Patient-Rated Osteoarthritis Severity in an Employed Population: Comparison of Impact With Non-Osteoarthritis Controls Using Data From the National Health and Health Survey

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BACKGROUND

- Although traditionally considered a disease most commonly affecting an older population, osteoarthritis (OA) has profound effects on individuals who are active participants in the workforce, resulting in reduced productivity as well as high indirect costs. 1-3
- Recent findings indicate that significant relationships exist between self-rated OA severity and other outcomes, including pain, function, productivity, and costs. 1-3
- Self-report of OA severity thus provides a useful approach to expand our knowledge of the impact and burden of OA in an employed population.

OBJECTIVE

- To evaluate the impact of self-rated OA severity on health-related quality of life (HRQoL), healthcare resource utilization, productivity, and costs in employed individuals relative to employed individuals without OA.

METHODS

- Data were derived from the 2009 National Health and Health Survey (N/HVS), respondents aged 20-29 years and employed full-time, part-time, or self-employed were included.
- Individuals were stratified by presence or absence of a self-reported diagnosis of OA based on the question, “Has your condition been diagnosed by a physician?”
- Individuals experiencing OA but not reporting a physician diagnosis were included in the cohort without OA (Figure 3).
- Individuals with OA self-rated their severity based on the question, “How severe is your arthritis?” with responses of mild, moderate, or severe.
- Work productivity was assessed using the self-report Work Productivity and Activity Impairment (WPAI) questionnaire. 4
- HRQoL was assessed using the SF-12v2 Health Survey Physical Component Summary (PCS) and Mental Component Summary (MCS) scores, 5 and health utility scores were calculated using the SF-6D. 6
- Healthcare utilization was evaluated by the type and number of traditional resources (physician, emergency department [ED], hospitalizations) and non-traditional healthcare visits reported within the past 6 months.
- Direct medical costs were estimated from the Medical Expenditure Panel Survey database. 5
- Indirect costs associated with lost productivity were calculated using data from the WPAI 7 and median income. 8

UNAVARIABLE ANALYSIS WAS USED TO EXAMINE DIFFERENCES IN DEMOGRAPHIC AND CLINICAL CHARACTERISTICS BETWEEN THE 2 GROUPS

- Multivariable models were used for analysis of QoL and productivity, adjusting for age, gender, race/ethnicity, education, income, Charlson Comorbidity Index (CCI), health insurance, body mass index, employment, traditional healthcare visits, non-traditional healthcare visits, prescription drug use, ED visits, hospitalization, and pain experienced in the past month.
- Determination and analysis of costs were not adjusted for covariates.
- All models employed users without OA as the reference category, and analyses were run using SAS version 9.1 (SAS Institute Inc., Cary, NC).

RESULTS

- Of the 39,772 individuals who met the inclusion criteria, 48% workers reported being diagnosed with OA, and 34.8% workers served as the cohort without OA (Table 1).
- Among workers with OA, severity was rated as mild, moderate, or severe by 45.0%, 45.9%, and 9% of individuals, respectively.
- Weighted univariate analysis of demographic characteristics showed that the OA cohort had: Greater proportion of females (P < 0.0001).
- More individuals in the 40–64-year and ≥65 year age ranges (P < 0.0001).
- Greater proportion of non-Hispanic whites (P < 0.0001).
- Higher percentage of obese individuals (P < 0.001).
- Higher percentage of employees with OA reporting a score of ≥2 on the CCI (P < 0.0001).
- The proportion of workers with OA reporting pain during the past 30 days increased at higher self-rated OA severity levels (Figure 1).
- A similar trend was observed for pain caused by arthritis.
- The overall effect for both pain categories was higher in the OA cohort relative to the percentage of employees without OA who reported any pain and arthritis-related pain (both P < 0.0001). Figure 1).
- As OA severity increased, so did the proportion of workers reporting greater levels of pain interference with daily activities, including both work outside the home and housework.
- Significantly higher proportions of workers with OA reported greater pain interference with daily activities relative to workers without OA (P < 0.0001).
- When adjusted for covariates, workers with mild, moderate, or severe OA reported increasingly worse (i.e., lower) PCS scores; differences at each severity level were significant versus non-OA workers (P < 0.0001). Figure 2A)
- Differences greater than 3 points between groups are considered clinically meaningful. 9
- In contrast, MCS scores were slightly but significantly higher among workers with mild OA relative to workers without OA, but no differences were observed for moderate and severe OA (Figure 2A).
- Workers with moderate and severe OA reported significantly poorer HRQoLs as indicated by health utility scores that were 0.036 and 0.079 points lower, respectively, relative to workers without OA (Figure 2B).
- Productivity over the past week as measured using the WPAI was increasingly impaired as self-reported OA severity increased (Figure 3A).
- Impairment was consistently greater among workers with OA relative to those without OA.
- Lost productivity caused by presenteeism was approximately 3–4 times greater than that caused by absenteeism across all cohorts.
- Overall, workers with moderate OA lost one third of their work time (33.2%), and those with severe OA lost almost half of their work time (47.4%).
- Similar proportions were reported for overall activity impairment.
- The adjusted ratio differences indicate the magnitude of impairment for workers with OA relative to workers without OA (Figure 3B).
- For example, the ratio difference of 94% for the moderate OA group and 1.86 for the severe OA group predicting absenteeism indicates that workers with moderate or severe OA reported 94% and 86% more absenteeism, respectively, than workers without OA (P < 0.0001).
- Similarly, workers with moderate or severe OA reported 49% and 74% more presentee time, and 45% and 73% more overall work impairment than workers without OA (all P < 0.0001).

- Across healthcare categories, resource utilization was significantly greater among workers with OA relative to those without OA (P < 0.0001).
- Although physician visits were similar across OA severity levels, utilization of other healthcare resources was higher at greater levels of self-reported OA severity.
- Annual total costs, comprising both direct and indirect costs, increased as OA severity increased (Figure 4).
- Component costs were higher at each increasing level of OA severity.
- Total costs and all component costs among workers with OA were significantly higher relative to workers without OA (P < 0.0001 for total costs and all component cost categories). Figure 4.
- Indirect costs, calculated based on lost productivity, were the primary driver of costs.
- Indirect costs consistently accounted for 70%–74% of total costs, even among workers without OA.

CONCLUSIONS

- OA has a significant impact among workers relative to workers without OA.
  - This impact was manifested by greater pain interference with function, poorer HRQoL, and greater lost productivity.
  - Greater differences between workers with OA and those without OA, reflecting a higher burden, were observed at increasing levels of OA severity.
  - Estimated costs were significantly higher among workers with OA relative to those without OA, with greater costs in increasing levels at OA severity.
  - The primary cost driver was indirect costs resulting from lost productivity, mainly caused by presenteeism.

REFERENCES


FIGURE 1: Proportion of workers reporting pain during the past 30 days

FIGURE 2: Impact of OA among workers, by self-rated OA severity, on HRQoL relative to workers without OA

FIGURE 3: Lost productivity as measured by the WPAI

FIGURE 4: Annual unadjusted costs per individual among workers with OA by self-rated OA severity and workers without OA