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The mobility gap between older men and women: The embodiment of gender

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ABSTRACT

Objectives: To present the study design and baseline results of the longitudinal International Mobility in Aging Study (IMIAS) on gender differences in physical performance and mobility disability prevalence in five diverse societies.
Methods: Data are from surveys on random samples of people aged 65–74 years at Canadian (Kingston, Ontario; Saint-Hyacinthe, Quebec), Mediterranean (Tirana, Albania) and Latin American sites (Natal, Brazil; Manizales, Colombia) ($N = 1995$). Mobility disability was defined as reporting difficulty in walking 400 m or climbing stairs. Activities of daily living (ADL) disability was based on any self-reported difficulty in five mobility-related ADLs. The short physical performance battery (SPPB) was used to assess physical performance. Poisson regression models were fitted to estimate prevalence ratios.
Results: Age-adjusted prevalence of low SPPB, mobility disability and ADL disability were higher in women than in men in all sites except for Kingston. After adjustment for education and income, gender differences in SPPB and ADL disability attenuated or disappeared in Saint-Hyacinthe and Manizales but remained large in Tirana and Natal and mobility disability remained more frequent in women than in men at all sites except Kingston. After further adjustment by chronic conditions and depressive symptoms, gender differences in mobility remained large at all sites except Kingston but only in Tirana did women have significantly poorer physical performance than men.
Discussion: Results provide evidence for gender as a risk factor to explain poorer physical function in women and suggest that moving toward gender equality could attenuate the gender gap in physical function in old age.

1. Introduction

Mobility, the ability to move in one's environment, is an essential feature of human functioning (Guralnik & Ferrucci, 2003). Population studies have consistently shown a gender gap in mobility disability. Limited available evidence suggests that this gap is small and is decreasing with time in countries where there is little gender segregation (Ahacic, Parker, & Thorslund, 2000; Raina, Dukeshire, Lindsay, & Chambers, 1998) and it is large in countries where women have different social roles and opportunities in life (Alvarado, Guerra, & Zunzunegui, 2007; Guerra, Alvarado, & Zunzunegui, 2008; Khadr & Yount, 2012; Miszkurka et al., 2012; Onadja et al., 2013; Rahman & Liu, 2000; Yount & Agree, 2005; Zeki Al Hazzouri et al., 2011) Few studies on gender differences in

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[4] In addition to the co-authors of this article, from the International Mobility in Aging Study (IMIAS) the following researchers have contributed at different steps of the study conception, design, data collection and analyses, listed by their academic affiliation: Freeman EE, Karna G at the Université de Montréal; Deshpande N, Garcia A, Kotecha J, Philips S at Queens University; Curcio CL at Universidad de Caldas; Freire A at Universidade Federale do Rio Grande do Norte and Qirjako G at the Albanian National Institute of Public Health.

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physical function have integrated performance and self-reported measures, and those that have used both types of measures utilized single populations(Khadr & Yount, 2012; Rahman & Liu, 2000). International research is needed to better understand the gender gap in physical performance and in mobility across diverse populations.

In this article "sex" refers to the biological and physiological characteristics that define men and women and "gender" refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women (WHO, 2013). We will use the term gender for customary dichotomous comparisons of men and women, absorbing both gender and sex-linked differences. Explanations of the mobility gap between men and women should go beyond understanding what part of the difference can be best explained by biological differences and what part could be explained by gender differences in exposure to risk factors and vulnerabilities(Kaneda, Zimmer, Fang, & Tang, 2009; Rahman & Liu, 2000; Roy & Chaudhuri, 2008).

To illustrate this point, the differences between men and women in mobility disability in old age can be related to: (1) higher prevalence of arthritis in women (Whitson et al., 2010). Obesity is a risk factor for arthritis (Blay, Fillenbaum, Andreoli, & Gastal, 2012; Loeser, 2010), and tends to be more prevalent in women (El Ati et al., 2012; Riediger & Clara, 2011; Whitson et al., 2010; Yount et al., 2010). The higher obesity risk of women could be linked to their lower physical activity compared with men (Souza, Fillenbaum, & Blay, 2015), particularly in societies with norms which discourage physical activity in women through the entire life-course (gender) (Van Tuyckom, Van de Velde, & Bracke, 2013; Yount et al., 2010). Obesity in women could be also linked to the daily responsibility to domestic housework (gender) (Appelhans et al., 2015; Stamatakis et al., 2007); (2) higher exposure to domestic violence (early childhood abuse and intimate partner violence) in women. People exposed to domestic violence have higher risk of osteoarthritis, heart disease, diabetes, hypertension and obesity (Fuller-Thomson, Stefanyk, & Brennenstuhl, 2009, Fuller-Thomson, Brennenstuhl, & Frank, 2010; Miller, Chen, & Parker, 2011). The higher prevalence of these chronic conditions in old women (Whitson et al., 2010) could be due to sex-linked differences in inflammatory and stress responses to lifecourse violence; (3) Higher prevalence of depression and low self-esteem in old women (Alvarado, Zunzunegui, Beland, Sicotte, & Tellechea, 2007; Djernes, 2006; Sonnenberg et al., 2000) could trigger a third pathway, characterized by impaired stress response (Dube et al., 2009; Fagundes et al., 2013; Power, Thomas, Li, & Hertzman, 2012), inflammation (Kiecolt-Glaser et al., 2011) and poor health behaviors (Miller et al., 2011); (4) Multi-parity is a risk factor for cardiovascular disease in later life (Parikh et al., 2010) and diabetes (Vandenheede, Deboosere, Gadeyne, & De Spiegelaere, 2012). In societies where women are expected to have many children, women have little control of their fertility and they may be at higher risk of these disabling diseases and, in consequence, at higher risk of mobility disability in old age.

