Sociodemographic and Clinical Correlates of Physical Therapy Utilization in Adults With Symptomatic Knee Osteoarthritis

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Background. Physical therapy is essential for conservative management of symptomatic knee osteoarthritis (OA). However, physical therapy utilization data are limited for knee OA.

Objective. The purpose of this study is to identify correlates of physical therapy utilization among adults with symptomatic knee OA.

Design. The design consisted of secondary analysis using baseline data from a randomized controlled trial of 350 adults with physician-diagnosed symptomatic knee OA.

Methods. Patients completed baseline surveys regarding demographics, pain, function, medical history, and prior physical therapy utilization for symptomatic knee OA. Multivariable logistic regression identified correlates of physical therapy utilization, with models adjusted for body mass index and age. Interactions of race and sex with all other characteristics were evaluated.

Results. One hundred and eighty-one patients (52%) reported prior physical therapy utilization. Factors independently associated with increased odds of physical therapy utilization were female sex (odds ratio [OR] =3.06, 95% CI = 1.58–5.93), bachelor degree or higher degree (OR = 2.44, 95% CI = 1.15–5.16), prior knee injury (OR = 1.86, 95% CI = 1.08–3.19), and duration of knee OA symptoms (OR = 2.16, 95% CI = 1.09–4.29 for >5-10 years; OR = 2.11, 95% CI = 1.10–4.04 for >10 years). Whites who had received a joint injection were >3 times as likely to have utilized physical therapy (OR = 3.69, 95% CI = 1.94–7.01); this relationship did not exist for non-whites who had received joint injections.

Limitations. A sample enrolled in an exercise study may limit generalizability. Self-report of physical therapy may misclassify utilization. It cannot be determined whether lack of utilization resulted from lack of referral or from patients choosing not to attend physical therapy.

Conclusion. Physical therapy is underutilized to manage symptomatic knee OA. Women and those with a bachelor degree or higher degree, prior knee injury, and longer duration of knee OA symptoms were more likely to have used therapy previously. Differences by race in the link between joint injection and physical therapy utilization may reflect a reduced likelihood of referral and decreased use of health interventions for symptomatic knee OA among non-whites, or both.

Physical therapy plays an essential role in the conservative management of symptoms experienced by individuals with knee osteoarthritis (OA) and is recommended by the American College of Rheumatology and by other professional organizations.[1–3] Recent management guidelines recommend at least 6 months of conservative therapy, including physical therapy for patients with symptomatic knee OA prior to having surgery.[4] Physical therapist interventions for knee OA include, but are not limited to, therapeutic exercise, modalities, manual therapy, patient education, and counseling.[4] Evidence from randomized controlled trials and systematic reviews of exercise and physical therapist interventions indicate that these interventions are safe and effective for improving pain, function, and activity in persons with knee OA.[5]

Even though guidelines recommend physical therapy for knee OA, studies of physical therapy utilization for knee OA are scarce. Studies that do exist examine OA in general and have investigated factors associated with access, including referral to physical therapy, perceived need for physical therapy, and attendance to physical therapy sessions.[6–10] In a study that examined physical therapy referral rates for adults with OA, Feldman et al[9] found that 60.4% of family physicians referred their patients to physical therapy. In another study of physical therapy referral for adults with hip or knee OA, referral rates were lower with only 18.7% of all participants receiving a referral.[7]

Utilization of physical therapy services has been associated with a variety of factors, including sex, race, ethnicity, education level, income, insurance coverage, knowledge of benefits of physical therapy, perceived need for physical therapy, and characteristics of the provider referring to physical therapy.[6–9] Andersen's Behavioral Model is one model that can help identify factors associated with physical therapy utilization. In this model, factors effecting utilization are classified into 3 primary categories: predisposing factors, enabling or impeding factors, and need for services. Predisposing factors can be defined as sociodemographic characteristics, such as age, race, knowledge, and understanding of the role of physical therapy and the physical therapist. Enabling or impeding factors are factors associated with access to physical therapy, such as family support for use of physical therapy, comorbidities, health insurance, and joint symptoms. Perceived need encompasses perceived as well as actual need for physical therapy.[3]

In a survey of 409 adults with self-reported OA or rheumatoid arthritis, 39% reported not obtaining rehabilitation therapies, including physical therapy. In this study, the most frequent reasons for not obtaining services were lack of service coverage by the health plan and high costs.[8] Feldman et al[9] investigated physical therapy utilization among adults with rheumatoid arthritis and OA and found that only 26.1% of patients felt they required rehabilitation and perceived a need for these services. Perceived need for services was associated with lower self-efficacy and higher educational attainment. Yeh et al[6] examined referral rates to physical therapy within the first year of an OA diagnosis among 29,012 Taiwanese adults and identified factors associated with physical therapy referral. In this study, 24.8% of adults with OA received physical therapy within the first year of their diagnosis. Referral was positively associated with patients treated by female physicians and by physicians who specialized in rehabilitation medicine and negatively associated with patients who were male, had an older age, and were low income.

