping that consists of trying harder against an obstacle) has been shown to influence how and why an individual copes with certain physically and mentally challenging situations. This observation is important considering that many older Black Americans self-rate their physical and mental health based on their ability to perform certain physical tasks.[51] These findings show the important role specific social, psychological, and environmental factors have in defining pain in older Black Americans. Further studies are needed to examine intra-cultural differences by age, physical functioning, coping styles, and pain perception in older Black Americans.

Our results showed that age was a significant indicator of pain intensity, which suggests that younger participants reported greater pain intensity than older participants.

One consistent observation was depressive symptoms and physical impairment as indicators of greater pain intensity. Previous research has demonstrated a positive linear relationship between depression and physical health in older adults from majority and minority populations.[52–54] Baker[55] found that older Black Americans (*N*=176) with various arthritis related symptoms (eg, joint stiffness, muscle weakness) reported more depressive symptoms. Similarly, older Black Americans with non-malignant and benign pain have been found to report more depressive symptoms than older non-Hispanic White Americans presenting for chronic pain management.[22] Despite these significant results, difficulty remains in interpreting, defining, and diagnosing depressive syndromes and other mental and medical conditions in Black Americans. One explanation is that previous studies examining depression among Black Americans focused primarily on institutionalized samples, which makes extrapolation to the general Black American population difficult.[56,57] Furthermore, the primary emphasis in defining these mental conditions has focused on comparisons involving Black and White Americans.[58] These simple group comparisons do not take into consideration the sociodemographic heterogeneity within the Black population. Although documented health disparities between White and Black Americans are numerous, more research is needed to understand the underlying processes that account for within-group differences in depressive syndromes and how these symptoms may change over time.

Another concern is compliance of older Black Americans to formal medical and mental health services.[24] Because Black Americans are often reluctant to seek mental health care, they may experience substantially more impairment (eg, increased psychological morbidity, impaired social functioning) due to chronic pain.[24,59] Walls and Zarit[60] contend that even though formal services are available, many individuals from racially or ethnically diverse groups do not readily accept services provided through many formal agencies (eg, healthcare professionals). Their research further suggests that the older adult does not have an emotional attachment to these formal agencies as with other agencies (eg, the church). Therefore, more formal services may go unused by older Black Americans. These results clearly demonstrate the variability in access and utilization in medical treatment and how this variation may lead to differences in patient outcomes. Despite evidence showing disparities in the use of formal and informal agencies, disturbing racial, ethnic, and age-related disparities in pain management remain. In a survey of older nursing home residents with cancer pain (*N*=13,625), Bernabei and colleagues[27] found that Black Americans were 63% more likely than White Americans to receive no pain medication. Up to 40% of Black Americans reported daily pain, and 25% received no analgesics. Several studies have also shown that Black Americans may have less access to treatment.[61] In an analysis of New York City pharmacies, adjusted for crime rates, Morrison et al.[62] showed that pharmacies in Black neighborhoods were significantly less likely to stock opioid analgesics than those in predominately White neighborhoods. The confounding factors of physician variability, suboptimal treatment strategies, and decreased ability to obtain medication for the management of pain may also lead to diminished health in older Black Americans living with chronic pain.[19]

These results reveal considerable variability in reports of pain intensity in older Black Americans, which may be attributed to differences in coping skills, social learning, and attitudinal differences.[45,63–65] Despite these psychosocial differences, substantial variability exists in physician decision-making based on age, race, and sex.[25] Considerable evidence, as reviewed by Bonham,[66] shows disparities in the treatment of pain by race, ethnicity, and sex of the physician and patient. Using clinical case vignettes Green et al[67] demonstrated considerable physician variability in the treatment of pain based on the patient's sex. Weisse and colleagues[68] reported similar findings, suggesting that women and minorities are treated less aggressively for pain by male physicians than female physicians. Variability in physician management of chronic pain may have important implications[67,69] that need to be rigorously evaluated to identify if this variability influences inter and intra-cultural health outcomes and differences.