These hypotheses could be examined in international population studies that provide a wide range of exposures and outcomes, compare disease rates, and examine the causes of differences in these population disease rates (Rose, 2001; Schwartz & Carpenter, 1999). Our hypothesis is that gender inequality (systematic differences in access to resources and opportunities between women and men) is an important risk factor for mobility disability in populations of women. If this hypothesis is true, we should observe higher rates of mobility disability in female populations in societies with larger gender inequality.

The International Mobility in Aging Study (IMIAS) aims at understanding the mobility differences between men and women by comparing mobility disability in populations that differ widely in gender norms and values. Main IMIAS hypotheses being currently tested are: (1) chronic exposure to violence and poverty during the life course increase the risk of mobility disability in old age (Sousa et al., 2014); (2) social and economic adversity will be embodied by dysregulation in the stress response and increased chronic inflammation with impacts on mobility in old age; (3) the higher the gender gap in social and economic adversity through the lifecourse, the higher the gender disability gap in old age will be.

This article presents the study design and preliminary baseline results of IMIAS on differences between men and women in physical performance and mobility disability in early old age in five diverse societies. We tested the hypothesis that the gender mobility gap would be small or non-existent in societies with little gender inequality, that this gap would be larger in societies with larger gender inequality and that it would be attenuated after statistical adjustment by gender related socioeconomic and health indicators. We expected to find that the direction of the results would be similar for three measures of physical function: physical performance, self-reported mobility and more severe disability in mobility-related activities of daily living (ADL).

2. Methods

2.1. Setting

IMIAS (International Mobility in Aging Study) is a population-based longitudinal study conducted in five sites: Tirana (Albania), Natal (Brazil), Manizales (Colombia), Kingston (Ontario, Canada) and Saint-Hyacinthe (Quebec, Canada).

Tirana is a city of approximately 700,000 habitants, situated in the central valley of Albania. Researchers in Tirana are affiliated with the Albanian School of Public Health. Natal is a city of 800,000 habitants and the capital of the province of Rio Grande do Norte in northeast Brazil. Researchers in Natal are affiliated with the Universidade Rio Grande do Norte. Manizales is a city of 400,000 habitants in the coffee-growing zone in the Colombian Andes Mountains and capital of the Caldas department. Researchers in Manizales are affiliated with the University of Caldas. Kingston is a city with 130,000 inhabitants in Ontario and was the first capital of Canada. Researchers in Kingston are affiliated with Queens University. Saint-Hyacinthe is a city with a population of about 50,000 inhabitants and the economic center of an agricultural region 50 km from Montreal, Quebec. Researchers in Saint-Hyacinthe are affiliated with the Université de Montréal.

These cities represent diverse ways of living in very different societies (Tirana is capital of Albania, an ex-communist country of Muslim tradition in rapid transition to capitalism; Kingston, a University city in Ontario and Saint-Hyacinthe, a center of an agricultural region in Quebec; Manizales in the Andean coffee growing region, a relatively wealthy area of Colombia; and Natal, a coastal city and capital of a relatively poor region of North Eastern Brazil) and they represent societies which vary strongly in gender equality: according to the Gender Inequality Index published in the 2014, Human Development Report of United Nations, Canada ranks 23, Albania 44, Brazil 85 and Colombia 92. These national averages are not applicable to each study city but they can be used as rough current national indicators of gender equality. Since they are based on current indicators of health, economics and participation they do not take into account historical variations or geographical variations within countries. Concerning our study sites, Kingston (Ontario) and Saint-Hyacinthe (Quebec) differ on their historical developments of gender equality (Québec, 2013) and Natal is capital of the province of Rio Grande do Norte, the province with the highest gender inequality of the Brazilian provinces (Cardoso, 2012).