Self-Care and Professionally Guided Care in Osteoarthritis:

Racial Differences in a Population-Based Sample

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Abstract

Objective—The aim of this study was to examine the prevalence of self-management practices among older White and African American persons with osteoarthritis. Self-management was defined broadly to include all behaviors adopted to reduce morbidity, whether recommended by physicians or not.

Methods—A population-based sample of Medicare beneficiaries (n = 551) was recruited. An expanded set of self-management behaviors using structured and open-ended inquiry, along with use of arthritis-specific medications was elicited.

Results—Few differences in self-care behaviors between race groups were found. However, older African American persons were significantly less likely to have prescriptions for nonsteroidal anti-inflammatory agents (NSAIDs) and more likely to use over-the-counter nonprescription analgesics.

Discussion—Older White and African American persons made similar use of self-care strategies to reduce disease morbidity. African Americans without access to prescription pain relievers substituted nonprescription analgesics. A broader view of self-management is valuable for assessing the ways people may move between professionally guided care and self-care.

Keywords

osteoarthritis; self-care; African American; disparities; prescription medication; population-based sample

The World Health Organization defines self-care as "the activities individuals, families, and communities undertake with the intention of enhancing health, preventing disease, limiting disease, and restoring health." In the WHO definition, self-care activities "are derived from … the pool of both professional and lay experience." Furthermore, these activities "are undertaken by lay people on their own behalf, either separately or in participative collaboration with professionals" (WHO, 1986). The WHO definition is important for stressing the interplay of self-care and professionally guided care. Health professionals may recommend self-care practices, and self-care strategies may also emerge from accepted professional medical expertise. The Chronic Care Model recognizes this feature of self-management by placing it between the "health system" and "community" components of the model (Hung et al., 2007; Wagner, Austin, & Von Korff, 1996).

Self-care has long been recognized as critical in chronic disease management (Adler, 1999; Chappell, 1987; Clark et al., 1991; DeFriese, Konrad, Woomert, Kincade-Norburn, & Bernard,

1994; Hickey, Dean, & Holstein, 1986; Stoller, 1993). For example, in one study of older people with diverse conditions, "a majority managed most symptoms on their own" (Stoller, Forster, & Portugal, 1993). Decisions to ignore or treat a symptom depend mainly on the extent of pain and discomfort, how much a symptom interferes with activities, and perceived seriousness, that is, whether people think it presages other medical issues. Importantly, the most common self-management behavior is use of prescription or over-the-counter products (Segall, 1990). Older adults may seek to reduce out-of-pocket expenses associated with prescription medication by substituting over-the-counter products (Sharkey, Ory, & Browne, 2005), suggesting that the distinction between professionally guided care (physician prescriptions) and self-care (use of alternative over-the-counter products) may be hard to maintain.

Variation in self-care behavior has been linked to sociodemographic features. Women report more self-care then men and show greater variety in self-care behavior (Dean, 1986; Dean, 1989; Kart & Engler, 1994; Rakowski, Julius, Hickey, Verbrugge, & Halter, 1988). Older and more highly educated patients are more likely to engage in self-care (Lam, Catarivas, Munro, & Lauder, 1994; Verbrugge & Ascione, 1987; Reid, 1992). However, African American and White elders may differ in self-care practices (Chappell, 1987; Davis & McGadney, 1993; Kart & Dunkle, 1989). Recent studies are inconsistent. In the case of diabetes, for example, data from the Behavioral Risk Factors Surveillance System suggest that African American adults are more likely to engage in preventive care behaviors (Oladele & Barnett, 2006), but results from a survey of diabetic patients in managed care (Oster et al., 2006) and in the community (Grzywacz et al., 2006) suggest the opposite. Research suggests differences in types of self-care among African American and White elders with heart disease (Musa, Silverman, King, & Harvey, 2003; Silverman, Musa, Kirsch, & Siminoff, 1999).