Although not the primary focus of this investigation, we found that sex did not emerge as a significant indicator of pain intensity in the context of controls for other factors. Pain research shows that women are more likely than men to experience recurrent, intense, and persistent pain, and tend to report more frequent and severe episodes of pain.[70,71] Why this study had different findings is not clear, 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 sex did not suggest that the males and females differed. Given that gender was not significant may suggest that the intercorrelations between gender with the other indicators were complex, and the independent effect of sex was not detected in the multivariate analysis. Including various health (eg, physical impairment) and other behavioral (eg, depression) factors in the analysis may reflect the importance these variables have in the pain experience, beyond that of sex and other psychosocial variables. More detailed studies are needed to determine if important sex differences exist in the chronic pain experience that were not captured by the variables in this study.

This study has several limitations. We used self-report data, which rely exclusively on the participant's recall of certain events, situations, and illnesses.[55] This reliance may be problematic given that self-reports of health among older adults are largely grounded in their ability to perform certain physical tasks.[51] Anther limitation of this study is that we did not include a more comprehensive list of chronic diseases and pain locations. Future investigations examining the psychosocial and health outcomes of pain should include a more thorough list of diseases (eg, asthma, stroke, neurologic disease, etc) and pain locations (eg, abdomen, neck, etc), which may have implications in the pain experience. Finally, the cross-sectional nature of the study made it difficult to test or assume the temporal order of the relationship between pain intensity, depression, and physical impairment. Future studies need to employ longitudinal analyses and structural equation modeling to demonstrate causal relationships among these factors.[72] Despite these limitations our findings underscore the importance of continued research on disease processes, as well as physical and mental health outcomes both within and between diverse samples of older adults. The potential benefits of this approach are significant and could address questions of how socialization patterns and other factors characterize and shape the pain experience of individuals from diverse racial and ethnic groups.

This study was aimed at identifying various health and psychosocial factors to help explain the pain experience in a sample of older, community-dwelling Black Americans. We established that being younger, reporting more depressive symptoms, and physical impairment were significant indicators of chronic pain in older Black Americans. Research has primarily focused on the pain experience among White Americans. Only a few studies have, however, focused on the pain experience in older Black Americans.[22,23,55,73] Future studies should emphasize behavior responses of community-dwelling Black Americans with chronic pain and clinical samples of Black Americans seeking pain treatment to determine if differences exist in reported health symptoms, psychological well-being, and quality of life. More empirically grounded theories of pain and pain management are needed to examine how pain severity and specific psychosocial variables (eg, health locus of control, life satisfaction, social support, personality) influence physical and mental health outcomes, well-being, healthcare and treatment utilization, and social relationships in older Black Americans. Data from the present study highlight the utility of employing quantitative measures to assess factors influencing the pain experience in older community-dwelling Black Americans. Another direction for future studies would be to use a triangulation approach, employing qualitative and quantitative methods to assess the experience of pain. Because pain is a subjective experience, using both methods would avoid the distortion of fitting data into a predetermined model (via quantitative methods), and would also allow the patient to present tangible responses when describing the pain experience (via qualitative measures). Future studies need to also focus on exploring pain indicators within defined racial and ethnic groups, which are necessary for developing a body of knowledge that will yield more meaningful and valid comparisons and inferences between different racial and ethnic groups.[39] These research efforts would provide a scientific basis for understanding the physical and psychological implications of pain among Black Americans. More importantly, these initiatives would help develop models that assess how social, cultural, and environmental factors influence the daily experience of pain among adults from racial and ethnically diverse populations.

ACKNOWLEDGMENTS

This study was supported by the National Institute on Aging (Dissertation Grant 1 RO 3 AG 17662-01). The author thanks Dr. Carmen Green, MD and Dr. Linda Chatters, PhD for their valuable comments and suggestions on previous drafts of this manuscript.

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AUTHOR CONTRIBUTIONS

Design and concept of study: Baker
Acquisition of data: Baker
Data analysis and interpretation: Baker
Manuscript draft: Baker