As physical therapy is a first-line intervention in the management of knee OA, it is important to elucidate the factors associated with referral and utilization. In fact, the American Physical Therapy Association's revised research agenda emphasizes the need to describe patterns of physical therapy use and characterize factors that contribute to variation in utilization.[11] To our knowledge, although there is limited research that has examined physical therapy utilization in adults with musculoskeletal complaints,

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rheumatoid arthritis, and OA of the spine and hips,[6–8,12–14] there are no previous studies that investigate factors associated specifically with physical therapy utilization in a cohort of patients with knee OA. Therefore, the purpose of this study was to examine physical therapy utilization among a cohort of adults with radiographic knee OA and knee symptoms and to elucidate the clinical and sociodemographic factors associated with utilization.

Methods

Participants

This cross-sectional study examined data from 350 participants with symptomatic knee OA enrolled in a randomized controlled trial titled, "Physical THerapy vs. INternet-Based Exercise Training for Patients with Knee Osteoarthritis (PATH-IN)."[15] Participants were randomly assigned to 1 of 3 groups: participants receiving physical therapy, an internet-based exercise program group, or a wait list control. This study uses data from the baseline assessment, prior to any participants receiving the assigned intervention. Participants in the trial were recruited from the University of North Carolina at Chapel Hill health care system, surrounding communities, and the Johnston County Osteoarthritis Project cohort.[16]

Confirmation of the diagnosis of knee OA was performed through review of electronic medical records or previous radiographs collected from the Johnston County Osteoarthritis Project.[16] To be included in the trial, participants also self-reported current knee symptoms on most days of the week. The institutional review boards of the affiliated hospitals approved the study protocol, and all research was conducted in compliance with the Helsinki Declaration.

Measures

Demographic features of participants. Patients completed a demographic and medical history survey at baseline. Demographic items included age, race (categorized as white, African American, other race), ethnicity (Latino/a vs not Latino/a), sex, education level, employment (working vs not working), marital/relationship status (married or living with a partner vs other) and financial situation. The financial situation item asked participants to report whether their income allowed them to live comfortably, have some money left after expenses, have just enough income to meet basic living needs, or their income did not meet basic needs. This item was dichotomized for the analysis as low (does not meet needs) or high income (meets or exceeds needs).

The medical history survey included the following items: duration of knee symptoms in years, whether participants were taking medications for knee symptoms (Yes/No) or had received a knee injection (Yes/No), number of comorbidities, body mass index (BMI), number of joints (other than the knee) with arthritis symptoms, history of knee injuries that significantly limited walking for at least 2 days, history of falls within the past 12 months, and family history of arthritis or knee OA (siblings, parents, grandparents, or children). For the family history of knee OA variable, we compared those who had no relatives or 1 relative with knee OA versus those who had 2 or more relatives with knee OA.

Knee-related pain and physical function. Participants also completed the Knee injury and Osteoarthritis Outcome Score (KOOS) subscales for Pain and Function in Daily Living (ADL). The KOOS items use a Likert score ranging from 0 to 4. A normalized score is calculated for each subscale (0 = extreme knee problems, 100 = no knee problems).[17] The KOOS has been validated in different populations with varying knee OA severity and durations, as well as in samples of varying ages and activity levels.[18] Reliability of the KOOS for the various subscales is high (random effects intraclass correlation coefficients range from 0.75–0.93). Construct validity when compared to the Short Form-36 corresponding subscales was good, with values ranging from r = 0.46-0.57.[17]

Physical therapy service utilization. Participants reported past physical therapy utilization to manage their knee OA symptoms using a single survey item. "Utilization of Physical Therapy (Yes/No)" served as the primary outcome for the study.