Osteoarthritis offers a good opportunity for study of differences between African American and White elders in disease self-management. The disease is highly prevalent. The proportion of older adults aged 60+ with radiographic confirmed knee arthritis was 37.4% in the National Health and Nutrition Examination Survey (NHANES); the proportion reporting knee symptoms was 12.1% and hip symptoms 16.3% (Christmas et al., 2002; Dillon, Rasch, Gu, & Hirsch, 2006). Osteoarthritis is also the most common cause of disability in older adults (Ettinger et al., 1994) and a source of substantial morbidity, including sleep disturbance, pain, fatigue, and interference with tasks that define occupational and social competencies. Although one study found that arthritis self-care in African Americans was low (Gregg et al., 2001), others report greater use of self-care among African Americans (Arcury, Bernard, Jordan, & Cook, 1996; Ibrahim, Siminoff, Burant, & Kwoh, 2001).

This research builds on prior literature by examining a relatively large sample of African American and White elders who met research criteria for knee or hip osteoarthritis. In addition, given the centrality of medications in self-management behavior (including substitution of over-the-counter for prescription medication), we considered a variety of professionally guided therapies as part of self-management. We included in self-management all behaviors mentioned by respondents that were adopted to reduce morbidity, whether recommended by physicians or not. We have drawn a broad distinction between "professionally-guided care" (prescription medication, over-the-counter medication, injection therapies, and physical therapy) and "self-care" (dietary change, supplements, topical agents, hot-cold treatments, exercise-movement, complementary-alternative practitioners, home remedies, relaxation-meditation, and massage) and stress that both kinds of self-management were elicited when we asked respondents what they did to manage symptoms of arthritis. Although it is difficult in some cases to distinguish between the two types of self-management, both differ from clinical care received by patients in physician offices.

Apart from eliciting self-care using multiple approaches, we sought answers to three questions: (a) What is the prevalence of self-management behaviors among African American and White men and women with mild and more severe osteoarthritis? (b) What are key correlates of adoption of self-care behaviors, and do these differ from factors associated with professionally guided care, such as prescription medication use? (c) Do self-care behaviors substitute for medication use in the management of osteoarthritis?

Methods

Sample

Community-dwelling adults aged 65 and above residing in Allegheny County, PA, who met screening criteria for knee or hip osteoarthritis and who had no obvious indication of cognitive impairment were eligible to participate. Screening was based on a series of self-report questions derived from the NHANES (Dillon et al., 2006). Respondents had to report that they had (a) pain in their hip or knee on most days for at least a month, (b) pain when walking or standing for at least half the days during the preceding month, and (c) pain of this severity for a period of at least 6 months.

From June 2001 to May 2002, 5094 community-dwelling older adults (65 and older) in Allegheny County were surveyed by telephone regarding eligibility. The sample for the recruitment survey was randomly drawn from individuals aged 65 and above who were included in the Medicare Enrollment File for Allegheny County in April, 2001. The Medicare Enrollment File includes 96% or more of adults aged 65+ nationally and thus is broadly representative of older adults. 52% of eligible respondents agreed to participate ($n = 551$). People participating in the research were more likely to be African American (57.3% of those eligible participated, compared to 48.1% of Whites, $p < .001$), younger (54.6% of participants aged 65–74 participated, compared to 48.6% of nonparticipants, $p < .01$), and more educated (57.8% of participants attended college vs. 42.2% of nonparticipants, $p < .001$). Because we aimed to recruit equal numbers of White and African American elders with osteoarthritis, the sample is not representative of Medicare enrollees generally.

Measures

Derivation of self-care behavior categories—To elicit a complete picture of osteoarthritis self-management, cohort participants first responded to dichotomous items involving a broad set of osteoarthritis management behaviors similar to those suggested by McDonald-Miszczak and Wister (2005) and drawn from the set of self-care behaviors reviewed by Ory and DeFriese (1998). Respondents were asked whether they used a particular strategy in the past 30 days "to help with your arthritis." These included "special diets or dietary supplements," "herbal or natural remedies," "copper bracelets, crystals, or magnets," "salves or ointments," "hot or cold treatments," "exercise," "relaxation techniques," "acupuncture or needle treatments," "injections," "massage therapy," "chiropractor," "physical therapy," and "natural healer or homeopath." We then departed from standard approaches with a qualitative inquiry. When participants endorsed a category, they were asked specifically what kind of behavior they had adopted or product they had used. Each of these was recorded verbatim and coded. Most people reported more than one behavior or product within a category.

