

How Do Different Health Care Systems Protect People Living With Dementia From Financial Hardship?

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1. INTRODUCTION

Dementia imposes a substantial financial burden on households. Despite rapid population aging in Asia, limited research has examined how different health systems protect against dementia-related financial risks. This study compares China, India, and South Korea, which are experiencing rapid population aging and represent distinct stages of health and long-term care (LTC) system development in the Asian context. Previous research indicates that the type and generosity of social health insurance (SHI) coverage play a role in mediating financial risk associated with care needs ¹. South Korea has a comprehensive SHI system that covers all essential healthcare services for individuals with dementia, including inpatient and outpatient services and prescription medications ². However, SHI schemes in China and India offer far more limited coverage for people with dementia ^{2,3}. India only has 38.6% of rural residents and 27.6% of urban residents covered by SHI ³. To assess financial protection for households affected by dementia, we introduce a new concept of dementia-related **catastrophic health and long-term care expenditure (CHLTCE)**, capturing the combined burden of health and LTC spending.

2. RESEARCH OJECTIVES

To examine the extent to which out-of-pocket health and LTC expenditures disrupt household living standards, as well as the role of social health insurance in mitigating these impacts.

3. METHODS

3.1 Study design and population

We used the 2018 wave data from the Korean Longitudinal Study of Aging (KLoSA) in South Korea, the China Health and Retirement Longitudinal Study (CHARLS), and the Longitudinal Aging Study in India (LASI), as it is the only wave in which all three surveys were conducted contemporaneously, enabling consistent cross-country comparisons. Moreover, using data from 2018 helps avoid potential confounding effects associated with the pandemic. The final analytical sample included 6,940 individuals from Korea, 15,522 from China, and 22,545 from India, based on a single inclusion criterion: individuals aged 50 years and older.

3.2 Measurement

Outcomes of interest: likelihood of experiencing CHLTCE

First, we calculated total health and long-term care costs by aggregating annual out-of-pocket healthcare costs and out-of-pocket long-term care (LTC) costs. In CHARLS, participants were asked to report their monthly out-of-pocket LTC costs in the 2015 wave; however, this question was not included in the 2018 wave. As the 2018 wave is the only wave conducted by all three surveys, we followed previous research ⁴ and applied regression imputation to estimate the 2018 values using the reported 2015 out-of-pocket LTC costs. LASI did not collect information on out-of-pocket LTC expenditure; therefore, our measure represents estimated LTC costs as follows. Individuals who did not receive any LTC were assumed to have zero out-of-pocket LTC expenditure. For those with LTC needs and recorded care hours, the estimation followed approaches ^{5,6} that imputed LTC costs based on the actual hours of the care they received and nationally representative wage data. Second, we calculated the proportion of an individual's health and LTC expenditures relative to their annual household income ⁶. Third, we used two thresholds: 20% and 25% of household income ⁶, to determine CHLTCE in each survey wave. An individual is marked as incurring CHLTCE if the proportion exceeds the threshold.

Variables of interest

1st Dementia status: no dementia (reference group), mild dementia, and severe dementia. Individuals whose cognitive score was less than 1.5 standard deviations below the population mean, stratified by education, were classified as having dementia. Individuals with dementia were divided at the median score into mild (upper 50%) and severe (lower 50%) dementia.

2nd Different types of care systems were measured by how the care system was financed. Korea’s healthcare system was financed by SHI, with schemes for ‘employee insured/dependents’ being the most generous, ‘self-employed insured’ (reference category) providing only basic coverage, and ‘Medical Aid’ targeting the poorest. In CHARLS, type of SHI was categorized as follows: ‘no SHI’ (reference category), ‘Urban Employee Insurance’ being the most generous scheme, ‘Urban Resident Insurance’ targeting urban residents without formal employment, ‘New Rural Cooperative Medical Scheme’ targeting rural residents, ‘Urban-Rural Resident Medical Insurance’ has improved benefits for urban and rural residents, and ‘other SHI’. In LASI, type of SHI was categorized as follows: ‘no insurance’ (reference category), ‘covered by government’ (publicly financed health insurance with relatively low benefit generosity, mainly covering basic inpatient care), ‘covered by employer’, and ‘other SHI’.

