



## Links between primary occupation and functional limitations among older adults in Mexico



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### ABSTRACT

Social inequalities in health and disability are often attributed to differences in childhood adversity, access to care, health behavior, residential environments, stress, and the psychosocial aspects of work environments. Yet, disadvantaged people are also more likely to hold jobs requiring heavy physical labor, repetitive movement, ergonomic strain, and safety hazards. We investigate the role of physical work conditions in contributing to social inequality in mobility among older adults in Mexico, using data from the Mexican Health and Aging Survey (MHAS) and an innovative statistical modeling approach. We use data on categories of primary adult occupation to serve as proxies for jobs with more or less demanding physical work requirements. Our results show that more physically demanding jobs are associated with mobility limitations at older ages, even when we control for age and sex. Inclusion of job categories attenuates the effects of education and wealth on mobility limitations, suggesting that physical work conditions account for at least part of the socioeconomic differentials in mobility limitations in Mexico.

### Introduction

Mortality, morbidity, and physical functioning among older adults vary considerably by socioeconomic status in most, if not all, countries (Bleich, Jarlenski, Bell, & LaVeist, 2012; He, Muenchrath, & Kowal, 2012; Hurst et al., 2013; Marmot, Allen, Bell, Bloomer, & Goldblatt, 2012; Smith & Majmundar, 2012; Toch et al., 2014). Individuals with more education and higher economic status are generally in better health. Although there is persuasive evidence about some of the mechanisms involved, including differential access to health care, early life conditions, environmental exposures, personal health behaviors, and stress (Braveman, Egerter, & Williams, 2011; Marmot & Allen, 2014), the picture is far from complete. This is particularly true for middle and low income countries which are experiencing rapid population aging and for which there is less evidence about the causes of health inequalities.

One of the factors that is likely to account for socioeconomic inequalities in health among older adults is work – specifically, the physical and psychosocial conditions of the work done throughout life (Burgard & Lin, 2013; Clougherty, Souza, & Cullen, 2010; Hoven & Siegrist, 2013; Landsbergis, Grzywacz, & LaMontagne, 2014;

Marmot et al., 1991). For most adults, work is a major part of life, whether it involves paid employment, self-employment, or housework and child care. Work is highly stratified by socioeconomic status: educational attainment and family background play a large role in determining the type of work that adults do and the work conditions they are exposed to. Furthermore, extensive research on occupational health and safety has demonstrated a strong relationship between physical and psychosocial work conditions and health. Taken together, socioeconomic stratification in work conditions and the strong evidence that work conditions affect health suggest that work conditions are likely to play an important role in the creation of socioeconomic inequality in older adult health.

In this paper, our goal is to determine whether physical work conditions contribute significantly to the creation of socioeconomic inequalities in physical functioning among older adults in Mexico. The analysis addresses three questions. First, do work conditions account for a substantial portion of the socioeconomic differentials – as measured by educational attainment and wealth – in mobility limitations at older ages in Mexico? Specifically, we use a set of job categories as proxies for work conditions and assess whether their inclusion attenuates the coefficients for education and wealth. Second, do job categories as a

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group remain statistically significant after controlling for education and wealth? Third, which job categories are associated with the highest rates of mobility limitations at older ages, as a whole and by gender?

We use data from the nationally representative Mexican Health and Aging Survey (MHAS). As in most health interview surveys, physical functioning in MHAS is measured with a set of questions on functional limitations that primarily focuses on mobility. There are several reasons for focusing on mobility. Mobility is likely to be affected more strongly than many other health outcomes by a history of jobs with heavy physical demands. It is also an important determinant of individual wellbeing at older ages with significant implications for health care and daily assistance needs.

This paper makes three important contributions. First, it contributes to the literature on explanations for socioeconomic inequalities in health by investigating the role of physical work conditions. This literature has typically focused on causal mechanisms such as: the role of early life conditions, adult living standards, access to health care, experiences of discrimination (by race, gender, and other characteristics), health behaviors, and psychosocial conditions at work and in other environments (Adler & Stewart, 2010; Berkman, 2009; Braveman et al., 2011; Elo, 2009; Goldman, 2001; Kawachi, Adler, & Dow, 2010; Marmot & Allen, 2014). Despite the enormous evidence based on the effects of physical work conditions on health (Burton, 2010) and the fact that individuals from less advantaged backgrounds are more likely to work at more strenuous jobs, less attention has been paid in studies of socioeconomic inequalities in health to the role of lifetime physical work conditions in creating these inequalities.<sup>1</sup> Several recent studies which do examine these associations, primarily in Europe, are summarized below.

A second contribution is the focus on Mexico, a middle income country with a significant technology sector, a large industrial sector, but also large agricultural, small manufacturing, service, and informal employment sectors. Mexico has begun to implement occupational safety and health regulations more recently than high income countries. Like many lower and middle income countries, Mexico is also experiencing rapid population aging, making the growing prevalence of functional limitations and disability at older ages a serious health policy concern. Understanding the role of work in affecting older adult health in Mexico is important for Mexican policy makers and provides useful evidence about the role of work in socioeconomic health inequalities in similar countries.

