

EVIDENCE OF REDUCED HEALTH-RELATED QUALITY OF LIFE IN OLDER MEXICAN AMERICANS WITH ARTHRITIS

Objective: To examine the association between self-reported physician-diagnosed arthritis and health-related quality of life among older Mexican Americans.

Design: Cross-sectional study involving population-based survey.

Setting: Hispanic Established Population for the Epidemiologic Study of the Elderly (EPESE) survey conducted in Texas, Arizona, New Mexico, Colorado, and California.

Participants: 839 non-institutionalized Mexican American older adults (≥ 75 years) participating in Hispanic EPESE.

Main Outcome Measures: Self-reported physician-diagnosed arthritis; sociodemographic variables; medical conditions; body mass index; and the physical and mental composite scales from the Medical Outcomes Study Short Form 36 Health Survey (SF-36).

Results: 518 (62%) of the subjects reported physician-diagnosed arthritis. Participants with arthritis had significantly lower scores on the physical composite scale (PCS) (mean=35.3, SD=11.3) and the mental composite scale (MCS) (mean=53.5, SD=10.8) of the SF-36 compared to persons without arthritis (PCS mean=42.9, SD=10.9; MCS mean=57.0, SD=8.8). Multiple regression showed that arthritis was associated with decreased PCS and MCS (model estimates of -5.74 [SE=.83]; and -3.16 [SE=.64]), respectively, after controlling for sociodemographic and clinical covariates.

Conclusions: Arthritis is a highly prevalent medical condition in Mexican American older adults. Our findings suggest that deficits in both physical health and mental function contribute to reduced quality-of-life in this population. (*Ethn Dis.* 2011;21(2):230–236)

Key Words: Aging, Disability, Life Satisfaction

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INTRODUCTION

By 2030, it is estimated that the number of Americans aged ≥ 65 will be 20% of the population.^{1–3} Nearly 80% of older Americans are living with at least one chronic condition^{4–6} with arthritis being the most common cause of disability in the United States affecting 47% of persons >65 years.^{7–12} The prevalence of arthritis is projected to increase by 40% as the median age of the US population increases over the next 25 years.¹³ There are 750,000 hospitalizations and 36 million outpatient visits annually attributed to arthritis.^{14,15} Direct medical costs for arthritis were \$81 billion in 2003, up from \$51 billion in 1997.¹⁶

Arthritis affects the older Hispanic population more than any other ethnic group.^{8,9,17} Data from the Asset and Health Dynamic Survey Among the Oldest Old (AHEAD) reported the adjusted prevalence of arthritis was 52% in older Hispanics;¹⁷ 47% in older non-Hispanic Blacks, and 32% in older non-Hispanic Whites. Greater than 65% of the Hispanic population in the United States are Mexican American and it is the fastest growing segment of the population aged >65 .^{8–9}

The symptoms and consequences of arthritis often result in limitations in functional capacity and the ability to perform activities of daily living,^{18–21} severe pain,²² psychological distress,²³ and depression.²⁴ One health outcome of primary interest in patients with

arthritis is health-related quality of life. Arthritis can affect several of the physical and psychological health domains. A number of large population-based studies have examined the effects of arthritis on disability and physical function,^{18–21} but few have assessed overall health-related quality of life.^{25–30} Several instruments, such as the Arthritis Impact Measurement Scales (AIMS/AIMS2), Disease Repercussion Profile (DRP), the Rheumatoid Arthritis Quality of Life (RAQOL), and the Medical Outcomes Study Short Form 36 Health Survey (SF-36), have been used in patients with arthritis to measure health-related quality of life.³¹

Studies examining older adults with arthritis have revealed lower summary values compared to older persons without arthritis, as measured by either the SF-36,^{23,25} or the Centers for Disease Control and Prevention quality of life measure.^{27–30,32–33} Little is known, however, about the effect of arthritis on health-related quality of life in older Mexican Americans.⁸

We examined the association between health-related quality of life in a sample of older Mexican Americans (≥ 75 years) with and without arthritis. We used the SF-36, which defines health-related quality of life as “an individual’s or group’s perceived physical and mental health over time.”³⁴ We selected the SF-36 because it is widely used to assess health-related quality of life and has been validated for this sample of older Mexican Americans.³⁵ We hypothesized that the presence of arthritis would be associated with a low level of physical health in older Mexican Americans after controlling for demographic and clinical covariates.