3.3 Statistical analyses

Step 1: We compared the likelihood of experiencing CHLTCE between two groups: individuals with dementia and individuals without.

Step 2: Country-specific logistic regression for each catastrophic threshold was conducted, adjusted for age, gender, education, marital status, household expenditures per capita, living arrangement, urban/rural residence, self-rated health, and number of limitations in instrumental activities of daily living (IADLs), having frequent pain, and long-term care insurance (LTCI) (if applicable).

Step 3: We estimated the average marginal effects of the dementia severity on catastrophic expenditures, stratified by age group (50-65 vs. 65+).

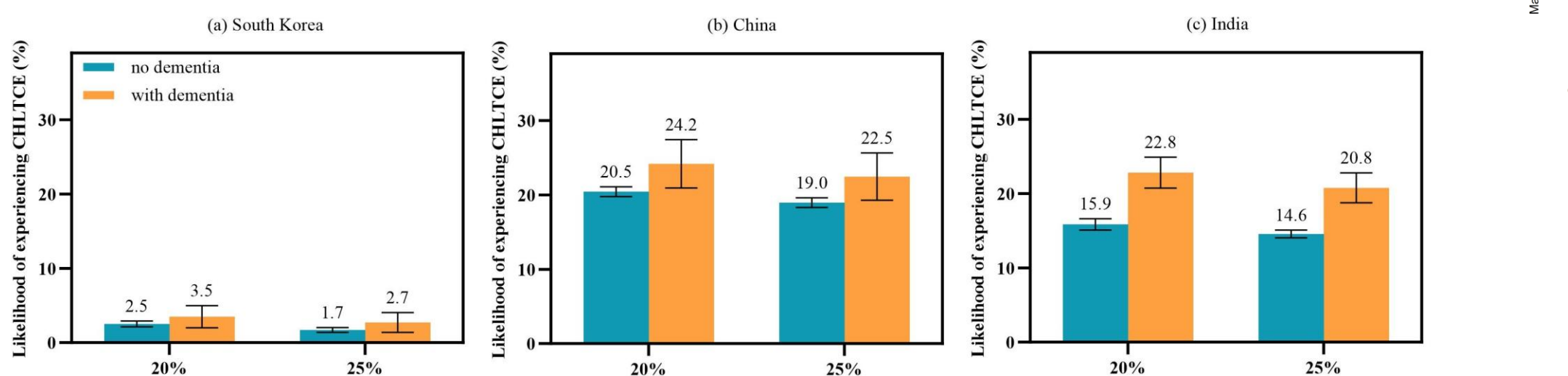
Step 4: Sensitivity analysis: (a) for the Indian sample, we recalculated LTC costs by including only formal care costs and excluding informal care costs. (b) using data from the 2018 and 2020 waves for the Chinese sample; not applicable for the Korean and Indian samples.

4. RESULTS

4.1 Overall patterns of catastrophic expenditures

Individuals with dementia had a higher likelihood of experiencing CHLTCE in both thresholds in India (**Fig 1.C**) compared to those without dementia. However, no differences were observed in dementia status in the Korean sample and the Chinese sample. In India, the increase in the likelihood of experiencing CHLTCE between individuals with and without dementia appeared more pronounced than in China (20%: 6.9% vs. 3.7%; 25%: 6.2% vs. 3.5%)

Fig 1. Weighted likelihood of experiencing catastrophic health and long-term care expenditure (CHLTCE), by dementia status.



4.2 Factors associated with unmet end-of-life care

Financial protection varied substantially across countries, reflecting differences in SHI generosity. In India, individuals with mild to severe dementia faced a 26-36% higher risk of CHLTCE than those without dementia (Fig 1), likely because government insurances provide limited financial protection (reducing risk by only 17–20%, **Fig 2**). In contrast, no significant association between dementia severity and CHLTCE was observed in South Korea or China, possibly due to stronger financial protection; Medical Aid (for the poorest) in South Korea and Urban Employee Basic Medical Insurance (a more generous scheme for formally employed urban residents) in China reduced CHLTCE risk by 61% and 52%, respectively.

