

**ORIGINAL RESEARCH**

# Effect of Comorbid Knee and Hip Osteoarthritis on Longitudinal Clinical and Health Care Use Outcomes in Older Adults With New Visits for Back Pain



Sean D. Rundell, DPT, PhD,<sup>a,b</sup> Adam P. Goode, DPT, PhD,<sup>c</sup> Pradeep Suri, MD, MS,<sup>a,b,d</sup> Patrick J. Heagerty, PhD,<sup>e</sup> Bryan A. Comstock, MS,<sup>e</sup> Janna L. Friedly, MD,<sup>a,b</sup> Laura S. Gold, PhD,<sup>b,f</sup> Zoya Bauer, MD, PhD,<sup>b,f</sup> Andrew L. Avins, MD, MPH,<sup>g</sup> Srdjan S. Nedeljkovic, MD,<sup>h</sup> David R. Nerenz, PhD,<sup>i</sup> Larry Kessler, ScD,<sup>j</sup> Jeffrey G. Jarvik, MD, MPH<sup>b,f,j,k</sup>

From the <sup>a</sup>Department of Rehabilitation Medicine, University of Washington, Seattle, WA; <sup>b</sup>Comparative Effectiveness, Cost, and Outcomes Research Center, University of Washington, Seattle, WA; <sup>c</sup>Department of Orthopaedics, Duke University, Durham, NC; <sup>d</sup>VA Puget Sound Health Care System, Seattle, WA; <sup>e</sup>Center for Biomedical Statistics, University of Washington, Seattle, WA; <sup>f</sup>Department of Radiology, University of Washington, Seattle, WA; <sup>g</sup>Division of Research, Kaiser Permanente Northern California, Oakland, CA; <sup>h</sup>Department of Anesthesiology, Perioperative and Pain Medicine, Brigham and Women's Hospital, and Spine Unit, Harvard Vanguard Medical Associates, Boston, MA; <sup>i</sup>Neuroscience Institute, Henry Ford Hospital, Detroit, MI; <sup>j</sup>Department of Health Services, University of Washington, Seattle, WA; and <sup>k</sup>Department of Neurological Surgery, University of Washington, Seattle, WA.

## Abstract

**Objective:** To examine if a comorbid diagnosis of knee or hip osteoarthritis (OA) in older adults with new back pain visits is associated with long-term patient-reported outcomes and back-related health care use.

**Design:** Prospective cohort study.

**Setting:** Three integrated health systems forming the Back pain Outcomes using Longitudinal Data cohort.

**Participants:** Participants (N=5155) were older adults ( $\geq 65$ y) with a new visit for back pain and a complete electronic health record data.

**Interventions:** Not applicable; we obtained OA diagnoses using diagnostic codes in the electronic health record 12 months prior to the new back pain visit.

**Main Outcome Measures:** The Roland-Morris Disability Questionnaire (RDQ) and the EuroQol-5D (EQ-5D) were key patient-reported outcomes. Health care use, measured by relative-value units (RVUs), was summed for the 12 months after the initial visit. We used linear mixed-effects models to model patient-reported outcomes. We also used generalized linear models to test the association between comorbid knee or hip OA and total back-related RVUs.

**Results:** Of the 5155 participants, 368 (7.1%) had a comorbid knee OA diagnosis, and 94 (1.8%) had a hip OA diagnosis. Of the participants, 4711 (91.4%) had neither knee nor hip OA. In adjusted models, the 12-month RDQ score was 1.23 points higher (95% confidence interval [CI], 0.72–1.74) for patients with knee OA and 1.26 points higher (95% CI, 0.24–2.27) for those with hip OA than those without knee or hip OA, respectively. A lower EQ-5D score was found among participants with knee OA (.02 lower; 95% CI, –.04 to –.01) and hip OA diagnoses (.03 lower; 95% CI, –.05 to –.01) compared with those without knee or hip OA, respectively. Comorbid knee or hip OA was not significantly associated with total 12-month back-related resource use.

**Conclusions:** Comorbid knee or hip OA in older adults with a new back pain visit was associated with modestly worse long-term disability and health-related quality of life.

Archives of Physical Medicine and Rehabilitation 2017;98:43-50

© 2016 by the American Congress of Rehabilitation Medicine

Presented as a poster to the Center for Enhancing Activity and Participation among Persons with Arthritis (ENACT), Boston University, April 6, 2014, Washington, DC; and to the Osteoarthritis Research Society International, May 1, 2015, Seattle, WA.

Supported by the Agency for Healthcare Research and Quality (grant nos. 1R01HS01922201 and 1R01HS022972-01), and a K12 grant from the Agency for Healthcare Research and Quality (grant no. 1K12HS022982-01). Disclosures: J.G.J. reports financial relations with PhysioSonics, HealthHelp, and Google outside the submitted work. The other authors have nothing to disclose.

Back pain is a complex and multidimensional condition resulting in substantial total costs,<sup>1</sup> high (ie, 80%) lifetime incidence,<sup>2</sup> and a high 1-year recurrence rate (44%–60%)<sup>3</sup> when recovery does take place. Among older adults ( $\geq 65$ y), the 1-year prevalence of back pain is estimated to be as high as 49%,<sup>4,5</sup> and approximately 12% of older adults experience functionally impairing chronic back pain,<sup>6</sup> which affects daily tasks of walking, standing, and climbing steps.<sup>5,7</sup> Despite the effect of back pain on older adults, research on this subgroup has been limited.<sup>4,8</sup>

Osteoarthritis (OA) is also a leading cause of disability in the United States, affecting at least 27 million adults<sup>9</sup> and resulting in health care costs  $>$ \$185 billion annually.<sup>10</sup> Lower extremity OA of the knee or hip are 2 of the most common types of OA in older adults, with 9.5%<sup>11</sup> and 9.7%<sup>12</sup> having symptomatic radiographic findings, respectively. The presence of comorbid low back pain has been found to influence the outcomes of patients with knee OA, suggesting that the influence of these 2 diagnoses are not independent of one another.<sup>13-19</sup> It is also proposed that hip OA is an important contributor to pain and disability in older adults with back pain.<sup>20</sup> We are unaware of any previous studies that have longitudinally examined a back pain cohort and the effect of lower extremity OA.

