Decomposition of Gender Disparities in Health Expectancy among the Elderly in Latin America

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Abstract:

Women live longer but suffer more ill-health than men. In a context of population aging and declining gender ratios at older ages, there is an increasing concern about female health disadvantages among elderly, particularly in developing regions that are aging at a very rapid pace such as the case of Latin America. Our goals are:*i)* to compare gender differences in health expectancies in five Latin American countries, and *ii)* to investigate the contribution of women's mortality advantage versus women's disability disadvantage to the gap. Regarding disability-free-life-expectancy, we showed that the patterns are not the same across countries. In Argentina, Chile and Uruguay, women enjoy more healthy years than men, whereas in Brazil and Mexico, men can expect to live more healthy years. Consistently, although the decomposition showed that the contributions of mortality and disability effects have opposite directions in all countries, the size of each effect differs substantially across them.

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1. Introduction

Gender disparities in health have been widely studied worldwide (Case and Paxson, 2005; Chan, 2005; Crimmins and Kim, 2010; Andrade et al., 2011; Grundy, 2006; Mathers et al., 2001; Ofstedal et al., 2003; Oksuzyan et al., 2014, 2008; Verbrugge, 1989). This literature has shown that although women live longer than men, they do worse concerning disability and other health outcomes such as self-rated health. As a result, men's proportion of healthy life exceeds that of women (Council and Review, 2018; Crimmins and Saito, 2001; Nusselder et al., 2010; Van Oyen et al., 2013). There are multiples causes for the male-female health-survival paradox, including biological, behavioral and social factors (Brønnum-Hansen and Juel, 2004; Christensen and Vaupel, 1996; Case and Paxson, 2005; Verbrugge, 1989; Wingard, 1982). Usually, men engage more frequently in risky behaviors, such as the use of tobacco and alcohol, and less safe driving, although gender-behavior differences have reduced in more recent years (Jacobsen et al., 2008; Preston et al., 2010). On the other hand, some diseases that are closely related to higher prevalence of disability, including arthritis and depression, are more common among women, which explain some of the gender differences in morbidity (Costa Filho et al., 2018; Schön and Parker, 2008; Case and Paxson, 2005; Yokota et al., 2016).

In a context of population aging and declining gender ratios at older ages, there is an increasing concern about female health disadvantages among the elderly (Robine et al. 2001, Zeng et al. 2001, Andrade et al., 2011, Campos et al., 2015). The proportion of healthy life lived by an American man at age 70 is about ten times higher than that of woman, and at age 90 the discrepancy is 20% greater (Crimmins et al., 1996). The situation can be more dramatic in populations that are aging at a very rapid pace and where long-term care is provided informally by families, such as the case of Latin American countries (Palloni and McEniry, 2007; United Nations, 2017). By 2050, 198 million people aged 60 years or over will live in Latin America and the Caribbean, with a ratio of 84 men per 100 women (United Nations 2017). Therefore, topics like healthy aging and gender disparities in health are becoming a fundamental issue in the region.

The literature about gender differences in health in Latin America has systematically described an excess of female morbidity (Andrade et al., 2014; Camargos et al., 2007; Palloni and McEniry, 2007; Zunzunegui et al., 2009). Women in Latin America are more likely to report worse self-rated health, and they experience about 50% higher prevalence of disability than men (Barbosa et al., 2005, Duarte et al. 2005). Regarding

gender disparity in health expectancy, the Latin America pattern is similar to the one documented in the weathiest regions: women live longer than men, but they spend proportionately more time disabled (Andrade et al. 2011, Camargos et al. 2005, Camargos et al. 2008). Female health status at late adulthood (65 years old) is important because it affects the duration of remaining healthy life. According to a Brazilian study, the proportion of healthy life years lived by a women without disability at age 65 is more than 3 times higher than the proportion lived by a disabled women at the same age (Nepomuceno and Turra, 2015).

Although previous studies have already documented health disparities between men and women at older ages, it remains unknown the contribution of mortality and disability levels to gender disparities in health expectancy across Latin American countries. Health expectancy is a summary measure widely used to evaluate the average level of population health. In addition, it is a policy planning tool generally used to compare the level of health across populations. In high-income countries, decomposition analysis to assess the contributions of mortality and disability to gender gap in health expectancy pointed out that considerable gender differences in mortality and disability can be masked when only the total gap is analyzed (Nusselder & Looman 2004, Nusselder et al., 2010, Van Oyen et al., 2013, Mairey et al., 2014). For example, in the Netherlands, the effect of disability (-3.5 years) and mortality (3.1 years) on health expectancies gap have similar magnitudes but opposite directions, that result in a very small gap (-0.4 years); however, the decomposition showed substantial differences in total mortality and in the prevalence of disability by gender. This kind of analysis is helpful in improving the assessment of targeted health priorities, particularly those that aims reducing gender differences in health.

Therefore, in order to better understand gender disparities in health at older ages, this study aims to compare differences in health expectancies for men and women across five Latin American countries (Argentina, Brazil, Chile, Mexico, Uruguay), and to investigate the contribution of women's mortality advantage versus women's disability disadvantage to the gap in health expectancy. We hope to reveal if there is a typical pattern of gender gap in healthy expectancy in Latin America.

