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Original Research

Factors associated with the health care cost in older Australian women with arthritis: an application of the Andersen's Behavioural Model of Health Services Use

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ABSTRACT

Objective: Factors associated with the utilisation of health care have not been rigorously examined in people with arthritis. The objective of this study was to examine the determinants of health care utilisation and costs in older women with arthritis using the Andersen's behavioural model as a framework.

Study design: Longitudinal cohort study.

Methods: Participants of Surveys 3 to 5 of the Australian Longitudinal Study on Women's Health who reported arthritis were included in the study. Information about health care utilisation and unit prices were based on linked Medicare Australia data, which included prescription medicines and health services. Total health care costs of participants with arthritis were measured for the years 2002 to 2003, 2005 to 2006, and 2008 to 2009, which corresponded to the survey years. Potential explanatory variables of the health care cost and other characteristics of the participants were collected from the health surveys. Explanatory variables were grouped into predisposing characteristics, enabling factors and need variables conforming to the Andersen's Behavioural Model of Health Services Use. Longitudinal data analysis was conducted using generalized estimating equations.

Results: A total of 5834 observations were included for the three periods. Regression analysis results show that higher health care cost in older Australian women with arthritis was significantly associated with residing in an urban area, having supplementary health insurance coverage, more comorbid conditions, using complementary and alternative medicine, and worse physical functioning. It was also found that predisposing characteristics (such as the area of residence) and enabling factors (such as health insurance coverage) accounted for more variance in the health care cost than need variables (such as comorbid conditions).

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Conclusion: These results may indicate an inefficient and unfair allocation of subsidised health care among older Australian women with arthritis, where individuals with less enabling resources and more socio-economic disadvantages have a lower level of health care utilisation. Future research may focus on evaluating the effectiveness of policies designed to reduce excessive out-of-pocket costs and to improve equity in health care access in the older population.

Introduction

Arthritis is a musculoskeletal disease that involves inflammation of the joints; it is a significant contributor to pain, loss of functioning, and disability.[1] Arthritis is very common around the world.[2] In Australia, over three million individuals are affected by arthritis.[3] The prevalence of arthritis is highest at older ages, though arthritis can develop at an early age. About one-third of individuals aged 65 years or older, and over half of those that aged 85 or older, are living with arthritis.[4] Arthritis is also a gendered disease where women are more likely to be affected than men. About two-thirds of individuals with osteoarthritis (the most common form of arthritis) are women.[3] Osteoarthritis also affects women more severely and at more body sites.[4] Consequently, women have more disability and higher health care utilisation than men with arthritis of the same age.[4]

Few studies have examined the factors associated with health care utilisation and/or costs in people with arthritis in Australia. Among international studies, it was found that health care utilisation (or costs) in individuals with arthritis is associated with risk factors such as obesity,[5] alcohol drinking,[6] tobacco smoking,[4,7] and physical inactivity.[8] Concurrently, evidence shows that the health care cost of arthritis is significantly associated with sociodemographic factors including area of residence,[9,10] education level,[11] and health insurance coverage.[9,12] Specifically, health care utilisation was found to be significantly negatively associated with living in a rural area, but positively associated with higher level of education and health insurance coverage.[9–12] Hence, there is some evidence that individuals with arthritis who have a lower socio-economic status have a lower level of health care utilisation, despite having the same need.

The Andersen's Behavioural Model of Health Services Use is one of the most acknowledged models of health care utilisation in the literature.[7] It suggests that health care use is affected by factors from three domains: predisposing characteristics, enabling factors, and need variables.[13] *Predisposing characteristics* are demographic variables that make some individuals more likely to use health care than others. *Enabling factors* measure individuals' ability to access health care from an economic standpoint. *Need variables* include risk factors for diseases, individual health states, and experiences of diseases that lead to the seeking of medical assistance. Andersen's behaviour model further theorises that when the need variables account for most of the variance in health care use, there is equitable access to health care.[13,14] On the other hand, there is inequitable access when the use of health care is primarily driven by predisposing characteristics or enabling factors.[13,14] Thus, Andersen's behaviour model provides a theoretical framework for examining the factors associated with the health care cost in the present investigation. Specifically, the aim of this study was to assess whether there are inequities in the health care utilisation of older Australian women with arthritis using a health care cost model and incorporating potential predisposing, enabling and need factors as per Andersen's framework.

Methods

Study design

This is a longitudinal cohort study where older women with arthritis were included in the analysis.

Study sample and data source

This study included data from the Australian Longitudinal Study on Women's Health (ALSWH) and linked Medicare Australia databases. Medicare is Australia's publicly funded universal health care system, which covers all citizens and permanent residents of Australia.[15]

ALSWH is a longitudinal survey of three cohorts of women that began in 1996.[16] ALSWH participants (born 1921 to 1926, 1946 to 1951, and 1973 to 1978) were originally randomly selected from the Medicare Australia database, and were broadly representative of the entire Australian female population.[17] ALSWH is designed to investigate multiple factors that affect the health and well-being of Australian women. ALSWH data are collected using self-administered questionnaires over a three-year rolling schedule. Since arthritis is a gendered disease and women are particularly at risk, ALSWH cohorts provided an appropriate sample for this study.

The present study focused on the 1921–26 birth cohort. The inclusion criteria were: participants who completed Survey 3 (2002), Survey 4 (2005), and/or Survey 5 (2008); self-reported arthritis; consented to the linkage of Medicare Australia administrative data; and had concessional status in the Pharmaceutical Benefits Scheme (PBS; described below) dataset during the enumeration period. In ALSWH surveys, women were asked, 'In the past three years, have you been diagnosed or treated for osteoarthritis, rheumatoid arthritis or