



## Predictors of basic self-care and intermediate self-care functional disabilities among older adults in Ghana



Prince M. Amegbor<sup>a,\*</sup>, Vincent Z. Kuuire<sup>b</sup>, Hamish Robertson<sup>c</sup>, Oscar A. Kuffuor<sup>a</sup>

<sup>a</sup> Department of Geography and Planning, Queen's University, Mackintosh-Corry Hall, Room E208, Kingston, Ontario, K7L 3N6, Canada

<sup>b</sup> Department of Geography, University of Toronto Mississauga, William Davis Building, Room 3278, Mississauga, ON, L5L 1C6, Canada

<sup>c</sup> University of Technology Sydney, Sydney, Australia

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### ABSTRACT

The number of older adults in Ghana is growing rapidly. Associated with this growth, is the rise in age-related chronic diseases such as cardiovascular and musculoskeletal conditions. However, there is limited knowledge in the Ghanaian context on the effect of chronic diseases on functional disabilities among older adults. In this study, we examine the association between chronic diseases, socioeconomic status, and functional disabilities. Data from 4107 Ghanaian older adults (persons aged 50 years and above) who participated in the World Health Organization's Global Ageing and Adult Health survey (SAGE-Wave 1) were used to fit random effect multivariate logistic and complementary log-log regression. Stroke was significantly associated with difficulty in performing both basic self-care functions and intermediate self-care functions. Hypertension and arthritis, on the other hand, were associated with basic self-care functional disability only. Socioeconomically vulnerable groups such as females, those with less education and low-incomes were more likely to have functional disabilities associated with basic self-care and intermediate self-care activities. In order to reduce functional disabilities among older persons in Ghana, efforts should be aimed at reducing chronic conditions as well as improving socioeconomic status.

### 1. Introduction

Like most countries in sub-Saharan Africa, Ghana's population is youthful compared to the population composition of western industrialized countries. However, there has been a significant rise in the number of the older adults in the country over the last 4 decades (Aboderin & Beard, 2015; Debpuur, Welaga, Wak, & Hodgson, 2010; Mba, 2006, 2010). Population census data show that the number of older people in the country increased from about 200,000 in 1960 to 1.6 million people in 2010 (Ghana Statistical Service, 2013). This figure is expected to double to 2.4 million in 2030 and quadruple to 4.8 million in 2050 (Department of Economic, 2015). Currently, older people constitute about 7.2% of the country's total population (Mba, 2010). Although this figure is relatively low compared to nations of the global north, Ghana has one of the fastest growing and highest proportion of older persons in the sub-region (Helpage, 2015; Mba, 2010). These emerging trends are the result of improvement in sanitation, health, and health care that have contributed to improved quality of life and minimized the impact of infectious diseases (Debpuur et al., 2010; Mba, 2010).

Research shows that an ageing population is associated with an

increase in chronic non-communicable diseases (NCD) as well as disabilities (Martin & Schoeni, 2014; Prince et al., 2015; Suzman, Beard, Boerma, & Chatterji, 2015). The natural processes of ageing mean that chronic conditions are more prevalent among older adult populations. Evidence from the literature indicates that the prevalence of chronic conditions such as obesity, diabetes, and cardiovascular diseases is increasing in Ghana and the sub-region (Addai, Opoku-Agyeman, & Amanfu, 2013; Biritwum, Gyapong, & Mensah, 2005; Debpuur et al., 2010). For instance, studies indicate that the prevalence of overweight and obesity among Ghanaian women rapidly increased from 10% to 25% in a decade between 1993 and 2003 (Tagoe, 2012). A recent study by Minicuci et al. (2014) also reports that the prevalence of self-reported hypertension was 14.2% while hypertension prevalence by blood pressure measurement was 51.1% among older adults in Ghana. Similarly, Mba (2006) observed that 42% of older urban women in Ghana have hypertension. The growth in these chronic morbidities has also been attributed to Ghana's rapid urbanization — a trend usually associated with changes in dietary behaviours and lifestyle habits (Agyei-Mensah & de-Graft Aikins, 2010; de-Graft Aikins, Boynton, & Atanga, 2010; Maher, Smeeth, & Sekajugo, 2010; Maher & Sekajugo, 2011).

\* Corresponding author.

E-mail address: [11pma4@queensu.ca](mailto:11pma4@queensu.ca) (P.M. Amegbor).

The connections between ageing, chronic conditions disability among older adults has long been established in the literature (Griffith, Raina, Wu, Zhu, & Stathokostas, 2010; Martin & Schoeni, 2014). Older adults are more likely to lose their functional abilities due to senescence and its associated degenerative chronic conditions. Age-associated chronic ailment like stroke, dementia, and heart diseases significantly contribute to physical disability in non-institutionalized older adults (Guccione et al., 1994; Lin, Beck, & Finch, 2016; Nakayama, Jorgensen, Raaschou, & Olsen, 1994; Wolff, Boulton, Boyd, & Anderson, 2005). This association is not only significant for single chronic cases such as hypertension, arthritis and obesity. Additionally, multimorbid chronic conditions—a common phenomenon of senescence—also contributes to functional disablement of older persons (Khoury et al., 2013; Marengoni, Angleman, & Fratiglioni, 2011).