This inquiry was valuable in a number of ways. First, it pointed to weaknesses in the initial categorization. For example, dietary change (e.g., attempts to lose weight or special efforts to eat diary products) differed considerably from use of diet supplements (e.g., purchase of mineral or vitamin formulations). Second, many of the behaviors mentioned by participants as an instance of a particular category were more appropriate in another category (for example, a hot shower reported as a home remedy rather than a hot/cold treatment). Thus, allowing

participants to report the particular behavior they had in mind when endorsing a category suggested a need to recategorize responses to dichotomous questions. The research team conducted a consensus review of these categories, which went through a number of revisions. Third, this inquiry showed a far more extensive range of behavior than we expected. For example, although we asked about "exercise," people often responded more broadly with what might be called "movement management strategies" to avoid pain or conserve energy. Finally, we discovered it was difficult in some cases to separate professionally guided care from self-care. Some OTC products could qualify as herbal remedies, and some self-care diet changes (such as limiting salt) could be considered professionally guided care.

Elicitation of professionally guided care and derivation of medication categories—We also asked participants to collect all medications, both prescription and over-the-counter, they were taking to manage osteoarthritis. The interviewer recorded all prescription label information. A research pharmacist and rheumatologist reviewed this information and determined which prescriptions were mostly likely to be prescribed for management of osteoarthritis. Other home-based self-management activities recommended by professionals were also recorded, such as injections and physical therapy.

We categorized arthritis medications into the following 12 classes: rheumatoid arthritis medications (disease modifying antirheumatic drugs [DMARD] and biologic response modifiers [BRM]), corticosteroids, opioid analgesics, Cox-2 selective nonsteroidal anti-inflammatory drugs (NSAID), other NSAIDs, antidepressants, muscle relaxants, benzodiazepines, sedative/hypnotics, gastroprotective agents (e.g., proton pump inhibitors), other potentially appropriate medications (such as gout and osteoporosis medications), and miscellaneous prescription analgesic medications (e.g., tramadol). Other over-the-counter pain relievers (e.g., acetaminophen) were categorized as nonprescription medications.

Final self-management taxonomy—This effort led us to establish two broad categories of self-management. In the self-care domain we included nine categories: dietary change, dietary supplements, topical treatments, hot or cold treatment, exercise/movement management, complementary or alternative treatments provided by a practitioner, home remedies, relaxation or meditation, and massage. The professionally guided care domain included prescription use, use of over-the-counter pain relief or other products, injection therapies, and physical therapy. Although our data allow us to categorize the spectrum of self-management behavior more finely, we have adopted this taxonomy because it allows comparison to prior literature and yet captures the full spectrum of in-home disease management reported by our sample.

Establishing severity of osteoarthritis—To assess osteoarthritis severity, we used the 10-item Lequesne Index (LI) for hip and knee osteoarthritis, which measures such symptoms as pain, stiffness, performance in activities of daily living, and the need for assistive devices (Lequesne, 1997; Lequesne, Mery, Samson, & Gerard, 1986). Because this measure addresses the principal symptom dimensions of osteoarthritis, it has been used as a measure of disease severity. Composite LI scores were categorized into the five severity groups suggested by Lequesne (1997), which range from mild to extremely severe. In categorical analyses, we defined a state of mild-to-moderate (composite LI, 1–3) and more severe (LI, 4–5) disease. As an alternative indicator of severity, respondents also completed a 10-point visual analogue scale for pain.

Analyses

We examined features of the Pittsburgh osteoarthritis cohort at baseline and provide descriptive statistics with respect to sociodemographic, health, and self-management status.

