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Gender differences in life expectancy with and without disability among older adults in Ecuador

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ABSTRACT

Background: Knowledge on disability's impact among older women and men in Ecuador is limited. This paper provides gender-specific estimates of disability prevalence, life expectancy with and without disability, and the factors associated with gender differences in disability at older age in Ecuador (2009–2010).

Methods: Data from the Health, Well-Being, and Aging Survey (SABE) Ecuador 2009 was used. Participants were 4480 men and women aged 60 and over. Life expectancy with and without disability was calculated using the Sullivan method. Logistic regression analyses were used to explore gender differences in disability prevalence. Two disability measures, indicating limitations in activities of daily living (ADL) and instrumental activities of daily living (IADL), were used.

Results: 60-year-old women in Ecuador can expect to live 16.3 years without ADL limitations compared to 16.9 years for men. Life expectancy without IADL limitations was 12.5 years for women and 15.5 years for men. At age 60, women's length of life with ADL and IADL disability was higher (7.9 years for women vs. 4.9 years for men with ADL, and 11.7 years for women vs. 6.3 years for men with IADL). After controlling for socioeconomic characteristics, chronic conditions and lifestyle factors, gender differences in ADL disability were not statistically significant. However, older women were 58% more likely (OR = 1.58, 95% CI 1.27, 1.95) to report having IADL limitations than men, even after including control variables.

Conclusion: Interventions should tackle chronic disease, physical inactivity, and socioeconomic differences to reduce women's vulnerability to disability in older age.

1. Introduction

Population aging is an ongoing global phenomenon; however the population of the developing world is aging faster than the global average (World Health Organization, 2011a,b). In 2012, 69% of people age 60 or older lived in developing countries, and the proportion will rise to 79% by 2050 (United Nations Department of Economic and Social Affairs Population Division, 2012) (for the purposes of this paper, "older" means age 60 and over). Ecuador is a developing country experiencing rapid population aging. The proportion of the population age 60 or older is expected to almost double, from 7.3% to 14.4%, between 2000 and 2030. In the same period, the number of people age 60 or older is expected to increase from 0.9 million to 2.8 million (CELADE, 2013).

Life expectancy of older adults has been increasing steadily in Ecuador over the past three decades. In 1980–1985 Ecuadorian men at age 60 were expected to live, on average, 17.6 additional years, while their female counterparts were expected to live an additional 19.1 years (CELADE, 2013). However, by 2005–2010, men would expect to live 21.4 additional years at age 60, while 23.6 additional years for women of the same age (CELADE, 2013). Older women not only outnumber older men in Ecuador but also live longer. This does not mean, however, that Ecuadorian women always live these additional years in good health. Chronic diseases such as arthritis, osteoporosis, heart disease, and stroke are more prevalent among older women. Specifically, they suffer higher incidences of hypertension (61.4% vs. 51.6% for older men), diabetes (16.7% vs. 11.3%) and obesity (24% vs. 10%) (Rosero Bixby, 2012). Older women also suffer from more frequent disabilities, particularly after age 70 (Mera Intriago, 2012). Chronic conditions can result in premature mortality, loss of productive years due to disabilities, and costs of medications, hospitalization, and specialized care services. In Ecuador, diabetes, hypertension, and

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cardiovascular diseases figure among the top 10 causes of hospitalization (Rosero Bixby, 2012).

Disability-free, life expectancy, defined as the years lived free of functional disability at older ages, is an emergent field in Latin America and the Caribbean (Camargos, Oliva Perpétuo, & Machado, 2005; Rose, Hennis, & Hambleton, 2008). However, studies on disability in Ecuador are scarce, and only a few important studies on health and aging have been published (Del Brutto et al., 2014; Orces, 2013; Sempértegui et al., 2011). The survey of Health, Well-Being, and Aging (*Salud, Bienestar y Envejecimiento*, hereafter "SABE") was carried out in Ecuador for the first time in 2009 and 2010 at the national level (SABE Ecuador I and II). The SABE study's data on disability and health status among older adults in 2009 offers a valuable resource for studying disability-free life expectancies in Ecuador.

Our study estimated the prevalence of functional limitations in activities of daily living (ADL) and instrumental activities of daily living (IADL) and how prevalence differs by gender in adults in Ecuador age 60 and over. We estimated total life expectancy, disability-free life expectancy, and disabled life expectancy for older men and women, and used a logistic regression model to examine socioeconomic, demographic, and health factors associated with gender differences in disability prevalence.