Although disability among older persons occurs in many forms, the most commonly used measures are the activities of daily living (ADL) and instrumental activities of daily living (IADL) (Clarke & Latham, 2014; Lin et al., 2016; Martin & Schoeni, 2014). ADL as a measure of functional capacity was first developed by Katz, Ford, Moskowitz, Jackson, & Jaffe (1963). The index of ADL counts the number of assistance an individual requires in the performance of activities that entail basic physical functioning (LaPlante, 2010; Spector & Fleishman, 1998). Bathing, dressing, toileting, transferring, continence and eating or feeding are used as indicators of ADL (LaPlante, 2010). IADL, on the other hand, is a measure of complementary activities that enable an individual to live independently in the community (Mlinac & Feng, 2016). Generally, there is a lack of consensus among researchers about the domains that should be used to measure IADL (Cabrero-García & López-Pina, 2008; Coster et al., 2004; Lindeboom, Vermeulen, Holman, & De Haan, 2003). The instrumental measures for IADL usually encapsulate activities related to household chores (such as meal preparation, laundry and housekeeping), out-door mobility (using transportation) and cognitive functioning (such as taking medication and managing personal finances) (LaPlante, 2010; Lindeboom et al., 2003). There are divergent views on the combined utility of ADL and IADL as measures of functional disability (Charlton, Patrick, & Peach, 1983; Garrad & Bennett, 1971), some scholars advocate an integration of the two to enable a comprehensive understanding of disability among older adults and the services needed (Spector & Fleishman, 1998). In view of the latter, Thomas, Rockwood, & McDowell (1998) proposed an alternative scoring of ADL and IADL indicators. Their proposed measure assumes a multidimensional factor structure of ADL and IADL indicators, resulting in three scales of functional ability: basic self-care, intermediate self-care and complex self-management (Griffith et al., 2010; Thomas et al., 1998).

In this paper, we adopt Thomas et al. (1998) proposed alternative scoring of ADL and IADL to examine chronic conditions and socioeconomic factors as determinants of functional disability among older adults (persons aged 50 years and above) in Ghana. We confine our definition of functional disability to basic self-care and intermediate self-care. The two dimensions of functional disability inform our discussion on the effect of chronic condition and socioeconomic factors on functional disabilities and recommendations.

## 2. Materials and methods

Our study used data from the World Health Organization's Global Ageing and Adult Health survey (SAGE-Wave 1). SAGE is a longitudinal survey of health and its determinants in older adults. Although the main target population for the survey were persons aged 50 years and above, the survey includes a smaller comparative sample of respondents aged 18–49 years. The SAGE survey consists of national surveys from six lower and upper-middle-income countries, namely: China, Ghana, India, Mexico, the Russian Federation, and South Africa (Chatterji & Kowal, 2010). Given the focus of our study, we used the Ghana component of the SAGE surveys for our analysis. Selection of respondents

for the Ghanaian component entailed a stratified multistage cluster sampling. The sample was stratified by Ghana's 10 national administrative regions and the type of locality (urban/rural) (Chatterji & Kowal, 2010). This stratification resulted in 20 nationally representative strata. A total of 5573 respondents were sampled from 5269 households located in 235 census enumeration areas. Data were collected through face-to-face interviews. The type of data collected includes sociodemographic characteristics, employment status, wealth and income indicators, chronic health conditions, and functional limitations. Respondents aged 18–49 years and missing cases were excluded from our analysis, leaving a final analytical sample of 4107 respondents.

### 2.1. Measures

#### 2.1.1. Dependent variables

In our study, we conceptualized functional disability into two categories based on Thomas, Rockwood, & McDowell (1998) proposed alternative scoring of ADL and IADL. The first dependent variable reflects functional limitations with basic self-care such as toileting, dressing, eating, transferring and grooming. We defined basic functional disability using five indicators – difficulties in bathing, dressing, eating, toileting, and transferring. In the SAGE survey, respondents were asked to indicate the level of difficulty in performing these functions. The variables were ordinal with the following response categories: '1 = none', '2 = mild', '3 = moderate', '4 = severe', and '5 = extreme' (that is, respondent cannot perform the activity). We recategorized these response categories into dichotomous responses. Respondents who indicated 'none' for all the five indicators of basic self-care functions were grouped into a single category and coded as '0 = No' (interpreted as having no basic self-care functional disability). Respondents who indicated any form of difficulties in one or more of basic self-care activities were grouped into a single category and coded as '1 = Yes' (interpreted as having some basic self-care functional disability). The five indicators used to define basic self-care functional limitation demonstrated excellent internal reliability with Cronbach's alpha of 0.89.

Our second dependent variable is a measure of intermediate self-care functional disability. In this study, we defined intermediate self-care functional disability using eight indicators from the SAGE survey: performing household responsibilities, joining community activities, walking a long distance (such as a kilometer), doing day to day work, carrying things, moving inside the home, using public or private transportation, and getting out of the house. Questions on these activities also had five response categories coded as: '1 = none', '2 = mild', '3 = moderate', '4 = severe', and '5 = extreme' (that is, respondent cannot perform the activity). These responses were dichotomized. Respondents who did not have any difficulties performing these intermediate functions were grouped into a single category and coded as '0 = No' (interpreted as having no intermediate self-care functional disability), whereas those who had any form of difficulties in one or more of the eight indicators were categorized into a single group and coded as '1 = Yes' (interpreted as having some intermediate self-care functional disability). These eight indicators of intermediate self-care functional limitation demonstrated excellent internal reliability with Cronbach's alpha of 0.91.

#### 2.1.2. Independent variables

Given the focus of our study, we included chronic conditions as our key independent variables. Chronic health conditions were self-reported based on responses to the question, "has a health professional ever told you, you have ...?". The question had two valid responses coded as '1 = Yes' and '0 = No'. We used the following chronic health conditions in our analyses: asthma, stroke, hypertension, diabetes, and arthritis.

We also examined the relationship between socioeconomic factors

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