We then determined the proportion of participants reporting each self-care behavior type and class of medication in groups defined by race, gender, and severity of arthritis. Differences between these proportions were compared using the χ^2 statistic. To examine what factors were associated with use of a particular self-care behavior type or arthritis drug class, we developed logistic and multiple regression models. We conducted these analyses for both individual self-management categories (logistic models) and counts across categories (multiple regression models).

We also used a regression framework to examine substitutability of self-guided and professionally guided care. We examined self-care behavior as a predictor of use of prescription medication classes. If self-care behavior was a significant predictor in these models, and significantly reduced the likelihood of medication use, we considered this evidence of substitution.

Results

The osteoarthritis cohort, by design, included roughly equal numbers of White ($n = 267$) and African American ($n = 284$) elders. Women were over-represented among African Americans (206 women, 78 men) compared to Whites (131 women, 136 men). Age did not significantly differ across race by gender groups. For men, the mean age (*SD*) was 73.5 (6.1) among Whites and 73.9 (6.3) among African Americans. For women, it was 72.6 (5.7) among Whites and 73.6 (5.6) among African Americans. African Americans completed fewer years of education than Whites. Among women, 23.3% of African Americans did not complete high school, compared to 10.7% of Whites ($p = .001$). Among men, 46.2% of African Americans and 11.0% of Whites did not complete high school ($p < .001$). Other differences in socio-demographic indicators were significant only among women. For example, African American (66.7%) and White (76.5%) men did not significantly differ in the proportion currently married, whereas African American women were significantly less likely to be married (26.2% vs. 47.3%, $p < .001$).

White and African American elders did not differ in the proportion reporting insurance or other special programs that cover the cost of prescription drugs. However, Whites were more likely to report "no difficulty" in obtaining medications than African Americans (80.4% vs. 66.5%, $p < .001$).

African American men and women were less likely than Whites to rate their health as "excellent" or "very good" (10.3% vs. 24.3% among men, $p < .05$; 14.2% vs. 27.5% among women, $p < .001$), but the four groups did not differ in the number of self-reported chronic conditions (median of 2 in addition to arthritis in all groups). Severity of osteoarthritis differed across racial groups. 60.3% of African American men and 70.4% of African American women were categorized as "extremely severe" or "very severe" by Lequesne Index classification; among Whites, only 40.4% of men and 53.4% of women reported this level of severity ($p < .01$).

Prevalence of self-care behaviors

The 551 participants reported a total of 2521 discrete professionally guided or self-care behaviors. The count of behaviors within each class, as well as the proportion of respondents performing at least one type of behavior within the class, is shown in Table 1. As mentioned earlier, behaviors were sorted into four categories of professionally guided care and nine categories of self-care. About two-thirds of all behaviors recorded fell into the category of self-care.

Table 1 also shows the proportion of respondents reporting different types of self-management practices. The most common professionally guided care included use of any prescription (53.7%) or over-the-counter (63.0%) product. The most common self-care activities included use of dietary supplements (33.0%), topical agents (42.8%), hot/cold treatments (43.0%), and exercise/movement management (47.7%). Other indicators of self-care, such as use of complementary-alternative practitioners, home remedies, and relaxation or meditation, were much less common, with none mentioned by more than 10% of respondents. Participants reported a median of two categories of current self-care behavior (range 0–8). Only 12.6% of the sample reported no self-care behavior over the prior 30 days.

Prevalence of osteoarthritis medication use

Of the total, 30.1% of participants did not have a prescription for an osteoarthritis medication, 46.8% had prescriptions for medications in one class, and the remainder, 23.1%, had prescriptions for drugs in two or more classes. The most commonly used drug classes were over-the-counter analgesics (55.7%), NSAIDS (33%), and Cox-2 inhibitors (24.7%).

Prevalence of self-care behaviors among White and African American men and women, with mild and more severe osteoarthritis

Table 2 breaks out the proportion of participants performing self-care behaviors in each class by severity of osteoarthritis, gender, and race.