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We hypothesized that the presence of arthritis would be associated with a low level of physical health in older Mexican Americans after controlling for demographic and clinical covariates.

METHODS

Data sources

Data were from the Hispanic Established Population for Epidemiological Study of the Elderly (EPESE).^{36–38} The Hispanic EPESE is a population-based study that included 3,050 noninstitutionalized Mexican Americans aged >65 years at baseline (1993–4). Participants were from Arizona, California, Colorado, New Mexico, and Texas. The total sample has been described in detail elsewhere.^{36–38} We examined 839 Hispanic participants aged ≥ 75 years who were enrolled in a substudy of frailty. The participants included persons able to complete the physical performance measures required for the frailty study (eg, grip strength, walking speed) and who responded to all questions in the SF-36. All participants were examined in their homes by trained interviewers. The interviewers received 30 hours of instruction on performance-based assessments of physical function including balance, gait, and assessment of daily living skills. The interviews were conducted in Spanish or English, depending on the respondent's preference. Detailed information on the data collection protocol is provided in previous publications.^{36–38} The Hispanic EPESE data, questionnaires, and protocol instructions are available as public use data files at: <http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/2851>. Data for the current study were collected in 2006.

Measurements

Arthritis

A prior physician diagnosis of arthritis was assessed with the question: "Has a doctor ever told you that you have arthritis or rheumatism?" Similar questions have been used in other national surveys³⁹ and epidemiological studies⁶ with adequate sensitivity and specificity.¹⁰

Outcome Measures (Health-Related Quality of Life)

The Short-Form 36-item Health Survey (SF-36) is a widely used measure of self-reported health-related quality of life.^{33,40} The SF-36 consists of 36 items covering 8 domains assessing the subject's physical and mental status. The Physical Composite Scale (PCS) includes the following domains: physical functioning (PF) (10 items); role limitations due to physical functioning (RP) (4 items); bodily pain (BP) (2 items); and general health (GH) (5 items). The Mental Composite Scale (MCS) includes the domains of general mental health (MH) (5 items); role limitations due to emotional problems (RE) (3 items); social functioning (SF) (2 items); and vitality (VT) (4 items).

The PCS and MCS scores range from 0 to 100, with higher values reflecting better health-related quality of life.^{33,41} Both the PCS and MCS have demonstrated good discriminative validity for identifying differences between clinically meaningful groups.⁴¹ The minimum clinically important differences (MCID) for arthritic conditions range between 2.5 to 5 points for both composite scores.^{42–44} The Cronbach's alpha for the SF-36 domains as administered in our sample ranged from 0.76 to 0.96.

Covariates

Sociodemographic characteristics included age (continuous), sex, formal years of education (continuous), and current marital status (ie, married or

unmarried, single/divorced/widow). Body mass index (BMI) was calculated in the standard manner by dividing weight in kilograms by height in meters squared. We assessed the presence of medical conditions by asking the respondents if they had ever been told by a doctor that they had a heart attack, stroke, hypertension, diabetes and/or osteoporosis.

Statistical Analyses

We examined all variables using descriptive and univariate statistics for continuous variables and Chi-square for categorical variables. Multivariable linear regression models were computed to predict the PCS and MCS scores. To investigate the association between arthritis and the SF-36 physical and mental composite scales, we computed 3 models for both outcomes. Model 1 examined the unadjusted relation between arthritis and the SF-36 composite scores. In model 2, we investigated whether the association between arthritis and PCS or MCS was affected by sociodemographic variables (ie, age, sex, education, and marital status). In model 3, BMI and all other medical conditions were included, along with the variables in model 2. The assumptions of linearity, normality, collinearity, and goodness-of-fit were tested and met for each model. All analyses were performed using the SAS, version 9.1.3 (SAS Institute, Cary, NC).

RESULTS

The descriptive statistics for the sample, based on the presence or absence of arthritis, are shown in Table 1. Five-hundred eighteen (62%) of the 839 participants reported doctor-diagnosed arthritis. Participants with arthritis were more likely to be unmarried women, have a lower educational level, and a higher BMI than persons without arthritis. They were also more likely to report hypertension and osteoporosis.

