



Arthritis Community Research &
Evaluation Unit (ACREU)

**Physiotherapy Services for People
with Hip and Knee Arthritis in
Ontario**

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University of Toronto

Table of Contents

Executive Summary	2
Introduction	4
Methods	
Data Source	5
Analyses	6
Results	7
Discussion	12
References	14

Executive Summary

- Questions about the use of physiotherapy (PT) services were included in a survey as part of an ongoing longitudinal study of residents of East York and Oxford County with at least moderately severe hip or knee arthritis.
- Nineteen percent (259/1366) of study participants were referred to PT in the year prior to the survey.
- Although not statistically significant, women, individuals who were residing in East York, who were younger, had more education or lived alone were more likely to have been referred. Even for those referred in the highest proportion, individuals aged 55 to 64 years, only 23% were referred.
- Individuals referred to PT in the past year had significantly worse arthritis symptoms (pain, stiffness, physical function) than those not referred.
- Individuals who had hip or knee total joint replacement (TJR) surgery in the past year or who were on a waiting list were much more likely to be referred to PT, than those who did not have surgery and were not on a waiting list. This result is in line with the fact that rehabilitation, including PT, is considered an important component of the overall episode of care surrounding TJR, as it helps individuals to maximize their function.
- Greater co-morbidity and currently taking a prescribed arthritis medication were also significantly related to referral to PT in the past year. Both of these factors are indicative of contact with a physician. Arthritis is often perceived as a normal part of aging, for which little can be done. It is likely that such a belief dissuades some individuals for contacting a physician about their arthritis, preventing referral to PT. These results imply that public health education about the availability and benefit of non-pharmacological treatment options, like PT, may be warranted.
- The median number of PT sessions received per week was 2 (range: 0.5-5), for a median total of 8 weeks (range: 1-208).
- Most participants (48%) received their therapy in a community clinic, although a substantial proportion (40%) reported receiving therapy in a hospital outpatient department. Fifty-one individuals (21%) received therapy at home.
- The payment method for PT varied by the location of therapy. For those who received therapy in a hospital outpatient department or at home, almost all (97% and 98%, respectively) of the therapy was paid for, in some part, by OHIP. For those receiving therapy in a community clinic, OHIP was used as a payment method for 75% of individuals. However, almost half of those receiving therapy in a clinic reported some amount of self-payment.

- The provision of PT in Ontario has undergone significant changes over the last decade. Currently, only about 14% of physiotherapists in the province work in an OHIP (Schedule 5) clinic. Despite the increasing role of private PT clinics, the large majority (87%) of PT provided to the participants of our study, was funded by OHIP. Financial barriers to accessing PT need to be further investigated. These are likely to be of particular significance for older individuals, like the participants in our study, many of who are retired.
- Examining issues of access to care for arthritis is an important public health issue, given the high prevalence of the disorder in the population. This study has documented low rates of referral to PT for individuals with at least moderately severe hip or knee arthritis in two Ontario communities. Further research is needed to examine barriers to accessing PT for individuals with arthritis in Ontario.

Introduction

According to the 2000/2001 Canadian Community Health Survey, 15.2% of Canadians aged 12 years and older report having arthritis or rheumatism as a long-term health condition diagnosed by a health professional (1). Almost twice as many women as men report having arthritis, with the prevalence increasing with age for both sexes (1). Osteoarthritis (OA) is the most common form of arthritis. Among American adults aged 30 years or older, symptomatic disease in the knee occurs in approximately 6% of the population and symptomatic hip OA in about 3%(2).

