



## Social exclusion and cognitive impairment - A triple jeopardy for Chinese rural elderly women

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### ARTICLE INFO

#### Keywords:

Social exclusion  
Cognitive impairment  
Aging  
Gender  
Rural and urban disparities in China

### ABSTRACT

This study investigates how social exclusion, defined as a multidimensional concept encompassing financial deprivation, social isolation, and a lack of basic social rights, is associated with cognitive impairment of elderly Chinese. Using three waves of the Chinese Longitudinal Healthy Longevity Survey ( $N = 10,923$ ), we find that rural elderly women are the most vulnerable to social exclusion (17.28%) and cognitive impairment (18.52%) among the Chinese elderly. After addressing the methodological challenges of endogeneity and sample attrition due to mortality, and holding an array of demographic, lifestyle, and health variables constant, we find that social exclusion is significantly associated with higher risks of cognitive impairment. Rural elderly women suffering from severe or extreme social exclusion are 23 times more likely to be cognitively impaired as compared to their urban male counterparts who are not socially excluded. Lack of participation in social activity is the most common risk factor associated with cognitive impairment across groups, after controlling for relevant covariates.

### 1. Introduction

Dementia has long been recognized as an intractable problem for human beings. It poses significant challenges to the health and longevity of the population because it leads to detrimental effects among patients (Sachs et al., 2011). Researchers have estimated that China has the highest growth projection of dementia patients compared to the rest of the world (Ferri et al., 2005). Though the pathology of dementia is still unclear, cognitive impairment is shown to be a highly predictive indicator of dementia (Petersen et al., 2001). Meanwhile, China has a large ageing population that suffers from inadequate financial and social support provided by the state to families with demented elderly. Despite growing concerns over under-provisioning of resources for elderly care, coupled with gender inequality, and rural/urban disparities which are known to be closely associated with social inequalities, little is known about the social determinants of cognitive impairment. With most of the extant literature in this field is based on Western contexts, the current paper analysing social determinants of cognitive impairment in China will contribute towards developing a fuller understanding of this problem in the context of large developing countries.

Studies in the West have shown that social deprivations play a crucial role in increasing the risks of geriatric cognitive impairment.

However, most of them focus on the effect of a single dimension of social deprivation, such as poverty, social isolation, or racial disadvantages (Mani et al., 2013; Morgan et al., 2007; Zhang et al., 2016). In reality, many vulnerable groups are exposed to multiple social disadvantages at the same time. In order to ameliorate the measurement limitations, the construct of social exclusion was introduced to encapsulate multiple deprivations in the society. The construct accounts for different social disadvantages, inclusive of poverty, social marginalization and alienation, the denial of basic social rights and opportunities (Social Exclusion Unit, 2001). However, the measurement of social exclusion is not well defined and few studies have examined health outcomes stemming from social exclusion (Morgan et al., 2007).

Focusing on the context of the Chinese ageing population, we constructed social exclusion that encompasses financial deprivation, social isolation, and lack of basic social rights, to examine its extent on cognitive impairment. We used the nationally representative Chinese Longitudinal Healthy Longevity Survey (CLHLS) and applied the Fixed-effects Model (FEM) and Heckman Selection Model (HSM) to address the endogenous issue and sample attrition due to mortality in the longitudinal dataset. To ensure the validity of this examination, we also controlled for demographic characteristics, physical and psychological health, and the lifestyles of the Chinese elderly featured in the CLHLS in

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the analyses.

### 1.1. Social exclusion

The notion of social exclusion refers to the erosion of cohesion, breach of solidarity, and lack of social integration in society (Silver and Miller, 2003). It underscores marginalised and vulnerable groups in the society as being “excluded” from the mainstream and suffering from multiple types of interrelated deprivations preventing them from fully participating in society (Social Exclusion Unit, 2001, 2004). Social exclusion was introduced to policy-making and academic literature in the 1990s to facilitate the development of an integrative approach towards analysing social deprivations (Levitas et al., 2007). Yet there remains no consistent measurement for social exclusion that can be applied across different societies. Although scholars have attempted to construct an indicator of social exclusion that is universally interpretable (Marlier and Atkinson, 2010), the measures of social exclusion are often contextual, based on the specific social groups that the studies focus on. The European Union understands social exclusion as referring to multiple deprivations from social resources and resulting in limited opportunities for participation in society (United Nations Development Programme, 2006). Other studies have defined social exclusion by relying on the key factors of inadequate financial support and its related deprivations (Marlier and Atkinson, 2010), while most of the studies defined social exclusion as the lack of access to relational support and civic rights that enable one to participate in society and gain access to social services (Morgan et al., 2007).

Different from the social exclusion theory in the West, which puts emphasis on the micro or meso aspects of social disadvantages by looking at the economic standings, relationship networks, and social integration of individuals, Chinese scholars focus more on the macro level, examining how economic inequality has caused structural segregations in the society (Chunling, 2005; Sun, 2003). However, the discussion of micro-level consequences of this loss of cohesion in social relations and social rights is missing in these two approaches. Apart from the theoretical discussions, there is a lack of empirical analysis in the Chinese literature on how social exclusion affects the well-being of individuals.