Statistical Analysis

Descriptive statistics were used to characterize the sample, and reported as means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Body mass index (BMI) was categorized based on established categories (BMI = 18 to <25, 25 to <30, and 30 or more). We categorized some variables due to the highly skewed nature of the data based on the distribution of the data. For example, values for the comorbidity variable ranged from 1 to 25 and was categorized as follows: 0 to ≤4, >4 to 9, and >9. Duration of knee symptoms was categorized as <1 year to 5 years, ≥5 years to 10 years, and ≥10 years. The number of joints (other than the knee) with arthritis symptoms was collapsed due to the skewness of data into the following categories: 2 to 3 joints, 4 to 5 joints, and more than 5 joints. Race was collapsed to white and non-white. Education was dichotomized as any education up to a bachelor's degree versus a bachelor's degree or postgraduate work.

We used logistic regression to model bivariate associations between physical therapy utilization for knee OA symptoms (Yes/No) with each sociodemographic and clinical variable. Variables with a $P \leq .20$ or lower in bivariate analyses were entered into a multivariable model to examine independent associations of participant characteristics with the outcome, adjusting for age and BMI. We chose this significance level because it was not highly restrictive, allowing us to capture any variables showing potential associations with physical therapy utilization. We adjusted for age, as physical therapy utilization was defined as any use of physical therapy for knee OA symptoms and not limited to a specific timeframe. Adjustment for BMI was used as patients with higher BMI may have greater symptoms. We also separately evaluated pair-wise interactions of race (white vs non-white) and sex with all

other predictor variables. Analyses were conducted using SAS Version 9.4 (SAS Institute Inc, Cary, NC).

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Results

Participant Characteristics

Of 350 patients, 249 (73.7%) were white, 71.7% female, 49.4% obese or very obese (BMI > 30), and the mean age was 65.3 (SD = 11.1) years. The majority of the non-whites were African American (20.4%). Patients had established disease, with a median duration of knee OA symptoms of 10 years (<1 to 65). In this sample, 147 patients (42.0%) had received a knee joint injection, 175 (50.0%) had a prior knee injury, and 181 (52.0%) reported physical therapy utilization to manage their knee OA. The mean KOOS pain score was 62.0 (18.0) and mean KOOS ADL scale was 66.8 (SD = 19.1). Additional participant characteristics are shown in Table 1.

Correlates With Physical Therapy Utilization

The following variables were significantly associated with utilization of physical therapy in the bivariate analyses: sex, employment status, duration of knee symptoms, history of knee joint injection, and having family members with knee OA (Tab. 2). Female sex, longer duration of knee OA symptoms, receiving a knee joint injection, and having more than 1 family member with knee OA increased physical therapy utilization, whereas being employed decreased the likelihood of physical therapy utilization.

In the multivariable logistic regression model (Tab. 3), adjusting for age and BMI, factors independently associated with increased odds of physical therapy utilization were: female sex, prior knee injury, and duration of knee OA symptoms. Women were 3 times as likely as men to utilize physical therapy for their knee OA. Those with a bachelor's degree or postgraduate work were 2.4 times as likely to utilize physical therapy for their knee OA. Individuals with a prior knee injury were 86% more likely to utilize physical therapy, and those who had been diagnosed with knee OA for 5 years to more than 10 years were 2 times as likely to have used physical therapy. Employment tended to be associated with a reduced likelihood of physical therapy utilization, though this trend as not significant (Tab. 3).

There was a significant interaction between race and history of joint injection (OR = 4.1; 95% CI = 3.26 – 13.37). When examining the interaction for each level of the variables, individuals who were white and had received a joint injection were >3 times as likely to have utilized physical therapy; this relationship did not exist for non-whites (for whites, OR = 3.69; 95% CI = 1.94 – 7.01, whereas for non-whites OR = 1.18; 95% CI = 0.44 – 3.18). There were no other significant interactions.

Discussion

This study aimed to characterize physical therapy utilization among a cohort of patients with symptomatic knee OA and to identify sociodemographic and clinical factors associated with physical therapy utilization. In our study, the prevalence of physical therapy utilization for knee OA was higher (52%) than in the published study on physical therapy utilization among patients with any form of OA (24.8%)[6] and in the study of physical therapy utilization among patients with OA and rheumatoid arthritis (39%).[8] The higher utilization of physical therapy found in our cohort may be explained by a number of factors. First, our participants were recruited for a clinical trial of exercise to manage symptomatic knee OA, potentially leading to a greater preference for physical therapy and exercise to manage knee symptoms. Second, we defined utilization as any utilization of physical therapy versus selecting a specific time period (eg, prior 3 years). Third, the 2 published studies consist of a heterogeneous mix of patients with respect to arthritis diagnosis, and neither specifically examined physical therapy utilization in adults with knee OA. Finally, physical therapy utilization is often not examined alone but reported along with the use of rehabilitation services or modalities.[8] In the study by Hagglund et al,[8] which examined physical therapy utilization among 409 patients with OA and rheumatoid arthritis, 61% of patients who self-identified as needing rehabilitation services (including physical therapy) stated that they actually received these services. In Hagglund's study, it is unclear whether a definition of physical therapy was provided on the patient survey.