Racial differences were not pronounced in comparisons that controlled for severity of disease and gender. African American men and women with more severe disease were less likely to use dietary supplements than Whites (both, $p < .05$). African American men were more likely to use topical agents than White men ($p < .05$).

To explore the effects of race further, we developed logistic regression models for each class of self-care behavior, using a common set of sociodemographic (race, gender, age, education) and disease severity indicators (Lequesne category, visual analogue scale rating of pain). We excluded income from the models because 10% of respondents did not provide this information; however, models that included income as a correlate yielded similar results. Also, we included the dichotomous indicator of respondents' reported difficulty in obtaining prescriptions. This indicator was also not a significant predictor for any self-care or medication outcome. Models for three classes of behavior achieved statistical significance: use of supplements, topical agents, and hot/cold treatments. Results are shown in Table 3.

In the multivariable models, African Americans were significantly less likely to use supplements, even with adjustment for disease severity and sociodemographic status (odds ratio [OR], 0.66; 95% confidence interval [CI], 0.45–0.98). Women and people with greater education were more likely to use supplements. Race was not a significant correlate for use of topical agents or hot/cold treatments; these were more strongly related to disease severity.

Prevalence of medication use among White and African American men and women, with mild and more severe osteoarthritis

The prevalence of medication use for the more common osteoarthritis drug classes is shown in Table 4, again stratifying by disease severity, gender, and race. Other drug class use was rare (all < 2.5%). Only over-the-counter analgesic use significantly differed between race groups.

We developed logistic regression models for the medication classes using the same set of correlates described earlier for self-care behaviors. Models involving this set of correlates were significant for three drug classes: nonprescription analgesics, NSAIDs, and Cox-2 inhibitors.

As shown in Table 5, African Americans were more likely to use over-the-counter analgesics than Whites (OR, 1.41, 95% CI, 1.0–2.0) and significantly less likely to have an NSAID prescription (OR, 0.60, 95% CI, 0.40–0.88). Reported ease in obtaining prescriptions was not a significant correlate. Introducing an interaction term for race by gender revealed a significantly greater likelihood of over-the-counter analgesic use among African Americans (OR, 2.0; 95% CI, 1.1–3.7).

Self-care: Substitute for medication use in management of osteoarthritis?

The regression models allow a test of the extent to which self-care behaviors may substitute for medication use, and vice versa, at least in this cross-sectional setting. We developed regression models in which we added the most prevalent self-care behaviors (use of topical agents, exercise, hot/cold treatments, supplements) as predictors of prescription use. None were significant correlates of NSAID, Cox-2, or over-the-counter analgesic use, suggesting that the self-care behaviors do not substitute for medication use. Likewise, use of NSAIDs or other medications did not reduce the likelihood that participants would adopt particular self-care behaviors.

However, a similar analysis suggested a substitution effect for over-the counter analgesics and prescription NSAIDs. In a logistic regression model involving the same set of correlates shown in Table 3 and Table 5, use of over-the-counter analgesics was associated with a significantly lower likelihood of NSAIDs use (OR, 0.45, 95% CI, 0.31–0.66, $p < .05$). In this model, African Americans were still significantly less likely to have NSAIDs prescription (OR, 0.62, 95% CI, 0.41–0.92, $p < .05$).

Correlates of aggregate self-care and medication regimens

Prior analyses examined discrete classes of self-care behavior and medication. We summed self-care behaviors to develop an indicator of the intensity of self-care and computed a similar sum across medication classes, which we then used as dependent measures in the same regression framework. For the aggregate self-care measure, disease severity ($p < .05$), pain ($p < .05$), and female gender ($p < .05$) were significantly associated with a greater number of self-care behaviors. For the sum of medication classes, African Americans were likely to use fewer osteoarthritis medications ($p < .001$). The same was true for older people ($p < .001$). By contrast, women ($p < .001$) and people with greater disease severity ($p < .01$) were likely to use a greater number of such medications. As in prior results involving discrete self-care behaviors and medication classes, additional regression models introducing the summed indicators (e.g., self-care as a predictor of medication use) showed no evidence of substitution.