OA is a slowly progressive disorder of unknown cause and obscure pathogenesis. Patients with OA commonly present with progressive pain, most often related to joint use, together with joint stiffness and reduced range of movement (3). OA is often thought of as a degenerative disease caused by aging and ‘wear and tear’ of the joints, for which nothing can be done. There is no known cure for OA, however effective therapies aimed at reducing pain, maintaining or improving joint mobility and limiting functional disability, are available. Non-pharmacological modalities of treatments have been recognized as an important component of OA therapy and are largely the first-line of treatment (4-6). Physiotherapy (PT) and occupational therapy (OT) are examples of such modalities. They have been recognized as having a central role in the management of patients with functional limitations by the American College of Rheumatology, as part of its guidelines for the treatment of hip and knee OA (4-6).

Our objective for this project was to describe characteristics of rehabilitation services, including PT and OT, for people with hip or knee arthritis in two Ontario communities. However, only 2% of our study participants were referred to OT during the study year, meaning that sample size was too small for further analysis. This report will focus exclusively on PT. However, we are concerned about the low utilization of OT services for people with arthritis.

PT for arthritis generally includes a musculoskeletal assessment of the patient including the examination of ranges of motion, muscle strength, joint status, posture and gait. Therapy consists of exercises to improve muscle strength, joint mobility, and cardiovascular function. Heat, cold, electrical treatments or hydrotherapy may be used for temporary relief of pain and reduction of muscle spasm, in preparation for exercise. The emphasis of PT is on exercise and education, with the goal of enabling the patient to continue an independent home program after discharge. This is particularly important for patients with arthritis, as most forms of the disease are chronic. PT may also include gait training to change poor habits, identify muscle weakness and imbalance, increase strength and walking range, as well as posture training and counselling to help patients reduce stress on joints or soft tissue (7).

Arthritis has consistently been found to be one of the leading causes of referral to PT (8-11). Despite this, literature on the patterns of use of PT for arthritis, particularly in a community setting is scarce. The objective of this report was to examine the characteristics of PT referral and use for a cohort of older adults with at least moderately severe hip or knee arthritis in 2 Ontario communities – socio-demographic characteristics and measures of arthritis severity for those referred, reasons for referral, the location and duration of therapy, payment methods used and additional costs incurred.

Methods

Data Source

The data were collected as part of a larger study examining the determinants of arthritis disability and total joint replacement surgery (TJR). The study is being conducted in two communities in Ontario, where the current rates for TJR were shown to be disparate: East York (low rates) and Oxford County (high rates). Findings from this study have been previously reported (12-14).

Phase 1 - Screening survey: A brief screening questionnaire was mailed to the entire population aged 55 years and older in East York (n=26 293) and Oxford County (n=21 925) to identify individuals with self-reported joint symptoms or disabilities.

Phase 2 – Baseline survey: Respondents were selected for the Phase 2 survey (Oxford County: n=1735; East York: n=1572) if they had at least moderately severe hip or knee complaints as defined by: (1) difficulty in the past 3 months with each of stair climbing, arising from a chair, standing and walking; (2) swelling, pain, or stiffness in any joint lasting ≥ 6 weeks in the past 3 months; and (3) indication on a homunculus that a hip and/or knee was “troublesome”.

Response rates for the screening and baseline surveys were $\geq 72\%$ in both communities. Respondents completed the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) (15), a reliable and valid measure of the severity of hip and knee arthritis symptoms and disability. They were also asked to report concurrent health problems, prior joint replacement surgery, medication use and a variety of socio-demographic variables.

Phase 3 - Longitudinal Follow-up: Annual interviews with Phase 2 respondents are being carried out until at least 5 years of follow-up data is acquired. The questionnaire administered in the third year of longitudinal follow-up, between July 2001 and March 2002, included questions concerning the use of PT services, concurrent health problems, prior joint replacement surgery, medication use and socio-demographic variables.

Referral to PT in the past year was ascertained as a positive response to the following question, “Have you been referred for or told to try physical therapy (physiotherapy) within the past year?”

WOMAC summary scores from the second year of follow-up, the year prior to the one for which PT referral is of interest, were determined. The WOMAC consists of three subscales (pain, stiffness, physical function) scored so that a higher score indicates greater arthritis severity. The WOMAC summary score is the summation of these three subscales, rescaled to range from 0 to 100.