With respect to correlates of physical therapy utilization, we found that female sex, a bachelor's degree or postgraduate work, prior knee injury, and longer duration of knee OA symptoms were positively associated with physical therapy utilization. Data indicate women older than 50 years have a higher prevalence of knee OA, experience greater functional impairments than men, seek treatment for knee OA at a later stage of disease progression, and appear to demonstrate differences in health care utilization.[19,20] Bawa et al[21] examined differences in health care utilization among 244,059 patients (mean age = 64.8 years) with symptomatic knee OA in the 12 months preceding a total knee arthroplasty (TKA) and found that women were 39% more likely to receive a physical and occupational therapy evaluation when compared to men.[21] In our study, women were 3 times as likely as men to have used physical therapy to manage their symptomatic knee OA. These sex differences in physical therapy utilization are observed across various orthopedic diagnoses. Yeh et al[6] found that Taiwanese men were 24%

Table 1.
Demographic and Psychosocial Features of Adults With Symptomatic Knee Osteoarthritis (OA) (N = 350)[a]

Feature	Value
Age, y, mean (SD)	65.3 (11.1)
Race (n = 338)	
White	249 (73.7)
African American	69 (20.4)
Other	20 (5.9)
Ethnicity (n = 348), Latino	9 (2.6)
Women	251 (71.7)
Married/living with partner	215 (61.4)
Bachelor degree or postgraduate work	208 (59.4)
Employed	141 (40.3)
Financial situation (n = 349)	
Living comfortably	211 (60.5)
Have some money left	76 (21.8)
Have just enough to meet basic needs	48 (13.8)
Income does not meet basic needs	14 (3.9)
Duration of knee OA symptoms[b]	
<1–5 y	106 (30.3)
>5–10 y	102 (29.1)
>10 y	142 (40.6)
History of falls (n = 349)	119 (34.1)
Taking medications for knee OA	245 (70.0)
Knee injection	147 (42.0)
History of knee injury	175 (50.0)
No. of family members with arthritis (n = 348)	
0 or 1	118 (33.9)
2	83 (23.9)
≥3	147 (42.2)
No. of family members with knee OA (n = 288)	
0 or 1	158 (54.9)
≥2	130 (45.1)
No. of comorbidities (n = 341)[c]	
0– ≤ 4	95 (27.9)
>4– ≤ 9	181 (53.1)
>9	65 (19.1)
Body mass index[d]	
18– < 25	76 (21.7)
25– < 30	101 (28.9)
>30	173 (49.4)
No. of other joints with musculoskeletal symptoms/pain	
0 or 1	96 (27.4)
2 or 3	103 (29.4)
>3–5	73 (20.9)
>5	78 (22.3)
Mean KOOS pain	62.0 (18.0)
Mean KOOS activities of daily living	66.8 (19.1)
Have received physical therapy to treat knee OA (n = 348)	181 (52.0)

[a]Data are reported as number (percentage) of adults unless otherwise indicated. KOOS = Knee Injury and Osteoarthritis Outcome Score.
[b]Median: 10; range = < 1–65.
[c]Median: 6; range = 1–25.
[d]Median: 29.9; range = 14.6–65.6.

less likely to utilize physical therapy to manage their OA than women. The authors of this study speculated that men tend to prefer interventions that are known to be quicker for reducing pain, and that men tended to work more hours than women, so they had less flexible hours to schedule physical therapy appointments.[6] However, in Yeh's study, employment status was not associated with physical therapy utilization.[6] In our study in the biviariate analysis, we found employment was negatively associated with physical therapy utilization, though this relationship did not exist in the multivariate model. One could speculate that jobs with less flexible work schedules may influence physical therapy utilization.