2. Methods

2.1. Sample size and data

This study is based on cross-sectional data from the SABE I Ecuador study. Data were collected from a national sample of respondents 60 years and over from June to August 2009 in urban and rural areas in the highland and coastal regions of Ecuador. Only two less populated regions, Amazon and Galápagos, were excluded from the sample. Funding was provided by the Ministry of Social and Economic Inclusion of Ecuador. The University of San Francisco de Quito, the National Institute of Statistics and Census, the Ministry of Public Health, and the Society of Geriatrics implemented and supported the study (Freire et al., 2010).

The interview guide and questionnaire of anthropometric measurements used in this study were validated through a pilot test, and were revisions of versions of previous SABE studies for Latin America and the Caribbean. A probability- and population-proportionate sample of households in urban and rural areas with at least one adult 60 years or older was used to obtain the sample (Freire et al., 2010). A total of 5100 households in the highlands and 5268 in the coastal region were randomly selected based on the 2001 national census cartography. The response rate reached 97%. Trained interviewers collected information for 5235 subjects. Consent was obtained from participants to use their data for research purposes (Freire et al., 2010). The survey included questions about personal information, cognitive status, health status, functional status, drug intake, use of and accessibility to health services, social and family network support, work history and income, housing conditions, flexibility and mobility, and exposure to physical violence and abuse. Manuals and survey instruments are publicly available (Freire et al., 2010).

From the original SABE sample of 5235, data in selected variables were missing in 755 cases. Most of the missing data belonged in the age, IADL limitations, and chronic conditions categories. When compared to subjects with complete data, subjects with missing data were more likely to be female ($p < 0.001$), to have ADL limitations ($p = 0.001$), and to have IADL limitations ($p < 0.001$). The final sample is composed of 4480 cases with complete data on selected variables.

Mortality tables were obtained from an official source, Secretaría Nacional de Planificación y Desarrollo (SENPLADES), which analyzes social, demographic, and economic data for Ecuador. The 2010 mortality tables generated by SENPLADES were estimated by disaggregating the aggregated mortality tables created by the Instituto Nacional de Estadística y Censos (INEC) and the Centro Latinoamericano y Caribeño de Demografía (CELADE) (Secretaría Nacional de Planificación y Desarrollo, 2008).

2.2. Analyses

We used the Sullivan method to estimate life expectancy with and without disability (Sullivan, 1971). The main inputs are age-specific prevalence of life expectancy with disability and without disability in the population and age-specific mortality rates. The estimates of disability prevalence were based on the SABE survey. Total life expectancy is the sum of disabled and disability-free years of life. These estimates are independent of the age structure of the population. We used the Sullivan method because it combines the use of mortality and prevalence of disability-free status, which are widely available. A detailed description of the Sullivan method to generate estimates for disabled and disability-free years of life can be found elsewhere (Andrade, Egüez Guevara, Lebrão, Oliveira Duarte, & Ferreira Santos, 2011). Logistic regressions were used to assess the associations between demographic, socioeconomic, and health characteristics on the prevalence of disability. Data management and analyses were performed using STATA (version 12.1; StataCorp, College Station, TX, USA). Survey design was accounted for when reporting descriptive statistics and regression results.

2.3. Measures

Disability status was ascertained using two measures: ADL and IADL limitations. Individuals with ADL limitations face difficulties performing daily activities related to functional mobility and self-care, such as having difficulty dressing, bathing, eating, getting in and out of bed (transferring), toileting, and getting across a room. IADL limitations are not as severe as ADL limitations but nevertheless limit the individual's ability to live independently within a community. IADL limitations include having difficulty preparing a meal, managing money, going out, shopping, using the telephone, and taking medication. We dichotomized each of the ADL and IADL measures: a score of 0 indicated that the respondent did not indicate any limitations, and a score of 1 indicated that the respondent had difficulty performing at least one activity in each scale.

Additional variables consisted of demographic characteristics, socioeconomic conditions, and health conditions and behaviors surveyed in the SABE study. Demographic characteristics were age, gender, and ethnicity. Age was aggregated into five categories: 60–64 (reference category), 65–69, 70–74, 75–79, and 80 or older. A dichotomous variable was included for gender (male = 0, female = 1). Ethnic categories were White, Indigenous, Afro-descendant, Mestizo, and not reported. In Ecuador, indigenous are defined as native of the country, and Afro-descendant as having black or brown skin and presenting Afro-Ecuadorian traits or having black ancestry. Mestizo includes those born from parents of different races or those who define themselves as mixed. White (reference category) are those having European or Caucasian ancestry.

Socioeconomic characteristics were education level, health insurance status, whether respondent received the Human Development Bonus, marital status, geographic region, and area of residence. Education level was grouped in three categories: illiterate or having less than primary education, completed primary school through the sixth grade (reference category), and completed secondary school or higher levels of formal