Co-morbid conditions were defined as the number of self-reported health problems, other than arthritis, for which treatment (seeing a physician or taking medication) was received in the past year.

A dichotomous variable (yes/no) for self-reported current use of prescribed arthritis medication was created. Prescribed arthritis medications were defined as any of celecoxib, rofecoxib, anti-inflammatory drugs, painkillers with codeine and oral steroids.

A variable for total joint replacement surgery status (TJR status) was also created. Individuals were characterized as either: 1) did not have hip or knee TJR in the past year and not on a waiting list, or 2) had hip or knee TJR in the past year or on a waiting list.

Analyses

The survey data were analyzed using SAS for Windows, release 8.02. Characteristics of respondents and non-respondents were compared using chi-square statistics. Comparisons of the proportion of respondents referred to PT by socio-demographic characteristics were also made using chi-square statistics. Mean WOMAC subscale and summary scores were compared for those referred to PT and those not referred using two-tailed t-tests. Multivariate logistic regression was used to evaluate the relationship between referral to PT in the past year (yes/no) and age, sex, region of residence, highest level of education, living arrangements, WOMAC summary score, TJR status, number of co-morbid conditions and use of prescribed arthritis medication. WOMAC summary score and number of co-morbid conditions were entered as continuous variables; all other variables were treated categorically. Odds ratios and 95% confidence intervals were determined. The goodness-of-fit of the model was assessed using the Hosmer-Lemeshow statistic. For all analyses, a two-tailed p-value of 0.05 or less was considered to indicate statistical significance.

Medians and ranges are reported for measures of the duration of PT services received. All other data are reported as percentages. Denominators, or the number of included participants, are indicated where response was not complete for all study participants, or for all those for which applicable.

Results

The response rate for the survey administered in the third year of longitudinal follow-up was 79.9%, adjusted for deaths and ineligibility. Of the 2411 respondents who completed the Phase 2 questionnaire, 702 were ineligible to complete the third follow-up questionnaire (463 dead, 239 unable to complete), 227 refused and 115 could not be traced. Of the remaining 1367 individuals who completed the questionnaire, data on PT was missing for one study participant. Therefore, the analyses presented here were based on 1366 individuals.

Non-respondents were more likely to be older, less well-educated and residing in East York than respondents (Table 1). There were no significant differences between respondents and non-respondents in terms of sex, living arrangements and Phase 2 WOMAC summary scores.

Table 1 – Comparison of baseline (Phase 2) characteristics of eligible cohort members

	Number (percentage) or Mean (95% CI)	
	Respondents (n=1366)	Non-Respondents (n=343)
Region of residence		
East York	577 (42.2)	176 (51.3)*
Oxford County	789 (57.8)	167 (48.7)
Sex		
Male	331 (24.2)	93 (27.1)
Female	1035 (75.8)	250 (72.9)
Age		
55-64 years	529 (38.7)	109 (31.8) †
65-74 years	545 (39.9)	109 (31.8)
75+ years	292 (21.4)	125 (36.4)
Highest level of education		
Grade 8 or less	364 (26.7)	121 (35.3) ‡
High school	666 (48.8)	159 (46.4)
Community college, university, or post-graduate study	288 (21.1)	47 (13.7)
Living Arrangements		
Alone	391 (29.2)	103 (31.6)
With others	949 (81.0)	223 (68.4)
WOMAC summary score	39.4 (38.4, 40.4)	39.7 (37.5, 41.9)

Comparing respondents and non-respondents: *p=0.002; †p=0.001; ‡p=0.0005

Two hundred and fifty-nine respondents (19.0%) were referred to PT in the year prior to the survey (Table 2). Although not statistically significant, women, individuals who were residing in East York, who were younger, had more education or lived alone were more likely to have been referred. Even for those referred in the highest proportion, individuals aged 55 to 64 years, only 23.0% were referred.

