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# Gender differences in health-related quality of life among the elderly: The role of objective functional capacity and chronic conditions

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**Abstract**

Although worse Health-Related Quality of Life (HRQL) among women has been widely described, it remains unclear whether this is due to differential reporting patterns, or whether there is a real difference in health status. The objective of this study was to evaluate to what extent gender differences in HRQL among the elderly might be explained by differences in performance-based functional capacity and chronic conditions, using the conceptual model of health outcomes as proposed by Wilson and Cleary. Data are from a cross-sectional home survey of 872 surviving individuals from an elderly cohort representative of Barcelona's general population. Complete valid data for these analyses were obtained from 62% of the subjects ($n = 544$). The evaluation included the Nottingham Health Profile (NHP), a generic measure of HRQL; three performance-based functional capacity tests (balance, chair-stand, and walking tests); and a standardized list of self-reported chronic conditions. A series of multiple linear regression models were built with the total NHP score as the dependent variable, with gender, socio-demographic information, performance-based functional capacity and chronic conditions included sequentially, as independent variables. Women (65.4%) showed worse results than men on HRQL (mean of NHP total score 28.3 vs 16.7, $p<0.001$) and functional capacity (mean of summary score 7.1 vs 8.3, $p<0.001$). Functional capacity, arthritis, back pain, diabetes, and depression were significantly associated to the NHP total score in the final regression model, which explained 42% of the variance. Raw differences by gender in the total NHP score were 11.5 points ($p < 0.001$), but decreased to a non-significant 3.2 points ($p = 0.18$) after adjusting for all the other variables. In conclusion, our data suggest that worse reported HRQL in elderly women is mainly due to a higher prevalence of disability and chronic conditions.


*Keywords:* Chronic conditions; Elderly; Functional capacity; Health-related quality of life; Gender differences; Nottingham Health Profile; Spain

## Introduction

The elderly population is increasing both in absolute and relative terms. In developed countries

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women live on average 6–8 years longer than men, leading to an increasing gender gap with age (WHO, 2000). Therefore a gender perspective of health determinants needs to be taken into account. In fact, gender differences have already been reported for several health indicators and related issues. Also, older women are substantially more likely to experience functional impairment in mobility and personal self-care than men of the same age. And health statistics routinely show the paradox of a higher morbidity and health service use for women, while mortality rates are higher for men (Arber & Cooper, 1999; Macintyre, Hunt, & Sweeting, 1996; Verbrugge, 1989).

Focusing on Health-Related Quality of Life (HRQL), gender differences with consistently worse results among women have been widely described in many different populations independently of the used instrument (Alonso, Anto, & Moreno, 1990; Emery et al., 2004; Hopman et al., 2000; Michelson, Bolund, Nilsson, & Brandberg, 2000; Wijnhoven, Kriegsman, Snoek, Hesselink, & de Haan, 2003). To what extent these differences can be attributed to social and biological factors is yet unclear. From a sociological perspective, it has been hypothesized that as a result of different roles taken by gender, individuals may have a different way of perceiving symptoms and the illness process, leading to an over-estimation of morbidity in women (van Wijk & Kolk, 1997). Men would be socialized to ignore physical discomfort and are less likely to seek medical care for perceived symptoms, thus obtaining treatment when the condition is more advanced (Verbrugge, 1982; Spiers, Jagger, Clarke, & Arthur, 2003). From a biomedical point of view, reported differences between men and women reflect the presence of medical conditions and disability (Hazzard, 1985; Kanner et al., 1994; Karim & Burns, 2003; Parker & Brotchie, 2004).

Most of the literature about determinants of gender differences in perceived health has focused mainly on social factors (Arber & Ginn, 1993; Artazcoz, Cortes, Moncada, Rolhlfs, & Borrell, 1999; Denton, Prus, & Walters, 2004; Verbrugge, 1989). Only a few studies have addressed a biomedical perspective to test whether gender differences in health, as measured by questionnaires, can be explained by medical conditions and/or observable physical limitations in the general population. One recent study concluded that socio-demographic and lifestyle factors may explain a substantial part of the differences between men and women in HRQL, while chronic morbidity and health services use to play a lesser role (Guallar-Castillon, Sendino, Banegas, Lopez-Garcia, & Rodriguez-Artalejo, 2005). This seems to be contradicted by findings from other studies of the elderly based on disability measures, which suggest that worse reports from older women do, in fact, reflect higher functional limitations (Arber & Cooper, 1999; Ferrer, Lamarca, Orfila, & Alonso, 1999; Merrill, Seeman, Kasl, & Berkman, 1997; Wray & Blaum, 2001). In addition, there are several isolated findings that would support the influence of biomedical factors, such as the different patterns in chronic conditions, and higher rates of survival with disability described among elderly women (Ettinger et al., 1994; Fried, Ettinger, Lind, Newman, & Gardin, 1994; Guralnik, Leveille, Hirsch, Ferrucci, & Fried, 1997). Disability in women has been shown to be more frequently related to non-fatal or minor but disabling conditions, such as arthritis, while disability in men is more related to fatal conditions, such as cardiovascular or lung diseases. However, again we find that medical literature shows complex and sometimes contradictory findings, with the magnitude and direction of gender differences varying depending on the particular diagnosis or age (Jagger & Matthews, 2002; von Strauss, Aguero-Torres, Kareholt, Winblad, & Fratiglioni, 2003).

A general model of patients' outcomes proposed by Wilson and Cleary (Wilson & Cleary, 1995) conceptualizes the integration of the social and the biomedical paradigms and places measures of health as existing on a continuum of increasing complexity. At one end of the continuum there are biological measures such as serum albumin levels and hematocrit, then symptoms and physical functioning, and then on to more complex and integrated measures such as general health perceptions to overall HRQL. In fact HRQL has been increasingly used as a health status outcome measure in the elderly. It is associated with acute hospital admissions and other health services use (Harris, Kovar, Suzman, Kleinman, & Feldman, 1989), with institutionalization (Branch & Jette, 1982), and with subsequent dependency or death (Kaplan, Barell, & Lusky, 1988; Warren & Knight, 1982). The influence of the environment (social, economic or psychological support) and of the individual's characteristics (values or motivation, among others) affect every step of the continuum of health, showing HRQL to be influenced not only by