2. Data and Methods

The data come from the Survey on Health, Well-Being, and Aging in Latin America and Caribbean (SABE). The SABE interviewed non-institutionalized individuals aged 60 and older in seven cities in Latin America and the Caribbean in 1999-2000. In this study we analyze Buenos Aires (Argentina), São Paulo (Brazil), Santiago (Chile), Mexico City (Mexico) and (Montevideo) Uruguay. One of the greatest advantages of SABE is the consistency of data across countries. Unfortunately, the comparisons can be performed only for the year 2000. To measure health status, we use the question that evaluates physical functioning according to the Katz Index of Independence in Activities of Daily Living (bathing, dressing, toileting, walking across a room, continence and feeding). We define disabled individuals those who declared difficulty to perform one or more ADL tasks. The information on prevalence of disability from the SABE is combined with life tables by gender estimated by the United Nations (2017) in the 1995-2000 period.

To examine gender disparities in health expectancy, we estimate the Disability-free life expectancy (DFLE) using the Sullivan Method (Sullivan 1971). It is a widely used index that combines mortality and disability data, reflecting the average number of years lived with and without disability. After estimating DFLE by gender at age 60, we decompose the gender gap in DFLE, at the same age, according to the mortality and disability effects by applying the method proposed by Nusselder & Looman (2004), which is an extension of the Arriaga (1984) method. The mortality effect is fraction of the gender gap in health expectancy that results from a difference in the total number of person-years lived by men and women, whereas the disability effect is the fraction due to gender differences in the prevalence of disability.

3. Preliminary Results

Table 1 shows gender differences in total life expectancy (LE), in DFLE and in life expectancy with disability (LEWD) at age 60, for five Latin American countries. Not surprising, gender differences in LE are in favor of women in all countries. The highest gap in LE is in Chile (6.26 years), followed by Uruguay (4.90 years) and Argentina (4.53 years). In Brazil, a woman aged 60 expects to live 2.70 years more than a man, and in Mexico the female advantage is 1.50 years. Although the difference in LE is in favor of women in all countries, most of the female additional years of life are lived with disability; for example, 85% in Argentina and 92% in Chile.

Table 1 -Decomposition of Gender Difference in Total Life Expectancy(LE), Life Expectancy Free of Disability(DFLE), and Life Expectancy With Disability (LEWD) into mortality and disability effect at age 60, Argentina, Brazil, Chile, Mexico, Uruguay, 1995-2000

		LE	DFLE	LEWD
Argentina	Total Difference(men=baseline)	4.53	0.67	3.86
	Mortality effect	4.53	3.00	1.53
	Disability effect		-2.33	2.33
Brazil	Total Difference(men=baseline)	2.70	-1.09	3.79
	Mortality effect	2.70	1.58	1.13
	Disability effect		-2.66	2.66
Chile	Total Difference(men=baseline)	6.26	0.48	5.79
	Mortality effect	6.26	3.95	2.31
	Disability effect		-3.48	3.48
Mexico	Total Difference(men=baseline)	1.50	-0.35	1.85
	Mortality effect	1.50	0.85	0.65
	Disability effect		-1.20	1.20
Uruguay	Total Difference(men=baseline)	4.90	1.26	3.63
	Mortality effect	4.90	3.55	1.34
	Disability effect		-2.29	2.29

Source: SABE survey and UN (2017).

Regarding disability-free life expectancy, the patterns are not the same in all five countries. In Argentina, Chile and Uruguay, women enjoy more healthy years than men, whereas in Brazil and Mexico, men can expect to live more healthy years. Consistently, although the decomposition showed that the contributions of mortality and disability effects have opposite directions in all Latin American countries, the size of each effect differs substantially across them. In Mexico and Brazil, the highest prevalence of disability among women explains why their mortality advantage does not translate into higher DFLE compared to men. In Chile, Argentina and Uruguay the mortality advantage surpasses the disability disadvantage among women to an extent that leads to higher female DFLE at age 60.

Gender differences in LEWD show that women expect to live more years with disability than men in all Latin American countries. In Chile, for example, women can expect to live about 6 years more than men with disability. The lowest gender gap in LEWD is in Mexico, where the number of disabled years lived by a woman is 1.85 years larger compared with men. In contrast with the decomposition of gender differences in DFLE, in the case of LEWD the contributions of disability and mortality effects have the same direction in all countries. Both effects increase the gender gap in LEWD, however, most of the gap is a result of higher disability among women.

4. Further work

In the final version of this study, we plan to expand the current analysis by adding the decomposition of mortality and disability effects by age groups. To do that we intend to apply the step-wise decomposition method described by Andreev et al. (2002). From Arriaga (1984), we learn that in the case of the decomposition of total life expectancy, contributions from changing age-specific death rates can be split into direct effects (the impact of changing death rates at that age on life expectancy) and indirect effects (the impact of the extra life years lived by the survivors on subsequent ages). Step-Wise decomposition alters the rates one element at a time, usually represented by age, and recalculates the index function (i.e. life expectancy or any other summary measures). In the case of our study, we will apply the step-wise decomposition to split gender differences in health expectancies into mortality and disability effects and compare with results showed in Table 1. Moreover, the method will allow us to estimate the role of disability and mortality effects at each age to explain the total gender differences.

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