Table 2 – Referral to physiotherapy in the past year stratified by socio-demographic characteristics

	Number (percentage) of people referred to physiotherapy in the past year
Total	259 (19.0)
Region	
East York	115 (19.9)
Oxford County	144 (18.3)
Sex	
Males	51 (15.4)
Females	208 (20.1)
Age	
55-64 years	48 (23.0)
65-74 years	94 (18.2)
75+ years	117 (18.3)
Highest Level of Education*	
Grade 8 or less	59 (16.2)
High school	131 (19.7)
Community college, university or post-graduate study	62 (21.5)
Living Arrangements†	
Alone	94 (20.0)
With others	164 (18.3)

*n=1318; †n=1364

Individuals referred to PT in the past year had significantly worse arthritis symptoms (pain, stiffness, physical function) than those not referred (Table 3). Mean scores for the WOMAC subscales and the summary score were significantly higher for those who were referred.

In multivariate logistic regression, WOMAC summary score, TJR status, number of co-morbid conditions, use of prescribed arthritis medication and greater education (community college or higher compared to grade 8 or less) were significantly related to referral to PT in the past year (Table 4). For every ten point increase in the WOMAC summary score, the odds of referral to PT increased by a factor of 1.10 (95% CI: 1.04-1.26; p=0.005). Individuals who had hip or knee TJR in the past year or who were on a waiting list were 8.25 (95% CI: 4.70 –14.49; p<0.0001) times more likely to be referred than those who did not have TJR and were not on a waiting list. For every additional co-morbid condition, the odds of referral increased by a factor of 1.24 (95% CI: 1.08-1.43; p=0.003). For those taking a prescribed arthritis medication, the odds of referral to PT were 1.81 times greater (95% CI: 1.30-2.51; p=0.0004) than for those not taking a prescribed arthritis medication. Individuals with a community college level or higher education were 1.56 (95% CI: 1.00-2.43; p=0.048) times more likely to be referred than those with a grade 8 education or less. Region of residence, sex, age, and living arrangements were not significantly related to referral to PT in the past year.

Table 3 – Mean WOMAC subscale and summary scores for those referred and not referred to physiotherapy in the past year

WOMAC subscale (range of possible scores)	Mean WOMAC Score	
	Referred to physiotherapy (n=248)	Not referred to physiotherapy (n=996)
Pain (0-20)	8.3*	7.0
Stiffness (0-8)	2.4†	2.2
Physical Function (0-68)	28.6*	24.9
Summary score (0-100)	41.0*	35.5

Comparing those referred to those not referred: *p<0.0001; †p=0.02

Table 4 - Odds ratios for referral to physiotherapy in the past year

Variable	Odds Ratio* (95% Confidence Interval)
Region of residence	
East York	Reference
Oxford County	0.96 (0.70, 1.31)
Age group	
55-64 years	Reference
65-74 years	0.80 (0.52, 1.23)
75+ years	0.78 (0.51, 1.21)
Sex	
Male	Reference
Female	1.20 (0.82, 1.77)
Highest level of education	
Grade 8 or less	Reference
High school	1.31 (0.91, 1.90)
Community college or higher	1.56 (1.00, 2.43) †
Current Living Arrangements	
Alone	Reference
With others	0.89 (0.64, 1.24)
WOMAC summary score	1.01 (1.00, 1.02) ‡
TJR Status	
Did not have hip or knee TJR in the past year and not on a waiting list	Reference
Had hip or knee TJR in the past year or on a waiting list	8.25 (4.70, 14.49) §
Number of co-morbid conditions	1.24 (1.08, 1.43)
Use of prescribed arthritis medication	
not currently taking	Reference
currently taking	1.81 (1.30, 2.51) **

*n=1194; †p=0.048; ‡ p=0.005; § p<0.0001; || p=0.003; **p=0.0004

Hosmer-Lemeshow goodness-of-fit statistic, 4.17 with 8 degrees of freedom (p=0.84)

Of the 183 individuals who provided the source of their PT referral, 178 (97.8%) were referred by a doctor. The large majority (95.3%) of those who were referred did attend at least one PT session.