Discussion

In this sample of African American and White elders with osteoarthritis, nearly half the sample used topical agents, hot and cold treatments, and exercise/movement management over the prior 30 days to reduce pain, stiffness, and inflammation. The prevalence of these forms of self-care was similar to use of prescription medication for osteoarthritis. In a fairly complete behavioral catalogue, about two thirds of self-management activity represented self-care and a third professionally guided care.

These findings are similar to results reported from the National Survey of Self-Care and Aging, which found that 44.2% used such "physical treatments" to manage symptoms and 48.1% took a prescription medication (Jordan et al., 2000).

In the Pittsburgh cohort, multivariable models suggest that African Americans and Whites do not differ systematically in recourse to self-care strategies; differences in self-care are better

explained by severity of disease, education, and gender. Differences between African Americans and Whites were not pronounced except in the case of dietary supplements.

Our results also suggest that self-care, at least in this cross-sectional framework, does not substitute for medication usage. Self-care intensity and osteoarthritis medication rather go hand-in-hand, with greater recourse to both with more severe disease. This, too, is consistent with findings from the National Survey of Self-Care and Aging. In that study, prescription and over-the-counter medication use and most forms of self-care were significantly more common among people facing more severe symptoms and arthritis-related disruptions in daily life (Jordan et al., 2000).

However, detailed inquiry on arthritis medication prescriptions revealed an important health disparity. African American elders were significantly less likely to have prescriptions for nonsteroidal anti-inflammatory agents (NSAID) and were more likely to use over-the-counter analgesics. They were less likely to use Cox-2 inhibitors as well, though this difference did not achieve statistical significance. These findings confirm reports of racial differences in access to prescriptions among Medicare beneficiaries (Poisal & Murray, 2001). Disparities in this area are likely to be far-ranging, because research also suggests that minorities spend less on medications even when they have the same number of prescriptions (Gaskin, Briesacher, Limcangco, & Brigantti, 2006). Although African Americans in our sample reported greater difficulty in obtaining prescription medications, they were less likely to use NSAIDs even when we adjusted for difficulty in access to such medications.

Our finding of lower use of NSAIDs among African Americans reporting osteoarthritis also supports results from a national VA system medication audit. African American patients in the VA system were less likely to be prescribed Cox-2 selective medications and were prescribed fewer days of medication (Dominick et al., 2003). Insofar as NSAID and Cox-2 medications represent current cutting edge treatment, minorities in our sample appear to lack access to the most appropriate care. Future effort should be dedicated to establishing the source of such disparities. Is it a difference in prescribing, filling prescriptions, or something else? Our data are limited to prescriptions filled (where bottles could be observed), rather than prescriptions written (which respondents may never have filled).

Findings from this research are relevant to both health services research and clinical interventions. Our regression models for self-care and prescription medication use broadly follow the revised Behavioral Model (Andersen, 1995) and its extension to vulnerable populations (Gelberg, Andersen, & Leake, 2000). In what sense is race a "predisposing" factor in self-management similar to other sociodemographic indicators? African American status in this sample was associated with less education, poorer self-ratings of health, less access to prescription medication, and greater severity of arthritis. But models adjusting for these factors showed that African Americans were still less likely to use dietary supplements as a self-management strategy. For models assessing self-management behaviors it will likely be important to consider racial or ethnic status with finer indicators, including health literacy, acculturation, and immigration status. Consideration of these factors may help specify what features of racial or ethnic identity are most relevant to self-management behavior.

Our findings will also be valuable in light of current efforts to cultivate "expert patients." In the case of arthritis, self-management has recently become the focus of randomized clinical trials that seek to determine whether patients trained in appropriate exercise, control of fatigue, adequate nutrition, stress reduction, and effective medication management manage symptoms more effectively. A large trial of such an intervention showed benefit in patient mental health but not in pain or physical function (Buszewicz et al., 2006). A smaller trial showed benefit for physical function (Heuts et al., 2005). Efforts to promote self-management and train "expert

patients" have become widely adapted in the UK National Health Service as a promising way of reducing morbidity in chronic disease (www.expertpatients.nhs.uk). But disparities in access to appropriate prescription medication, as documented here, may undercut these efforts. Given that one third of patient activity to manage symptoms involved professionally guided care, the focus on patient training alone may be inadequate.