Table 1. Sociodemographic and health-related characteristics for the entire sample and for persons with and without self-reported physician-diagnosed arthritis

Characteristic, n (%)	Total N=839	No self-reported physician- diagnosed arthritis n=321	Self-reported physician- diagnosed arthritis n=518
Sex†, female	538 (64.1%)	175 (54.5%)	363 (70.1%)
Married†, yes	344 (41.0%)	151 (47.0%)	193 (37.2%)
Heart attack	143 (17.0%)	51 (16.0%)	92 (17.7%)
Hypertension†	557 (66.4%)	189 (58.9%)	368 (71.0%)
Diabetes	270 (32.2%)	96 (29.9%)	174 (33.6%)
Osteoporosis†	196 (23.3%)	44 (13.7%)	152 (29.3%)
Stroke	107 (12.7%)	39 (12.1%)	68 (13.1%)
Characteristics, mean (SD)			
Age, yrs	82.1 (4.5)	82.6 (4.1)	81.7 (4.2)
Education, yrs‡	5.07 (3.9)	4.98 (3.7)	4.53 (3.6)
BMI, kg/m ² †	27.3 (5.1)	25.8 (4.3)	27.5 (4.9)
SF=36			
PCS*	38.2 (11.9)	42.9 (10.9)	35.3 (11.3)
MCS*	54.9 (10.2)	57.0 (8.8)	53.5 (10.8)

* $P < .0001$, † $P < .001$, ‡ $P < .05$: independent t-test and chi-square analyses for unadjusted comparisons between arthritis and no arthritis groups. SD, standard deviation; BMI, body mass index; PCS, Physical Component Scale; MCS, Mental Component Scale.

Figure 1 displays domain and composite scores for older Mexican Americans with arthritis and without arthritis. Older Mexican Americans with

arthritis were significantly more likely to report low health-related quality of life in all 8 domains of the SF-36 compared to those without arthritis.

The PCS and MCS means (SDs) in persons with arthritis were 35.3 (11.3), and 53.5 (10.8), respectively.

In model 1, arthritis was significantly associated with a decrease of -7.58 (SE=.79) points on the PCS score (see Table 2). In model 2, when sociodemographic variables (age, sex, education, and marital status) were added, the association decreased but remained statistically significant. In model 3, after controlling for BMI and medical conditions along with the variables in model 2, the association with arthritis was attenuated by approximately 23% ($[7.58-5.74]/7.58=.235$), but remained strong at -5.74 . Entering all covariates in the model resulted in an increase of explained variance from an R^2 of .09 to .21. Other variables significantly associated with the physical aspects of health-related quality of life were age, sex, education, BMI, diabetes, heart attack, osteoporosis, and stroke (see Table 2).

Table 3 presents the regression models for the MCS of the SF-36.

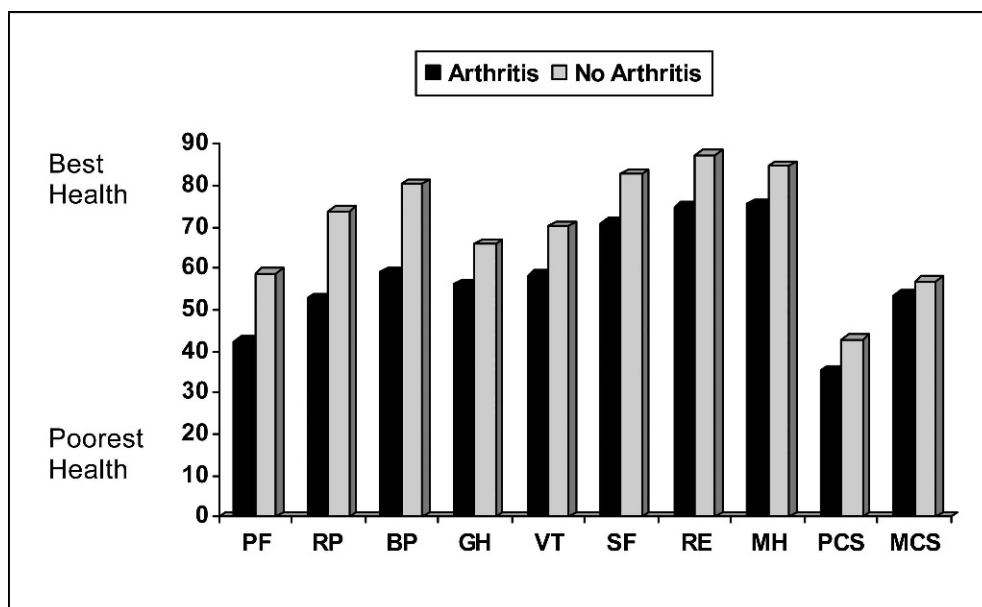


Fig 1. Comparison of SF-36 scale scores between older Mexican Americans with and without self-reported physician-diagnosed arthritis (aged 75+).

