

Academy of Orthopaedic Physical Therapy, APTA, Inc. Grant Program Final Report Form

Date: 06/17/2020

Name of Investigators: Meredith Christiansen, DPT, PhD, & Daniel K. White, ScD, MSc
Name of Grant: Improving the Model of Care for Knee Osteoarthritis: Investigating Patient-Perceived Value of Physical Therapy
Award Period: 4/30/2019 to 4/29/2020 (Initial award date is the date that the award was made to your institution)

The final report is due no later than 60 days after the end of the award date.

1. Briefly summarize major accomplishments of this project (2-4 pages)
 2. Provide a one-paragraph summary of results or abstract suitable for posting on the Academy website.
 3. Attach a list of your publications published or accepted during the past year, or currently being written. Send reprints when available. List presentations made and abstracts accepted for presentation based on this work. Indicate with an asterisk (*) those publications supported by Academy of Orthopaedic Physical Therapy funding.
- Budget:
4. Provide a budget, using the original approved budget. Indicate total funds spent to date per major categories. If there was $\geq 25\%$ deviation (greater or less spent) of use of funds for any of the budget category, please BRIEFLY indicate the rationale.
 5. Budget: please send out a final print-out from your institution indicating monies spent per major categories.



06/17/2020

Your Signature

Date

Return to:

Tara Fredrickson, Executive Associate
Academy of Orthopaedic Physical Therapy, APTA, Inc.
2920 East Avenue South, Suite 200 LaCrosse, WI 54601-7202
tfred@orthopt.org

1. Briefly summarize the major accomplishments of this project (2-4 pages):

With the funding from AOPT and the new investigator grant, I was able to complete three research projects to full the requirements for my Ph.D. training and complete my training in March of 2020. As a result, the three aims of my dissertation are in the process of being published in three peer-reviewed journals. The results from my research are relevant and timely to orthopedic physical therapy practice and provide insights into physical therapy utilization for knee osteoarthritis. Please see below background and results from the project.

Background

Physical therapy (PT) is infrequently used for the management of knee osteoarthritis (OA) despite being recommended by all arthritis organizations. PT for knee OA has been shown to decrease pain and increase function for a low price (~\$800 per episode of care) and has few adverse events compared to other knee OA interventions such as injections, medications, and surgery. Interventions delivered by a physical therapist improve impairments such as muscle strength, balance, and gait speed that, in turn, reduces functional limitations such as walking difficulty. In those with knee OA, walking difficulty is a risk factor for premature death. Thus, the use of PT is essential in the management of knee OA. Although PT interventions are beneficial, only 11% of Americans with knee OA receive PT one-year after an initial diagnosis and 10-14% within five years of a knee replacement, both expected time points for PT utilization. Currently, it is unclear why few Americans receive PT for knee OA. Subsequently, there is a critical need to understand the factors related to PT utilization from both the patients' perspective and within a health system, e.g., organizations delivering healthcare.

The long-term goal of this research is to improve the model of care for knee OA by optimizing high-value healthcare in clinical practice. The objective of the dissertation was to understand patient-reported barriers and facilitators towards using PT, patients' understanding of knee OA and perceptions of PT as a treatment option, and to identify health system-level factors related to PT utilization for knee OA. The combination results from the qualitative and quantitative study is a step towards achieving the long-term goal as it identifies factors associated with PT utilization and seeks to understand why few receive PT, i.e., a high-value treatment for the management of knee OA, in a group of adults with self-reported knee OA recruited from the Northern Delaware community and among insured Oregonians seeking health services for knee OA.

The rationale for this dissertation is that knowing the factors associated with PT utilization within a specific group of adults with knee OA is a necessary first step to design an implementation study to increase usage in similar patients. Researchers in Europe and Australia have investigated non-demographic factors associated with the use of knee OA interventions which include the following: (1) patient-reported cost and time, the perception of treatment efficacy, knowledge of a procedure, and (2) health system-level factors were: (1) referral to PT, (2) proximity to services, and (3) insurance

coverage. The model of care for knee OA is different between the US, Europe, and Australia, i.e., universal healthcare and OA public health initiatives, and the factors identified in other countries may not be transferable to adults in the US. Little is known about the patient-reported and health system-level factors related to PT utilization for knee OA in America. Conducting a mixed-method study in a group of adults with self-reported knee OA recruited from the Northern Delaware community and among insured Oregonians, seeking healthcare for knee OA is a first step to understand the broader problem. To achieve the overall objective, the following three specific aims were undertaken:

Aim 1. *Identify patient-reported barriers and facilitators to PT utilization for knee OA.*

Aim 2. *Ascertain patients' understanding of knee OA as a disease and PT as a treatment option.*

Aim 3. *Evaluate health system-level factors associated with PT utilization for knee OA.*

Results

Results from the dissertation indicate that adults with knee OA experience knee pain and loss of physical function. Once knee symptoms impact their quality of life, most adults will seek treatment from a physician. The physician often diagnoses them with knee OA using X-ray imaging and describes knee OA as a structural disease. Based on how the physician explains knee OA and on their knowledge of the disease, most adults will identify knee OA as “bone on bone” and view the cause of OA as overuse, age, obesity, and heredity. Most adults anticipate severe disability related to knee pain and believe surgery is inevitable. As a result of adults' understanding of knee OA, they often have mixed beliefs about the efficacy of PT services. For those who had positive views about the effects of PT, they either were healthcare providers or had family members who were healthcare providers; they had a referral from a physician, had a positive previous experience with PT for another musculoskeletal condition, and preferred to avoid knee surgery.

Conversely, those who had negative beliefs about the effects of PT for knee OA, they did not have a referral from a physician, personally had or had a family member or friend who had a negative experience with PT, particularly, after knee replacement surgery. Since all of the participants had health insurance, they did not perceive having any barriers to accessing PT services. Female, Medicaid insurance, knee injection(s), another medical visit(s), and knee replacement surgery(s) were also factors related to PT utilization for knee OA. The combination of patient-reported barriers and facilitators, adults' understanding of knee OA and perceptions of PT as a treatment option and health system-level factors that may influence their decision to utilize PT for knee OA. Further research in a larger sample is needed to determine if the results from this dissertation are transferable to other knee OA populations.

Completion of this dissertation identified patient-reported and health system-level factors related to PT utilization for knee OA in adults recruited from the Northern Delaware community and among insured Oregonians. With this information, a model to explain PT utilization for knee OA was created. The next step is to develop a survey to conduct a study in a larger knee OA sample to determine if the identified factors are generalizable to a broader US population. Then using the results from the survey to conduct an implementation study and manipulate one or more of the patient-reported factors to study the effects on increasing the number of adults who receive PT for knee OA in similar patient populations. One example would be creating an automated electronic physician referral to PT for a new patient diagnosis of knee OA and then investigate if that intervention increased PT utilization, or studying if creating a guide to PT for knee OA as an educational tool to promote PT as an effective intervention for knee OA increases PT utilization in a community setting. Lastly, comparing results from the Oregon All-Payer All-Claims with other statewide All-Payer All-Claims, as well as adjusting for the unexplained confounding variables, will help to isolate which factors are driving PT utilization. Through this iterative research process, the long-term goal of improving the model of care for knee OA by optimizing high-value healthcare in clinical practice will be achieved.

2. Provide a one-paragraph summary of results or abstract suitable for posting on the Academy website:

Title: Improving the Model of Care for Knee Osteoarthritis: A Mixed-Method Study Investigating Physical Therapy Utilization

Abstract: Although physical therapy (PT) is recommended as an approach to reduce pain and improve function, adults with knee osteoarthritis (OA) rarely use it. It is unclear why PT is underutilized for knee OA. As a first step to understand the broader problem of PT underutilization, the objective of the dissertation was to identify factors associated with PT utilization within a focused sample of adults with knee OA.

The long-term goal of this research is to improve the model of care for knee OA by optimizing high-value health care in clinical practice. To achieve the overall objective, three studies were conducted.

First, a qualitative descriptive study was conducted using semi-structured interviews to identify patient-reported barriers and facilitators to PT utilization for knee OA (Aim 1). Themes identified as either barriers or facilitators among the twenty-two participants were: 1) previous experience with PT, 2) physician referral, 3) beliefs about treatment efficacy before and after knee replacement surgery, 4) insurance coverage, and 5) preference to avoid surgery. Findings from Aim 1 indicate a previous positive encounter with PT and a physician referral were reasons participants utilized PT for knee OA, but access to and knowledge of PT services were not identified as factors related to PT utilization.