Finally, this analysis also contributes to our knowledge of the determinants of limited physical functioning at older ages. The prevalence of functional limitations is increasing in many countries simply because of rapid population aging. In some countries, such as the U.S. and Mexico, functional limitations may also become more prevalent because of the dramatic growth in obesity and increased sedentariness during the past several decades (Himes & Reynolds, 2012; Rtveldzde et al., 2014; Vincent, Vincent, & Lamb, 2010). Thus, old age functional limitations and other forms of disability are a key issue in public health policy and more research on ways to reduce old age functional limitations is essential (Chatterji, Byles, Cutler, Seeman, & Verdes, 2015; Jette & Field, 2007; Martin & Schoeni, 2014).

## Work conditions and health

Workers with less education and from lower income backgrounds are more likely to have jobs that include heavy physical demands (e.g., carrying or moving heavy loads), repetitive movements, tiring or painful positions, ergonomic strain, extensive vibrations, noise, and heat, exposure to toxic or hazardous substances, and/or physical dangers. For example, blue collar jobs even in higher income countries

often still involve exposure to heavy physical demands (Clougherty et al., 2010). Physical work conditions are typically worse in middle and lower income countries that have more limited occupational health and safety regulation and a higher proportion of workers in the unregulated informal sector (Haro-García, Juárez-Pérez, Sánchez-Román, & Aguilar-Madrid, 2014; Verbeek & Ivanov, 2013). In Mexico, for example, Sánchez-Román, Juárez-Pérez, Madrid, Haro-García, & Borja-Aburto (2006) report that high levels of underemployment (e.g., 39% in 2004) have favored informal and unregulated work.

A number of studies in higher income countries have shown that physically demanding work is associated with poorer health and functional ability in later adulthood. For example, in a U.S. national sample of individuals aged 65 or older, those whose occupation involved high levels of physical activity were less likely to be able to perform activities of daily living (ADLs) (Missikpode, Michael, & Wallace, 2016). Studies in other countries report similar results for older adult ADLs, physical functioning, and/or disability (da Costa & Vieira, 2010; Lahelma et al., 2012; Li, Wu, & Wen, 2000; Møller et al., 2015; Polvinen, Gould, Lahelma, & Martikainen, 2013; Russo et al., 2006). However, in a national Swedish sample, Rydwick et al. (2013) found little association between midlife occupation and later adult ADL or IADL disability.

A number of recent studies, mostly from European countries, have assessed the contributions of physical work conditions to socioeconomic inequalities in health. Using nationally representative survey and register data in Finland, Polvinen et al. (2013) found that socioeconomic inequalities in disability retirement – and particularly for musculoskeletal conditions – could be accounted for, in part, by differences in physical work requirements. Several studies based on the GAZEL cohort data in France found that physical work conditions contributed to socioeconomic inequalities in quality of life after retirement (Platts et al., 2013), back pain (Plouvier, Leclerc, Chastang, Bonenfant, & Goldberg, 2009), and sick days (Melchior et al., 2005). In the Netherlands, Monden (2005) showed that adverse physical work conditions, particularly over a lifetime, accounted for a significant portion of educational inequality in self-reported health (SRH) for men, but not for women. The sex difference appears to be due to educational differences in time out of the workforce (e.g., maternity and family leave) for women and limited educational variation in the physical work conditions to which women are exposed. Results of a study by Goh et al. (2015) in the United States also suggest that physical work conditions may contribute to socioeconomic inequalities in premature mortality.

The same jobs that have heavy physical work requirements may also have stressful psychosocial work conditions. Using national survey data from 27 European countries, Toch et al. (2014) examined the contribution of both physical and psychosocial work conditions to inequalities by social class categories in self-rated health (SRH). They found that physical work conditions accounted for a substantial amount of inequality in SRH and that they had a larger effect on SRH than psychosocial conditions. Plouvier et al. (2009) also found that physical work conditions, particularly biomechanical strains, had a large effect on social inequality in back pain in the GAZEL cohort study, whereas psychosocial factors played a relatively modest role. Parker et al. (2013) reached similar conclusions in Sweden. A five year longitudinal study of employed Danish adults (Borg & Kristensen, 2000; Borg, Kristensen, & Burr, 2000) also examined both physical and psychosocial work conditions and their effects on socioeconomic inequality in SRH. They also investigated whether adverse work conditions affected socioeconomic variation in the change in SRH over a five year period. They found that physical factors (repetitive work, high ergonomic exposures) and psychosocial factors both contributed to the observed social inequality in health. Only one work condition, low to moderate ergonomic exposure, contributed significantly to the probability of an improved SRH over the five year period.

The results of these and other studies suggest that adverse physical

<sup>1</sup> Exceptions include Clougherty et al. (2010), Burgard and Lin (2013), Toch et al. (2014), and Goh, Pfeffer, & Zenios (2015).

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