PF, physical functioning; RP, role limitations due to physical functioning; BP, bodily pain; GH, general health; VT, vitality; SF, social functioning; RE, role limitations due to emotional problems; MH, mental health; PCS, standardized physical composite scale; MCS, standardized mental composite scale

Table 2. Regression analysis of self-reported physician-diagnosed arthritis on the Physical Composite Scale (PCS); (N=839)

Variables	Model 1			Model 2			Model 3		
	b	SE	P	b	SE	P	b	SE	P
Arthritis	-7.58	.79	<.0001	-6.80	.78	<.0001	-5.74	.83	<.0001
Age, years				-.28	.08	<.001	-.34	.12	<.0001
Sex, female				-3.77	.86	<.0001	-2.58	.93	<.01
Education				.34	.09	<.001	.32	.15	<.001
Married				-.02	.85	.98	.23	.87	.77
BMI							-.17	.15	.03
Hypertension							-.15	.84	.85
Diabetes							-2.31	.82	<.01
Heart attack							-3.69	1.01	<.001
Osteoporosis							-4.84	.92	<.0001
Stroke							-2.31	1.16	.04
R ²	.09			.14			.21		

b, parameter estimate; SE, standard error; BMI, body mass index.

Model 1 included only arthritis.

Model 2, included age, sex, education, and marital status along with arthritis.

Model 3, included medical conditions (hypertension, diabetes, heart attack, osteoporosis, and stroke) along with variables in Model 2.

Among older Mexican Americans, arthritis was associated with a decrease in MCS of -3.48 (SE=.71) points. After controlling for covariates (model 3), arthritis was still significantly associated with decreased mental composite scores (b = -3.16 [SE=.64]). The pattern of covariates significantly associated with the mental aspects of health-related

quality of life was different than for the PCS and included diabetes and heart attack.

DISCUSSION

The aim of the current study was to examine the association between arthri-

tis and health-related quality of life among Mexican American adults aged ≥75 years. Our findings can be summarized as self-reported physician-diagnosed arthritis was significantly associated with decreased scores in the physical (PCS) and mental composite (MCS) scales of the SF-36. The effect was stronger for the PCS.

The prevalence of arthritis was nearly 62% among older (≥75 years) Mexican Americans. This rate is higher compared to 25% to 50% reported in the literature for the general population, suggesting an escalating prevalence of arthritis with age in this sample of Mexican American older adults.^{17,45} The current results extend a prior trend reported from Hispanic EPESE data; the prevalence of arthritis in participants aged ≥65 years was 41%, and it increased to more than 55% for those >70 years of age.⁴⁶

We found that older Mexican Americans with arthritis scored lower on scales that measured physical health compared to participants without arthritis. As expected, given the pathophysiology of osteoarthritis and its association with physical disability, our findings suggest a negative impact on physical aspects of health-related quality of life. According to data from the National Survey of Functional Health Status,³⁴ patients with arthritis scored

Table 3. Regression analysis of self-reported physician-diagnosed arthritis on the Mental Composite Scale (MCS); (N=839)

Variables	Model 1			Model 2			Model 3		
	b	SE	P	b	SE	P	b	SE	P
Arthritis	-3.48	.71	<.0001	-3.28	.72	<.0001	-3.16	.64	<.0001
Age, years				.13	.08	.11	.15	.07	.07
Sex, female				-1.21	.79	.13	-1.01	.77	.22
Education				.14	.09	.13	.15	.07	.10
Married				-.61	.78	.43	-.49	.79	.53
BMI							.1	.06	.15
Hypertension							.03	.81	.97
Diabetes							-1.94	.76	.01
Heart attack							-2.43	1.03	.01
Osteoporosis							-1.16	.92	.18
Stroke							-1.24	1.10	.25
R ²	.03			.04			.06		

b, parameter estimate; SE, standard error; BMI, body mass index.