In the existing literature on cognitive impairment, social deprivation is usually measured as a single dimension, mostly referring to social isolation (Shankar et al., 2013) or poverty (Mani et al., 2013). However, social disadvantages are rarely isolated from each other, which is why we need a more inclusive concept to examine multiple deprivations and their implications on health. Social exclusion provides one such framework that effectively encapsulates the above-mentioned disadvantages and could pose negative impacts for healthy living (Social Exclusion Unit, 2004). However, it has been rarely used to study ageing populations with mental disorders, although past studies have shown that people with cognitive impairment may have a high likelihood of suffering from social exclusion (Hall, 2005). It is, therefore, unclear how, and to what extent, social exclusion might affect cognitive impairment. To address these gaps, the current study proposes a multi-dimensional measure of social exclusion based on the Chinese ageing population and investigates its associations with cognitive impairment.

Based on the social context of the ageing population in China and the literature on social exclusion from the West, we focus on three fundamental and critical factors to construct social exclusion. Firstly, we define financial deprivation as one of the components of social exclusion because poverty could significantly harm cognitive functioning in old age (Mani et al., 2013). We include both subjective and objective measures of this type of deprivation. Secondly, there is a substantial number of studies indicating the dangers of social isolation on cognitive functioning (Morgan et al., 2007). Social connectedness is important for the Chinese elderly, both at familial and societal levels because China has the tradition of communal living. However, with a shrinking family size and large internal migration from rural areas to cities, the

characteristics of social connectedness have been changing rapidly. Thus, we include marital status, intergenerational support, social support, and social participation as measures for social isolation. Thirdly, there exist significant inequalities on retirement benefits and the quality of medical resources for the elderly entitle to them and those do not (Lei and Lin, 2009). All of these resources are important for the cognitive well-being in old age. Thus, we construct social exclusion of the elderly population based on the above mentioned three aspects.

### 1.2. Cognitive impairment in China

China is currently faced with the challenge of having to cope with an increasing number of older adults with dementia. In 2017, the number of Chinese aged 65 and over was 158 million, which accounted for 11.4% of the total population (National Bureau of Statistics of China, 2018). Among them, about 4.6% were affected by dementia (Wu et al., 2013). The exact prevalence of cognitive impairment in China is unclear, but the data shows large variations across octogenarians, nonagenarians, and centenarians, ranging from 35% to 80% (Zeng et al., 2017). Another study estimated that cognitive impairment affected around 20% of the elderly in an urban community of Shanghai (Ding et al., 2015). However, the limited literature on cognitive impairment has either focused on the oldest-old group (Zhang, 2006) or used regional cross-sectional data (Ding et al., 2015; Jia et al., 2014). Studies on the general ageing population either did not address endogenous issues in the data (Zhang et al., 2010), or used cognitive impairment as one of the indicators for estimating health, and hence could not provide any specific analysis on it (Zeng et al., 2017).

Asides from seeking to understand the prevalence of cognitive impairment, another cluster of studies have analysed the challenges of providing adequate care and support to the elderly with cognitive impairment (Gu et al., 2009). Scholarly interest in this issue has grown exponentially in response to the rapidly ageing population, coupled with the changing characteristics of intergenerational support in the country (Gong et al., 2012). More specifically, the traditional family-based elderly support system, wherein elderly parents rely on their adult sons for care, is undergoing a flux due to shrinking family size and large internal migration that have led to the physical absence of adult children at home. Meanwhile, neither the government's healthcare policies nor the existing care-giving infrastructure has paid adequate attention towards the elderly afflicted with dementia (Wu, 2012). It is unclear how the changing elderly support system would affect the cognitive wellbeing of the elderly, and the current study seeks to address this gap.

The effects of gender and rural/urban disparities need special attention when studying social exclusion and cognitive impairment in China. The long history of patriarchy functioning within the context of the household registration (hukou) system that is prevalent in China have cumulative negative effects on poorer cognitive functioning among women and rural residents (Jia et al., 2014; Lei et al., 2014). They expropriate education opportunities and certain social rights from Chinese women and rural residents that further depress their financial and welfare statuses, which have cumulative negative effects on health in their later lives (Chen et al., 2010; Lei et al., 2014). Whether these deprivations will have detrimental effects on the cognitive impairment of rural female elderly is not well understood.

### 1.3. Gender disparities in cognitive impairment in China

Studies have consistently shown that elderly females face a higher risk of cognitive impairment than their male counterparts (Wu et al., 2017; Zeng et al., 2017). Unequal access to financial resources was one of the factors contributing to this gender gap in China (Lei et al., 2014; Zhang, 2006). Gender differences in economic status among the current ageing population is a product of history, due to the lower paid labour force participation rate for women in the early and middle twentieth

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