Study participants most commonly reported being referred to PT for knee problems (35.1%) (Table 5). Although individuals were selected for the study because they had at least moderately severe hip and/or knee arthritis, the second most common reason for referral to PT was back problems (33.8%). Eighteen point two percent reported being referred for hip problems.

Table 5 – Reasons for referral to physiotherapy

Body Part	Number (percentage) of people referred to physiotherapy for problems associated with specified body part* †
Neck	22 (9.8)
Shoulder(s)	38 (16.9)
Back	76 (33.8)
Hip(s)	41 (18.2)
Knee(s)	79 (35.1)
Other ‡	40 (17.8)

*n=225 -Those referred to physiotherapy for non-arthritis related reasons (e.g. trauma, stroke), and those who did not provide a body part were excluded.

†Individuals could report more than one reason for referral.

‡ Other includes joints not listed in Table 2, as well as those who specified all joints/fibromyalgia.

The median number of PT sessions received per week was 2 (range: 0.5-5), for a median total of 8 weeks (range: 1-208). Most participants (48.3%) received their therapy in a community clinic, although a substantial proportion (40.4%) reported receiving therapy in a hospital outpatient department (Table 6). Fifty-one individuals (21.3%) received therapy at home. The Ontario Health Insurance Plan (OHIP) paid for some part of the large majority (86.5%) of therapy. Just under a quarter of participants reported paying for some part of their own therapy and extended health care benefits were the payment source for 11.1% of people who received PT.

The payment method for PT varied by the location of therapy (Table 7). For those who received therapy in a hospital outpatient department or at home, almost all (96.9% and 98.0%, respectively) of the therapy was paid for, in some part, by OHIP. For those receiving therapy in a community clinic, OHIP was used as a payment method for 75% of individuals. However, almost half of those receiving therapy in a clinic reported some amount of self-payment.

Most people (91.0% of 244) reported no additional costs resulting from their therapy. Nine people (3.7%) reported purchasing assistive devices (ex. cane), 5 (2.0%) reported purchasing exercise equipment (ex. weights) and 11 (4.5%) reported purchasing orthotics (ex. brace).

Table 6 – Location and payment methods for physiotherapy

Location of Physiotherapy†	Number (percentage) of people who received physiotherapy in the past year*
Hospital Outpatient Department	97 (40.4)
Community Clinic	116 (48.3)
At Home	51 (21.3)
Payment Methods for PT‡	
OHIP	211 (86.5)
Extended Health Care Benefits	27 (11.1)
Self	60 (24.6)
Other	5 (2.1)

* Individuals could report more than one location or payment method.

†n=240; ‡n=244

Table 7 – Location of physiotherapy by payment methods

Payment Method	Number (percentage) of people who received physiotherapy at location who used specified payment method*†		
	Hospital Outpatient Department	Community Clinic	At Home
OHIP	94(96.9)	87(75.0)	50(98.0)
Extended Health Care Benefits	5(5.2)	23(19.8)	1(2.0)
Self	7(7.2)	56(48.3)	1(2.0)
Other	0	6(5.2)	1(2.0)

*Individuals could report more than one location or payment method.

†n=240

Discussion

Only a minority, about 1 in 5 people, with at least moderately severe hip or knee arthritis in our Ontario cohort, were referred to PT in the past year. This is actually an overestimate of PT use for hip and knee arthritis, as some study participants reported receiving PT for problems unrelated to their hips and knees. It is also important to note that there was not a statistically significant difference in the percentage of individuals referred in the rural community (Oxford County – 18.3%) compared to the urban community (East York – 19.9%). These results raise concern about the accessibility of PT services for individuals with arthritis in rural and urban communities in Ontario.