More generally, our findings suggest that self-management applies to selection and use of medication. African American patients in our sample appear to have substituted over-the-counter analgesics for NSAIDs and Cox-2 inhibitors. This too is a form of self-management, and it_would be valuable to conduct further research to measure such substitution explicitly. Restriction of the study to self-care narrowly conceived would have missed this important self-management strategy.

More generally, it is now clear that self-management has considerable economic significance. A study that examined traditional medical care and alternative therapies (e.g., acupuncture, chiropractic, massage) found that expenditures on alternative therapies were equivalent to expenditures for traditional medical care (Ramsey, Spencer, Topolski, Belza, & Patrick, 2001). Also, self-care behaviors, such as walking and home safety modifications, have been associated with reduction in monthly Medicare expenditures (Stearns et al., 2000). For this reason, as well for further insight into the ways people manage symptoms, it will be valuable for effective disease management.

Findings from this research should be interpreted in light of its cross-sectional design (so that substitution effects could not be definitively established) and potential biases introduced by nonparticipation. Still, our cohort includes a large number of minority elderly drawn from a population-based study. Also, our protocol for eliciting self-guided and professionally guided care allowed us to identify and categorize perhaps the most complete range of symptom management available in research on self-care in osteoarthritis.

Acknowledgements

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Table 1

Spectrum of Professionally Guided and Self-Care Behaviors Over Prior 30 Days, Pittsburgh Osteoarthritis Cohort

	Behavior or Product as Proportion of Total Disease Management Behaviors (%) (*n* = 2521)	Participants Reporting 1+ Behavior or Product Within Class (%) (*n* = 551)
Prescription medication	17.2	53.7
Over-the-counter medication	17.5	63.0
Injections	1.2	5.3
Physical therapy	1.0	4.4
Dietary change	2.4	8.3
Supplements	13.3	33.0
Topical agents	13.4	42.8
Hot/cold treatments	11.9	43.0
Exercise/movement	14.0	47.7
Complementary/alternative practitioners	1.4	5.6
Home remedies	1.7	6.9
Relaxation/Meditation	1.4	6.0
Massage	2.9	12.9

Table 2

Self-Care Practices in Osteoarthritis Cohort, Last 30 Days, by Disease Severity, Gender, and Race

	Diet Change	Supplements	Topical Agents	Hot/Cold Treatment	Exercise/Movement	CA	Home Remedy	Relaxation-Meditation	Massage
Mild-moderate disease									
Male (n)									
White (81)	11.1	30.9	32.1	28.4	44.4	6.2	7.4	3.7	12.3
African American (31)	6.5	19.4	29.0	22.6	55.2	9.7	6.5	6.5	16.1
Female (n)									
White (61), %	8.2	37.7	31.2	39.3	44.3	4.9	8.2	4.9	6.6
African American (61), %	13.1	42.6	41.0	44.3	51.7	1.6	3.3	4.9	16.4
Severe disease									
Male (n)									
White (55), %	3.6	34.5*	27.3*	41.8	42.3	5.5	7.3	9.1	12.7
African American (47), %	6.4	14.9*	48.9*	53.2	55.3	4.3	6.4	6.4	4.3
Female (n)									
White (70), %	2.9*	45.7*	51.4	51.4	55.1	10.0	8.6	8.6	11.4
African American (145), %	10.3*	30.3*	57.2	49.7	46.5	4.8	6.9	5.5	17.2

Note: CA = complementary-alternative medicine practitioner.

$n = 551$.

*
$p < .05$.