Among individuals with dementia in China (**Fig 3C** and 3D), those aged 65 years and older exhibited a significantly higher probability of experiencing catastrophic expenditure than those aged 50–64 years, irrespective of dementia severity and whether the threshold was set at 20% or 25%. A similar pattern was observed among individuals in India (Figures 3E and 3F). In contrast, no such age-related differences were observed among individuals in South Korea.

5. DISCUSSION

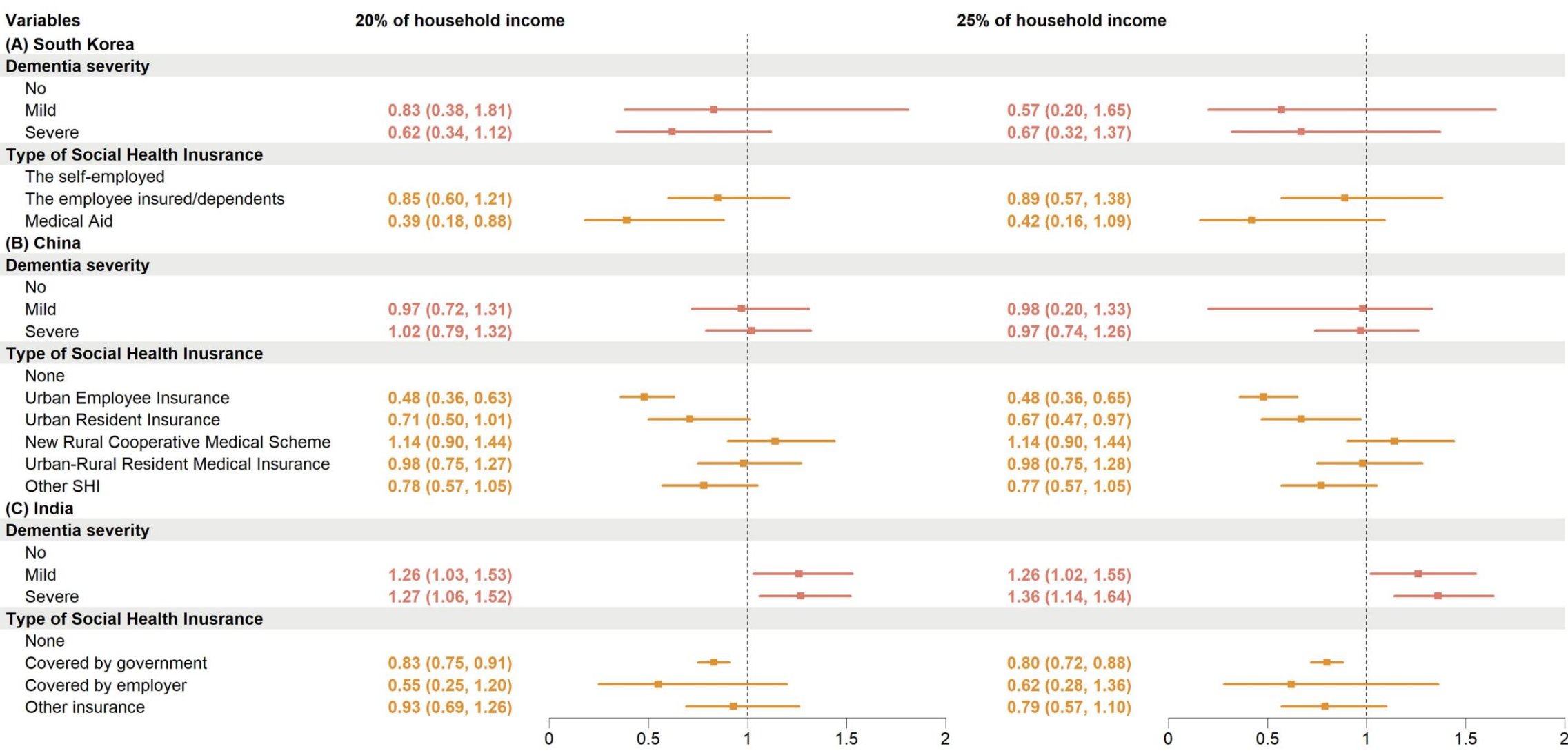
Implications

- 1) Future research on catastrophic expenditures should adopt an integrated measure that includes both healthcare and LTC expenditures.
- 2) It becomes increasingly important for low- and middle-income countries facing rising care needs to develop or expand LTC financing mechanisms to respond to emerging care needs.
- 3) By disaggregating the protective effects of different types of SHI, the study provides nuanced evidence on how key design features affect financial outcomes.
- 4) Reducing catastrophic spending requires improvements in both the depth and breadth of insurance coverage. Schemes that combine low cost-sharing with broad service coverage, including services related to dementia care, are more effective in reducing financial strain.

Takeaways:

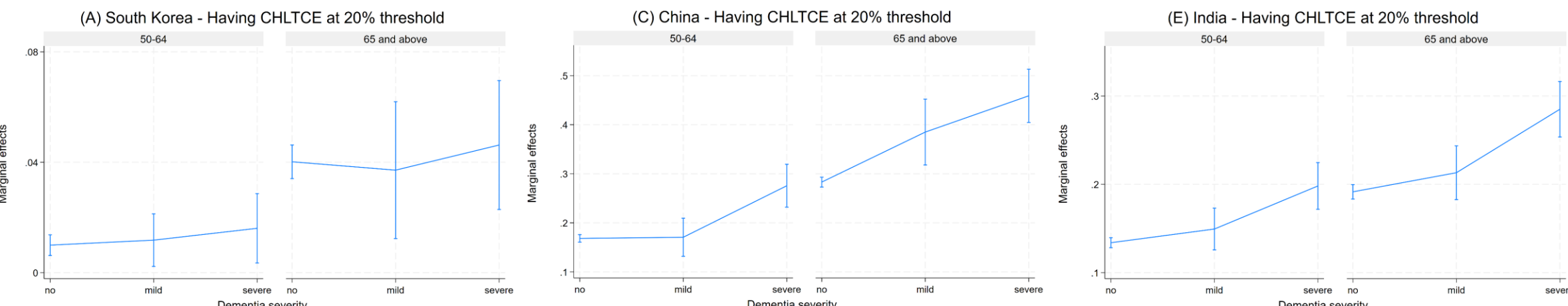
- Asia bears heavy dementia burdens but differs markedly in insurance generosity.
- Older adults with dementia face lower financial risk in South Korea.
- Dementia severity raises financial risk in India, but not in Korea or China.