Although not statistically significant, females, younger and more educated people were referred to PT in higher proportions. In research not limited to arthritis related care, women (8,9,16) and more educated individuals (11) have been found to be more frequent users of rehabilitation services. Previous research has also found that referral rates to rehabilitation services decrease with increasing age (17), even among the elderly (11,17,18). In our study, age and sex were not significant predictors of referral to PT in multivariate logistic regression. Study participants with a community college education or higher were more likely to be referred to PT in the past year, than those with the least education (grade 8 or less). TJR status, taking a prescribed arthritis medication, number of co-morbid conditions and WOMAC summary score were also significantly related to PT referral. Individuals who had hip or knee TJR in the past year or who were on a waiting list, were much more likely (odds ratio=8.25) to be referred to PT than those who did not have and were not waiting for TJR. This result is in line with the fact that rehabilitation, including PT, is considered an important component of the overall episode of care surrounding TJR, as it helps individuals to maximize their function (19-22).

Interestingly, the associations between referral to PT and number of co-morbid conditions, and particularly, taking a prescribed arthritis medication were stronger than that for the WOMAC summary score, a measure of arthritis severity. All of the participants in our study had at least moderately severe hip or knee arthritis. It may be that other factors drive PT referral once this level of severity is reached. Taking a prescribed medication may be an additional measure of arthritis severity, but it is also indicative of contact with a physician. Increased co-morbidity may also indicate that an individual is more likely to see a physician. The visit may be initiated for a co-morbid condition, but a physician inquiry about general health may prompt a discussion of arthritis related concerns, leading to a PT referral. Arthritis is often perceived as a normal part of aging, for which little can be done. It is likely that such a belief dissuades some individuals for contacting a physician about their arthritis, preventing referral to PT. These results imply that public health education about the availability and benefit of non-pharmacological treatment options, like PT, may be warranted.

A lack of patient awareness, however, cannot fully explain the low rates of PT referral found in this study. Why did so few physicians refer patients with at least moderately severe hip or knee arthritis to PT in the past year? There has been concern about the adequacy of treatment provided by primary care practitioners for musculoskeletal conditions. Although primary care physicians are largely responsible for diagnosing and treating musculoskeletal conditions, they often receive little exposure to them during undergraduate and residency training (23, 24).

Further, continuing medical education for musculoskeletal problems has been shown to be inappropriate in both content and format (25).

The provision of PT in Ontario has undergone significant changes over the last decade, with a shift towards an increase in the number of privately funded clinics located both inside and outside of hospitals. Currently, only about 14% of physiotherapists in the province work in an OHIP (Schedule 5) clinic (26). Despite the increasing role of private PT clinics, the large majority (87%) of PT provided to the participants of our study, was funded by OHIP. Perhaps, physicians do not refer to PT when a publicly funded clinic is unavailable, due to factors such as location or a long waiting list, when the patient does not have supplemental health insurance and is financially unable to pay for their own care in a private clinic. Such financial barriers are likely to be of particular significance for older individuals, like the participants in this study, many of who are retired.

There are a few limitations to this study. First, all of the data were based on self-report. Second, participants were limited to residents of two Ontario communities. Issues of access to health services may vary within the province. Finally, data on referral and use of PT services was only acquired for a single year. It may be that some study participants were currently attending PT, but were referred prior to the year before the survey. These last two points indicate the need for more research that includes other regions in Ontario and monitors changes over time, particularly as the manner in which PT services are delivered continues to evolve.

Examining issues of access to care for arthritis is an important public health issue, given the high prevalence of the disorder in the population. This issue is expected to increase in relevance, as estimates suggest that the number of people with arthritis in Canada will double by 2020 (27). Despite this, there has been little published research on the patterns of use of PT for arthritis. This study has documented low rates of referral to PT for individuals with at least moderately severe hip or knee arthritis in two Ontario communities. Further research is needed to examine barriers to accessing PT for individuals with arthritis in Ontario.

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