

Gender Differentials in Cognitive Impairment of the Oldest Old in China

Background

Population aging historically has been characterized as a social problem faced by most developed countries. Today, it is quickly becoming a major social issue in many developing countries (Hayward and Zhang 2001). China, with its rigorous family planning program over the past several decades and significant improvement in life expectancy, is aging at an unprecedented speed and in an extraordinary scale. In 2000, China already had the largest number of the oldest old persons (i.e., people aged 80 and above) in the world., and it is predicted that the number will climb from 12 million to 100 million by 2050 (Zeng, Liu, and George 2003; Zeng, Vaupel, Xiao, Zhang, and Liu 2001). Such rapid growth of the oldest old raises many questions about the health of the oldest old in China and the burden of personal assistance and healthcare to their families and societies.

In developed countries, research has found that cognitive impairment is one of the most serious problems in the oldest old. For example, prevalence of dementia rises dramatically with age: 18% for those aged 75-84 and 45% for those aged 85 and above (Herzog and Wallace 1997). Although research has found substantial variability in cognitive functioning among the oldest old in developed countries, there is only slight gender difference in the rates of cognitive impairment. Research in cognitive functioning in developing countries such as China has been few and fragmentary. However, among those few studies in China, there is *a consistent finding* that females in China are significantly disadvantaged in cognitive functioning in old age (Gu and Qiu 2003; Yu, Liu, Levy, Zhang, Katzman, Lung, Wong, Wang, and Qu 1989; Zeng, Liu, and George 2003). In one of the first studies of cognitive impairment in China, Yu and her coauthors (1989) found large gender disparities in the prevalence of both severe and mild cognitive impairment among those aged 65 and above in the city of Shanghai. In a recent study on the oldest old in China, Zeng and Vaupel (2002) reported that the gender gap of cognitive functioning among the oldest old was extremely large. While 20 percent of males aged 90-99 had poor cognitive functioning, as high as 37 percent of females suffered from poor cognitive functioning. However, no studies that we know of have explored socioeconomic and cultural factors that account for the huge gender differences in cognitive impairment in China.

In this paper, we intend to fill this gap by addressing two questions: 1) Are there gender differentials in both prevalence and incidence of cognitive impairment among the oldest old in China? 2) Do socioeconomic status, social support, physical health, and leisure activities explain the gender gap in cognitive impairment? Our paper contributes to the literature in several ways. First, previous studies in cognitive impairment seldom use national samples. Most studies were conducted in big cities such as Shanghai and Beijing, thus the results cannot be generalized to the total elderly population in China.

Our paper used a recently released dataset whose survey covered 85% of the total population in China. Second, no previous studies have looked at the reasons behind the huge gender differences in cognitive impairment. Previous studies are largely limited to simple bivariate analysis. Our paper explored four possible pathways linking gender and cognitive impairment in the oldest old Chinese, including SES, social support, physical health, and leisure activities. Third, we examine both the prevalence and incidence of cognitive impairment. Due to the lack of longitudinal data, previous research only looked at gender differentials in the prevalence of cognitive impairment. While prevalence is an important indicator, it can be influenced by the incidence as well as the survival rates of those who have cognitive impairments. Therefore, the results are not easily interpretable.

Data and Methods

We draw on two waves (1998-2000) of the Chinese Healthy Longevity Survey (CHLS) to examine gender differentials in the prevalence and incidence of cognitive impairment among the oldest old in China. The CHLS was conducted in a randomly selected half of the counties and cities of the 22 Chinese provinces. The target respondents were aged 80 years old and above in 1998, and they were interviewed again in 2000. The richness of information collected on cognition functioning, socioeconomic status, social support, physical health, and health behaviors makes the CHLS particularly suitable for the research on the gender disparities in cognitive impairment in the oldest old.

Dependent variables:

The cognitive functioning of the Chinese oldest old was measured by the Chinese version of Mini-Mental State Examination (MMSE), which tested four aspects cognitive functioning: orientation, calculation, recall, and language. The total score of MMSE is 30. Consistent with international standard and previous studies in China, persons are defined as “cognitively impaired” if their score of MMSE is below 24.

The prevalence of cognitive impairment is based on the individual’s MMSE score in 1998. Scores below 24 were coded as 1, indicating the presence of cognitive impairment, and scores equal or higher than 24 were coded as 0, indicating no cognitive impairment.

The incidence of cognitive impairment is based on whether a respondent’s MMSE score was below 24 in the follow-up survey among those who did not have cognitive impairment in the baseline. Incidence rates thus measure the onset of *cognitive impairment* within an approximate two-year interval over the observation period 1998-2000.

Independent variables:

In this study, gender is the major independent variable. We also examine the mechanisms producing gender differentials in cognitive impairment among the oldest old. All independent variables were measured in the baseline. Four blocks of variables were examined. The first block is socioeconomic status. We use four indicators to reflect a respondent’s overall economic status: *education, primary lifetime occupation, the*

main income source, and access to health care. The second block is social support, which includes marital status, the number of children, the number of siblings, and visits by children and sibling. The third block is physical health, which is indexed by the activity of daily living (ADL). The fourth block is leisure activities, including garden work, grow vegetables and other field work, reading newspapers and books, playing cards and/or mah-jong, watching TV/or listening to radio. Control variables include age, ethnicity, and place of residence (rural vs. urban).

Methods

We use a series of nested logistic regression models to test the gender differentials in the prevalence of cognitive impairment among the oldest old in China. We first estimate a model to estimate the total effect of gender, controlling for basic demographic variables such as age, ethnicity, and place of residence. Then, SES, social support, physical health, and leisure activities are entered sequentially to assess whether the main effects of gender on cognitive impairment are reduced. If the main effects are reduced or eliminated after introducing these variables, this would point to the importance of SES, social support, physical health, and leisure activities as important mechanisms that contribute to the gender differentials.

In terms of the onset of cognitive impairment, we will use multinomial logistic regression. The dependent variable has three outcomes: cognitively impaired, cognitively unimpaired, and death. The cognitively unimpaired is the base category. Our main interest is the onset of cognitive impairment. Likewise, we will first estimate the total effect of gender on the onset of cognitive impairment, and then SES, social support, physical health, and leisure activities are entered sequentially to assess whether the main effects of gender on cognitive impairment are reduced.

Preliminary Results

In the preliminary analysis, we identified 8,805 people aged between 80 and 105 who had complete information on the variables examined in the study. Gender has a significant effect on both the prevalence and incidence of cognitive impairment in the Chinese oldest old when we control for age. Adding SES substantially reduced the gender differentials, suggesting that the lower SES status of females in China contributed a lot to their poor cognitive impairment at the old age. Adding social support, health, and leisure activities further narrowed the gender differentials. In this study we made significant contributions to the literature by showing that there are substantial gender differentials in cognitive impairment in the oldest old Chinese. Gender inequalities in SES, social support, physical health, and leisure activities explained a significant part of the gender differentials.

Reference

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