- More generous social health insurance is linked to lower financial hardship risk.
- Improving social health insurance generosity is crucial for financial protection.

Fig 2. Factors associated with the likelihood of experiencing catastrophic expenditures.



Notes: The odds ratios (ORs) and their 95% confidence intervals (CIs) were estimated.

Fig 3. Average marginal effects of dementia severity on the likelihood of experiencing catastrophic health and long-term care expenditure (CHLTCE), stratified by age group.



Strengths

- 1) Adopts CHLTCE as a composite metric to provide a more comprehensive assessment of economic vulnerability associated with dementia.
- 2) The inclusion of three countries with contrasting levels of insurance and institutional support for dementia offers a unique opportunity to examine how different policy configurations shape household financial risk.
- 3) Allows for a clearer understanding of which aspects of insurance coverage are more effective in alleviating economic hardship.

Limitations

- 1) Data availability constrained analyses to a cross-sectional design using the 2018 data.
- 2) Out-of-pocket expenditures were estimated using self-reported data.
- 3) Informal care costs were included only for the Indian sample in the main analyses and excluded in robustness checks.
- 4) Due to inconsistencies in cognitive assessment across the three datasets, only 27 of the 30 MMSE items were used.
- 5) Survival biases may result in adults with dementia being less likely to survive to the survey stage.

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