Previous work has identified that many older adults presenting for new visits for back pain continue to have persistent symptoms, disability, and interference at 12 months.<sup>21</sup> Whether these findings differ based on comorbid diagnoses of lower extremity knee or hip OA is unknown. Therefore, our primary objective was to examine if a comorbid diagnosis of knee or hip OA in older adults with new visits for back pain was associated with back-related disability, back pain intensity, pain interference with activity, and health-related quality of life over 12 months. Our second objective was to investigate if comorbid knee or hip OA was associated with the amount and type of back-related health care services provided over a 12-month period.

## Methods

### Study design, setting, and participants

These data come from the Back pain Outcomes using Longitudinal Data registry, a prospectively collected cohort of 5239 older adults ( $\geq 65$ y) with new visits (ie, an index visit) for back pain. The registry was created to prospectively examine the effectiveness of tests and treatments for older adults with back pain. We recruited participants from primary care settings of 3 integrated health systems: Kaiser Permanente in Northern California, Henry Ford Health System in Detroit, Michigan, and Harvard Vanguard Medical Associates in Boston, Massachusetts, during the years 2011 through 2013. New visits for back pain were identified

through the electronic health record (EHR) using diagnosis codes. Exclusion criteria included the following: a back pain visit within 6 months of the index visit, prior lumbar spine surgery, developmental spine deformities, inflammatory rheumatic spondyloarthritis, known spinal malignancy or infection, history of cancer in the last 5 years, history of human immunodeficiency virus infection, serious medical comorbid condition with life expectancy  $<$ 1 year, or severe cognitive impairment that would interfere with answering questions. The Back pain Outcomes using Longitudinal Data cohort is further described elsewhere.<sup>22,23</sup>

For this study, we selected 5155 of the 5239 enrolled participants who had complete EHR data, 12 months prior to the index visit and 12 months after the index visit. Patient-reported outcomes were collected via either phone interview or mailed questionnaire at baseline and at 3, 6, and 12 months after the index visit. Baseline interviews occurred from the index visit up to 3 weeks after the index visit. Follow-up interviews occurred within 3 weeks (before or after) of the 3-, 6-, or 12-month time point. The study was approved by the institutional review boards of all the participating institutions: the University of Washington, Kaiser Permanente Northern California, Henry Ford Health System, and Harvard Vanguard Medical Associates.

### Variables

Our exposure variables were the presence of comorbid knee or hip OA. We collected data regarding knee and hip OA status from the EHR using The International Classification of Diseases, 9th Revision (ICD-9) codes. Participants were defined as having knee (ICD-9 codes: 715.16, 715.26, 715.36, 715.96, and 716.66) or hip (ICD-9 codes: 715.15, 715.25, 715.35, 715.95, and 716.65) OA if they had at least 1 of the respective diagnosis codes in their EHR during the 12 months prior to the index visit.

We examined patient-reported outcomes and health care utilization over the 12 months after the index visit. The Roland-Morris Disability Questionnaire (RDQ) was our primary patient-reported outcome measure.<sup>22</sup> The RDQ consists of 24 questions on back-related disability, where 0 represents no disability and 24 represents maximum disability. Each question of the RDQ was modified by adding “or leg pain (sciatica)” to the words “back pain.” The RDQ is a validated outcome measure for back pain studies.<sup>24</sup> Secondary patient-reported outcomes were back pain intensity, pain interference with activity, and health-related quality of life. We measured back pain intensity using a validated 11-point (0=no pain, 10=pain as bad as you can imagine) numerical rating scale (NRS) for average back pain intensity during the prior 7 days.<sup>25</sup> We used the Brief Pain Inventory (BPI) to assess pain interference with activity. The BPI is the mean of 7 domains (general activity, mood, walking, work, interpersonal relations, sleep, and enjoyment of life), each of which are each scored on a scale of 0 (no interference) to 10 (interferes completely).<sup>26</sup> Finally, we measured health-related quality of life with the EuroQol-5D (EQ-5D), a preference-based health outcome measure that is scored from  $<$ 0 (implying that there can be a health state worse than death) to 1 (perfect health). The EQ-5D is a composite of 5 domains (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression).<sup>27</sup>

We measured back-related health care use for the 12 months after the index date using Current Procedural Terminology codes from patients' EHR. We developed a summary measure of total back-related health care use by summing the relative-value units (RVUs) for all of a participant's back-related procedures over the

#### List of abbreviations:

<b>BPI</b>	<b>Brief Pain Inventory</b>
<b>CI</b>	<b>confidence interval</b>
<b>EHR</b>	<b>electronic health record</b>
<b>EQ-5D</b>	<b>EuroQol-5D</b>
<b>ICD-9</b>	<b>International Classification of Diseases, 9th Revision</b>
<b>NRS</b>	<b>numerical rating scale</b>
<b>OA</b>	<b>osteoarthritis</b>
<b>RDQ</b>	<b>Roland-Morris Disability Questionnaire</b>
<b>RVU</b>	<b>relative-value unit</b>

Download English Version:

<https://daneshyari.com/en/article/5677580>

Download Persian Version:

<https://daneshyari.com/article/5677580>

[Daneshyari.com](https://daneshyari.com)