Second, a qualitative descriptive study using focus group discussions was conducted to explore adults with knee OA understanding of the disease and perceptions of PT as a treatment option (Aim 2). Of the thirty participants, knee OA was identified as “bone on bone,” and participants reported having limited knowledge about the disease. Also, participants described the causes of knee OA as overuse, aging, obesity, and heredity. The consequences of knee OA were seen as severe disability related to knee pain, and most believed surgery was inevitable. Two focus groups had positive perceptions of PT, which was typically associated with having medical training. Four focus groups reported negative or mixed perceptions and thought PT did not work before surgery. Findings from Aim 2 indicate that adults with knee OA had limited knowledge and misconceptions about the disease that appeared to influence their perceptions of PT as a treatment option.

Third, a retrospective cross-sectional cohort study was conducted using administrative data from the Oregon All-Payer All-Claims (APAC) database (N=12,590 patient-level claims). In the cohort, 6.5% (821/12,590) utilized PT for knee OA. Adults with Medicaid were 38% (1.38 [1.15, 1.66]) more likely to use PT for knee OA compared to those with commercial insurance. Males were 21% (0.79 [0.68, 0.91]) less likely to use PT than females. Adults who had a knee injection(s), another medical visit(s), and knee replacement(s) they were 41% (1.41 [1.22, 1.64]), 192% (2.92 [2.51, 3.39]), and 109% (2.09 [1.72, 2.53]) more likely to use PT compared those who did not utilized these services.

The combined results from the three studies generated hypotheses and created a model as to why PT is underutilized for knee OA. Further work is needed to validate the proposed model by in a broader sample of adults with knee OA.

- 3. Attach a list of your publications published or accepted during the past year, or currently being written. Send reprints when available. List presentations made and abstracts accepted for presentation based on this work. Indicate with an asterisk (*) those publications supported by Academy of Orthopaedic Physical Therapy funding.**
- a. Accepted publication: “I’ve been to physical therapy before, but not for the knees.” A Qualitative Study Exploring the Barriers and Facilitators to Physical Therapy Utilization for Knee Osteoarthritis. *Musculoskeletal Care*. 2020.*
 - b. Revise and resubmit publication: “If you are bone on bone, you apparently have to have surgery.” Adults Understanding of Knee Osteoarthritis and Perceptions of Physical Therapy. *Arthritis Care & Research*. 2020.*
 - c. Under review publication: Factors Associated with Physical Therapy Utilization among Insured Adults with Knee Osteoarthritis. *Physical Therapy Journal*. 2020.*

4. Budget: Provide a budget using the original approved budget. Indicate total funds spent to date per major categories. If there was > 25% deviation (greater or less spent) of use of funds for any of the budget category, please BRIEFLY indicate the rationale.

- a. Budget (see excel sheet for more detail): Total amount spent \$16,899.05, which was 43% less than budgeted (\$30,000). One reason the data set that was purchased (APAC) was expected to cost >\$4000, but it only <\$500 because I received a graduate student rate. Also, the software that was initially budgeted for I no longer needed, e.g., Sawtooth, the open-access publication fee I did not use, and I needed fewer participants than initially budgeted for, e.g., fewer participant incentives and refreshments/snacks.

5. Budget: please send out a final print-out from your institution, indicating monies spent per major categories.

- a. See attached budget



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FINANCIAL REPORT				
University of Delaware				
210 Hulliher Hall, Newark, DE 19716				
Sponsor:	The Academy of Orthopaedic Physical Therapy			
Project Title:	Improving the Model of Care for Knee Osteoarthritis: Investigating the Patient-Perceived Value of			
PI:	Meredith Christiansen			
			Project Period:	4/30/19 - 4/29/20
			Reporting Dates:	4/30/19 - 4/29/20
Grant Reference Number:	19A00644		Funded Amount	\$30,000.00
Category	Approved Budget	Total Expenditures	Balance	Percentage
Salary	\$11,304.00	\$11,317.50	-\$13.50	100.12%
Fringe	\$667.00	\$164.55	\$502.45	24.67%
Supply and Expense	\$9,874.00	\$1,545.94	\$8,328.06	15.66%
Refreshments/Snacks	\$600.00	\$249.06	\$350.94	41.51%
Publication Costs	\$2,900.00	\$130.00	\$2,770.00	4.48%
Tuition	\$2,530.00	\$2,192.00	\$338.00	86.64%
Participant incentives	\$2,125.00	\$1,300.00	\$825.00	61.18%
Total	\$30,000.00	\$16,899.05	\$13,100.95	56.33%
Comments:				
Signature of Authorized Financial Officer: <i>Wanda K Cibroski</i>				
				Date: 6/12/20
Name: Wanda K Cibroski	Phone: 302-831-4956			
Title: Research Accountant				

RESEARCH OFFICE