Model 1 included only arthritis.

Model 2, included age, sex, education, and marital status along with arthritis.

Model 3, included medical conditions (hypertension, diabetes, heart attack, osteoporosis, and stroke) along with variables in Model 2.

Our findings can be summarized as self-reported physician-diagnosed arthritis was significantly associated with decreased scores in the physical (PCS) and mental composite (MCS) scales of the SF-36.

significantly lower on the PCS only, indicating that the impact of arthritis was primarily on physical health.

In our data, Mexican Americans with arthritis had lower MCS scores compared to participants without arthritis. The arthritis-related differences in MCS scores suggest that the disease impacted areas beyond physical function in our sample. Although a direct link between arthritis and mental aspects of health-related quality of life is not obvious, previous research has shown adverse effects of arthritis across dimensions of health-related quality of life, including mental health.^{27,30} For example, Hill et al⁴⁷ found that persons with self-reported physician-diagnosed arthritis have more mental health comorbid conditions and are at greater risk for anxiety and depression compared to persons without arthritis. They suggest that coexisting psychological distress compounds the inherent negative consequences of arthritis for many individuals.⁴⁷

Cultural factors, such as individual versus family orientation, attitudes toward work, illness, and health beliefs, may influence health-related quality of life in patients with arthritis.^{24,48} For example, Escalante et al²⁴ found that Hispanic patients with rheumatoid arthritis, who are not fully acculturated to the mainstream Anglo society, had more depressive symptoms and psychological distress than did Non-Hispanic patients. Fisher et al⁴⁹ found that older Mexican Americans with arthritis, who had a high positive affect, had a lower incidence of disability.

Our study has several limitations. Since data were examined cross-sectionally, the association between arthritis and health-related quality of life cannot be viewed as causal. Longitudinal studies are needed to examine predictive relationships between arthritis and health-related quality of life ratings with other factors, such as depression and pain. Another limitation of our study was that it relied on self-report of physician diagnosed arthritis. Some participants might have had arthritis,

but were not diagnosed at the time of interview and, therefore, misclassified. Self-report of physician diagnosis of arthritis has been used in other national surveys^{39,50} and has demonstrated good concurrent reliability with medical records and acceptable sensitivity and specificity.¹⁰

Our investigation has several strengths, including a large community-based sample of Mexican American older adults. We also used a widely accepted and validated measure to assess health-related quality of life – the SF-36. Information was collected in the participants' homes by trained interviewers and the respondents were given the option to complete the interview and assessment in English or Spanish.

A better understanding of the relation between arthritis and health-related quality of life is necessary to develop effective prevention and treatment programs, particularly for older adults.⁵¹ For example, if future research confirms that older Mexican Americans with arthritis display both reduced physical capacity and impaired mental function compared to persons without arthritis then attention should be devoted to the types of educational and training materials prepared for this population, which could aid them in managing their health and maintaining their independence. This is particularly important for Mexican Americans, some of whom will require information in a bilingual format.⁵² In addition, state health departments that organize physical activity programs, such as the "Buenos Días, Artritis,"⁵³ should consider the implications of the current findings related to both physical and mental functioning in planning activities and education/training materials.

In conclusion, we found arthritis to be highly prevalent in this sample of older Mexican Americans, and that persons with arthritis demonstrated poor health-related quality of life compared to those without arthritis. Ar-

thritis was significantly associated with both low physical and mental components of health-related quality of life, even after adjusting for sociodemographic and clinical covariates. Future population-based longitudinal research is necessary in order to examine how health-related quality of life changes over time and the relation to physical activity, pain and mental function.⁵³ This research is particularly important in underserved groups, such as Mexican American older adults, who are at high risk for arthritis.

ACKNOWLEDGMENTS

This research was supported by the National Institute on Aging - R01 AG017638 (Ottenbacher) and R01 AG010939 (Markides). Dr. Al Snih was supported by a career development grant, K12 HD052023 (PI: Berenson), funded by the National Institute of Child Health & Human Development. The content is solely the responsibility of the authors and does not represent the official views of the institutes above.

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