Table 3

Differences by Race, Gender, and Education in Self-Care, Osteoarthritis Cohort

Correlate	Supplements	Topical Agents	Hot/Cold Treatments
White	1.0	1.0	1.0
African American	0.66 (0.45, 0.98)[*]	1.28 (0.88, 1.9)	1.10 (0.76, 1.6)
Male	1.0	1.0	1.0
Female	1.89 (1.3, 2.8)[**]	1.58 (1.08, 2.3)[*]	1.31 (0.90, 1.9)
Mild-moderate OA	1.0	1.0	1.0
Severe OA	0.96 (0.65, 1.4)	1.53 (1.05, 2.24)[*]	1.48 (1.02, 2.16)[*]
Age	0.98 (0.95, 1.01)	1.01 (0.98, 1.04)	0.98 (0.95, 1.01)
Pain scale, 1–10	1.01 (0.94, 1.09)	1.04 (0.97, 1.2)	1.12 (1.04, 1.20)[**]
Education	1.28 (1.05, 1.56)[*]	0.78 (0.64, 0.94)[**]	0.98 (0.81, 1.2)
Model χ^2	22.6[***]	35.5[***]	26.6[***]

Note: Results from logistic regression models, $n = 551$.

[*]
$p < .05$.

[**]
$p < .01$.

[***]
$p < .001$.

Table 4

Medication Use in Osteoarthritis Cohort, Last 30 Days by Disease Severity, Gender, and Race

	Analgesic-OTC	NSAIDs	Cox-2 Inhibitors	Other Analgesic-Rx	Opioid Analgesic	Osteoporosis Drugs	Antidepressants
Mild-moderate disease							
Male (*n*)							
White (81)	44.4	35.8	21.0	4.9	6.2	4.9	2.5
African American (31)	51.6	22.6	9.7	6.5	3.2	9.7	3.2
Female (*n*)							
White (61)	54.1	42.6	34.4	1.6	6.6	21.3	1.6
African American (61)	69.7	27.9	29.5	4.9	3.3	18.0	4.9
Severe disease							
Male (*n*)							
White (55), %	47.3	38.2	20.0	7.3	14.5	3.6	7.3
African American (47), %	70.2*	25.5	21.3	6.4	17.0	2.1	6.4
Female (*n*)							
White (70), %	57.1	40.0	32.9	4.3	8.6	21.4	2.9
African American (145), %	59.3	29.0	22.8	8.3	9.0	15.2	2.8

Note: Rx = prescription; OTC = over-the-counter medication.

n = 551.

*
p < .05.

Table 5

Predictors of Use of Nonprescription Analgesics, NSAIDs, and Cox-2 Inhibitors, Osteoarthritis Cohort

Correlate	Nonprescription Analgesic	NSAIDs	Cox-2 Inhibitor
White	1.0	1.0	1.0
African American	1.39 (0.96, 2.0)[+]	0.61 (0.41, 0.90)[**]	0.71 (0.46, 1.08)
Male	1.0	1.0	1.0
Female	1.07 (0.75, 1.5)	1.19 (0.81, 1.76)	1.81 (1.2, 2.8)[**]
Mild-moderate OA	1.0	1.0	1.0
Severe OA	1.01 (0.69, 1.47)	1.13 (0.76, 1.69)	0.86 (0.56, 1.32)
Age	0.99 (0.96, 1.02)	0.95 (0.92, 0.99)[*]	0.98 (0.95, 1.02)
Pain scale, 1–10	1.09 (1.0, 1.17)[*]	0.98 (0.91, 1.06)	1.08 (0.99, 1.17)
Education	0.93 (0.78, 1.12)	1.07 (0.88, 1.31)	1.06 (0.85, 1.31)
Hard-to-access Rx med	1.0	1.0	1.0
No difficulty	0.91 (0.61, 1.36)	1.08 (0.71, 1.66)	1.15 (0.72, 1.84)
Model χ^2	13.8 ($p = .05$)	18.6 ($p = .01$)	14.8 ($p = .04$)

Note: Results from logistic regression models, $n = 551$.

[+] $p = .08$.

[*] $p < .05$.

[**] $p < .01$.