In some studies of health care utilization, higher educational attainment was used as a proxy for socioeconomic status and was found to be positively associated with physical therapy utilization.[13,14,22] Our data regarding education level and physical therapy utilization are consistent with other published studies of physical therapy utilization in adults with musculoskeletal disorders. For example, Carter and Rizzo[13] examined outpatient physical therapy utilization among a cohort of 18,546 patients with musculoskeletal conditions and found that those with a college education or advanced degree were 20% to 37% more likely to utilize physical therapy. However, in the studies by Yeh et al[6] and Hagglund et al,[8] educational status was not significantly associated with physical therapy utilization to manage general OA symptoms. Higher educational attainment has been associated with perceived need for physical therapy among individuals with chronic arthritis. Specifically, Feldman et al[9] reported that those who were college educated were 2 times more likely to perceive a need for physical therapy to manage their symptoms.

Income is another predisposing factor often associated with health care utilization. In their cohort of Taiwanese patients with OA, Yeh et al[6] found that those who earned 40,000 NT or more per month were 32% more likely to utilize physical therapy than those who earned less than 20,000 NT per month, whereas

Table 2.
Bivariate Correlates of Physical Therapy Utilization for the Management of Symptomatic Knee Osteoarthritis (OA) (n = 348)[a]

Correlate	Odds Ratio	95% CI
Women	**2.44**	**1.50–3.95**
White	0.72	0.44–1.17
Age (per year)	1.00	0.98–1.02
Body mass index		
>30	1.27	0.71–2.12
>25– < 30	0.58	0.32–1.68
Reference category: <25		
Married or living with significant other	0.77	0.50–1.19
Bachelor degree or postgraduate work	1.38	0.76–2.5
Employed	**0.62**	**0.41–0.96**
Low income (income does not meet needs)	1.15	0.75–1.77
Duration of knee OA symptoms		
>5–10 y	**2.10**	**1.21–3.67**
>10 y	**2.04**	**1.22–3.41**
Reference category: <1–5 y		
History of falls (n = 347)	0.99	0.63–1.54
History of knee injury	1.41	0.93–2.16
History of knee joint injection	**2.21**	**1.43–3.42**
No. of comorbidities (n = 341)		
>4–9	1.39	0.84–2.28
>9	1.09	0.57–2.05
Reference category: 0– ≤ 4		
More than 1 family member with knee OA (n = 288)	**1.89**	**1.18–3.03**
No. of family members with arthritis categories		
>1– < 3		
≤3	0.89	0.50–1.55
Reference category: 0 or 1	1.30	0.80–2.12
Other joint with musculoskeletal symptoms		
2 or 3 joints		
>3–5 joints	0.88	0.50–1.53
More than 5 joints	0.99	0.54–1.84
Reference category: 0 or 1 joint	0.55	0.30–1.02

[a]Statistically significant values are in bold type. An odds ratio was considered significant if the 95% CI did not include 1.00.
[b]Reference category: the odds ratio for the categories of variables are calculated in reference to the reference category of the variable.

Hagglund et al[8] found that income was not associated with access to health care utilization. In our study, we did not find a significant association between income and physical therapy utilization. We did not, however, obtain data on actual income. Rather, we asked patients whether they perceived that their income met their needs. This difference in measurement of income may account for the lack of association of income with physical therapy utilization. We also speculate that the role of income as it relates to physical therapy utilization may be influenced by different cultural and health care system factors, though it is difficult to draw conclusions given the small number of studies.

Comorbidities are also considered a predisposing factor associated with health care utilization.[7,23] In a study of physical therapy utilization among 1350 adults aged >55 years with at least moderate hip and knee OA, Power et al[7] found comorbidities to be positively associated with physical therapy utilization among those adults who had not received a total joint arthroplasty. In our study, as with the study by Yeh et al,[6] comorbidities were not associated with physical therapy utilization in adults with knee OA.

Clinical practice guidelines recommend that physical therapy and other noninvasive treatments be used prior to the implementation of nonsurgical invasive treatments such as knee joint injections.[1,2] In practice, nonsurgical invasive procedures may be used more often, and sooner, than rehabilitation services to manage knee symptoms.[24] In this study, we found an interesting interaction between joint injections, physical therapy utilization, and race. Specifically, whites who had received a knee joint injection were >3 times more likely to have utilized physical therapy when compared with non-whites who received a knee joint injection. This interaction effect is complicated to interpret. Differences by race in the link between joint injection and physical therapy utilization may reflect a reduced likelihood of referral, use of health interventions for symptomatic knee OA among non-whites, or both. More specifically, this interaction might be interpreted as follows: for whites, those who received one type of treatment (injection) were also more likely to utilize physical therapy. These data may also indicate that, among whites, there are people who just tend to get more treatments and different types of treatments. However, among African Americans, receiving an injection did *not* indicate that these individuals were more likely to use physical therapy. We did not find any studies of physical therapy utilization that examined interactions between race and health service use. However, other studies have examined race as a main effect, and these studies reported that differences in health service utilization exist

Table 3.
Multivariable Correlates of Physical Therapy Utilization for the Management of Symptomatic Knee Osteoarthritis (OA) (n = 277)[a]

Correlate	Odds Ratio	95% CI
Interaction of race by history of injection	**4.1**	**3.26–13.37**
Women	**3.06**	**1.58–5.93**
Bachelor degree or postgraduate work	**2.44**	**1.15–5.16**
Having family members with knee OA	1.64	0.95–2.83
History of knee injury	**1.86**	**1.08–3.19**
Employed	0.58	0.34–1.00
Duration of knee OA symptoms		
>5–10 y	**2.16**	**1.09–4.29**
>10 y	**2.11**	**1.10–4.04**
Reference category: <1–5 y		

[a]Statistically significant values are in bold type. An odds ratio was considered significant if the 95% CI did not include 1.00. The model was adjusted for age and body mass index.
[b]Reference category: the odds ratio for the categories of variables are calculated in reference to the reference category of the variable.

by race.[13] For example, in a large study of health service use among individuals covered by Medicare, use of non–physician services such as physical therapy was lower among non-whites than among whites.[25] Differences in use of surgery for symptomatic knee OA between non-whites and whites do not appear to be influenced by socioeconomic factors alone.[26–28] Some literature suggests that African Americans perceive differences in the effectiveness of treatments and prefer noninvasive treatments for symptomatic knee OA over surgery.[29–31] One may speculate that the reasons non-whites may be less inclined to receive joint injections to manage their knee OA symptoms may be related to cultural beliefs and values as well as how they interact with the health care system.[32–34] In our study, we are not able to discern whether these patients were not offered knee joint injections or whether they chose not to receive them.

Limitations of this study include the use of a convenience sample enrolled in a randomized controlled trial of exercise, the potential for misclassification of physical therapy utilization due to self-report, and lack of an operational definition of physical therapy in the survey. We were also not able to determine whether lack of utilization was due to clinicians not referring patients to physical therapy or whether patients were not attending physical therapy when they received a referral. Other determinants of physical therapy use, such as perceived need for physical therapy and distance to the physical therapist clinic, were not measured in our study and may need to be considered in future studies of physical therapy utilization. Strengths of the study include a fairly large sample size where all patients had knee OA, and the diversity of patients with respect to race.

Our findings are consistent with other studies of physical therapy utilization in the management of musculoskeletal disorders indicating low utilization rates for physical therapy and highlight the need for clinicians to promote physical therapy as a method to manage knee OA symptoms and potentially reduce costs associated with the care of adults with knee conditions such as knee OA.[24] Although we cannot draw inferences from our data with respect to referral rates for physical therapy in the management of symptomatic knee OA, both referral rates and utilization may be contributing factors. As physical therapy is recommended as a first-line approach to conservative management of symptomatic knee OA, it is imperative that patients both have access to and understand the value of physical therapy to reduce symptoms and maximize physical function and independence.

Conclusion

Compared with other studies of physical therapy utilization among adults with OA and musculoskeletal conditions, we found higher rates of self-reported utilization among a cohort of adults with symptomatic knee OA who were enrolled in an exercise intervention study. Yet, given their longstanding knee OA symptoms, preference for physical therapy, and current practice guidelines, we might have expected a higher percentage of physical therapy utilization—suggesting that there is room for improvement. We believe it is important for physical therapists to reach out to primary care physicians, patient organizations, and stakeholders to increase referral to physical therapy prior to seeking surgical advice. The strongest correlates of physical therapy utilization were female sex, higher education, history of knee injury, and longer duration of knee OA symptoms (>5 years). Differences by race in the link between joint injection and physical therapy can be interpreted in many ways and suggest more research is needed to better understand correlates of physical therapy utilization in adults with symptomatic knee OA. These data also suggest a need to facilitate physical therapy utilization among adults with symptomatic knee OA, especially men, non-whites, and those with lower educational attainment. Educating the public about the benefits of physical therapy to manage symptomatic knee OA to increase their perceived need for services—and encouraging therapists to advocate for referrals to patients with knee OA—may help improve functional outcomes.

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Ethics

The Institutional Review Boards of the affiliated hospitals approved the study protocol and all research was conducted in compliance with the Helsinki Declaration.

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Disclosures

The authors completed the ICJME Form for Disclosure of Potential Conflicts of Interest. They reported no conflicts of interest.

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