Home Care or Institution Care? It Depends

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Introduction

The worldwide share of elderly individuals in the population has increased over the past 20 years, leading to a higher demand for long-term care. This care varies depending on cultural and institutional settings. In many Asian countries, such as China, family members primarily take care of disabled elderly individuals at home. While institutional care offers advantages in terms of professional expertise and facilities that can delay health deterioration, family members can provide more emotional support, which benefits the elderly's health. As aging in place is preferred in many countries and public long-term care systems are being considered, understanding the health outcomes of different types of care is crucial for policymakers. However, it is currently unknown which type of care is better for the elderly's health (Kim and Lim, 2015).

In 2016, China introduced Long-Term Care Insurance (LTCI) in 15 pilot cities, which was later extended to more areas (Feng et al., 2020a). While most pilot cities only provided LTCI subsidies to institutional care, a few cities, such as City X, subsidized both institutional care and home care. The benefit levels for the two types of care were similar, providing an opportunity to compare the health outcomes of the two care types within the LTCI system. This study utilized administrative data of LTCI applicants from City X to compare the mortality rates of institutional care and home care, aiming to determine which type of care is more beneficial. Additionally, LTCI in City X led to around half of the disabled individuals who used to live in institutions to move back home, creating a special group of home care recipients that should be equivalent to those using institutional care without LTCI. Since those who chose institutional care selected an institution with a LTCI agreement, the distance to institutions with LTCI agreements was used as an instrumental variable to predict the choice of institutional care.

This study contributes to the literature in three ways. First, it compares the two commonly used types of care, home care (HC) and institutional care (IC). Only a few research explore the differences in formal and informal care. Stabile et al. (2006) found that disabled individuals reported improved health when they used more professional in-home care and less informal care. Barnay and Juin (2016) revealed that informal care could reduce depression and that formal care improves general mental health. Still, it is not clear whether home care and institutional care lead to different health outcomes, and this research fills that gap.

The second contribution is the study's usage of an external shock, the introduction of LTCI, to address potential self-selection issues. The choice of home care or institutional care may reflect different characteristics at the outset, such as the presence of family caregivers or the need for professional facilities. Directly comparing health outcomes could be biased, as the selection into home care or institutional care could be

endogenous. This external shock of LTCI helped to overcome potential self-selection issues in choosing the type of care. Since both groups are subsidized by LTCI, this study helps answer which type of care provides more cost-benefit advantages.

Lastly, the study contributes to the policy evaluation of LTCI. Few studies have explored the policy effects of LTCI in China, with most focusing on health expenditures (e.g., Feng et al., 2020b). This study is one of the first to utilize administrative data from LTCI beneficiaries to examine health outcomes, helping to assess the policy's effects on the target population. As China plans to expand LTCI to broader areas, understanding the policy effects is relevant. The results will also be useful for other developing countries designing their LTCI systems.

Data and Method

We analyzed the administrative data of all LTCI applicants from City X in China between July 2017 and June 2020. The data includes information on each applicant's demographics, living conditions, application time, health conditions, months of disability at the time of application, grade of disability, etc. Out of 35727 applicants, 23918 were classified as having severe disabilities and were entitled to benefits. The monthly benefit levels, which varied by the location of care (at home or in an institution) and grade of disability, were determined by the LTCI fund. To encourage aging in place, the benefit for home care was slightly higher than that for institutional care. Applicants then chose their places of care and signed agreements with local agencies authorized by the local government. The agreement data includes the time of agreement, chosen place of care (home or institution). The initial choice of care was inferred from the application data on living conditions and residential addresses. After excluding those without key information, we were left with 22089 observations. Out of these, 10138 individuals (45.9%) passed away during the observation period.

We first plotted Kaplan-Meier survival curves and built models to compare the survival rates among different types of care. We then used an instrumental variable model to study how the type of care affects mortality. Mortality was defined as whether a person died within 6 months since becoming eligible LTCI benefits. LTCI beneficiaries could choose institutions from a list of institution with LTCI agreement. We used the distance to institutions on the list as an instrumental variable to predict the probability of choosing institutional care. A binary variable is constructed to indicate whether there was an institution within 1 km of the beneficiary's address and used it as a measure of distance to the institution. 20.9% of individuals in our sample had an institution within 1 km. In the two-stage least square regression, we controlled for several covariates, including gender, age, education level, marital status, years of disability, and application area.

Preliminary findings

Out of 22089 individuals, 16488 (74.6%) chose home care and 5601 (15.4%) chose institutional care initially. Among those who initially chose institutional care, 2928 lived in nursing hospitals and 1673 in older people care institutions. After receiving LTCI benefits, out of those who initially stayed in institutions, 2452 remained in

institutions and 3149 moved to home care. Figure 1 shows the Kaplan-Meier survival curves according to different types of care. The figure indicates that those who chose home care consistently (HC) had a higher survival rate compared to those who chose institutional care (IC) and those who transferred from institution to home care (ITH). Additionally, those who transferred from institution to home care had the lowest survival rate in the first 24 months, suggesting that moving from an institution may lead to higher mortality.

We applied the instrumental variable model to test whether choosing institutional care after receiving LTCI affects mortality within 6 months. We restricted the sample to those who initially chose institutional care. Table 1 shows the first and second stages of IV (instrumental variable) results. The coefficient of the first stage is 0.505, indicating a strong and significant stage effect. The second stage result shows that choosing institutional care after receiving LTCI decreases 6-month mortality by 9.1%. Moreover, the negative effect on death rate is prominent among those who initially stayed in nursing hospitals. For robustness checks, we constructed alternative instrumental variables to measure the distance to institutions, such as the number of institutions within 1 km and 3 km. All of them generated similar results. We also used mortality within 9 and 12 months as dependent variables, and our main results still held.

Our preliminary findings show that those who choose home care consistently have a higher survival rate. Furthermore, for those who initially chose institutional care, choosing home care may negatively impact their health. Our results suggest self-selection in the original place of care. Our findings contribute to the future design of LTCI by suggesting that different types of care should be prioritized based on beneficiaries' health.

Reference

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Figure 1: Kaplan-Meier survival curves according to different types of care.

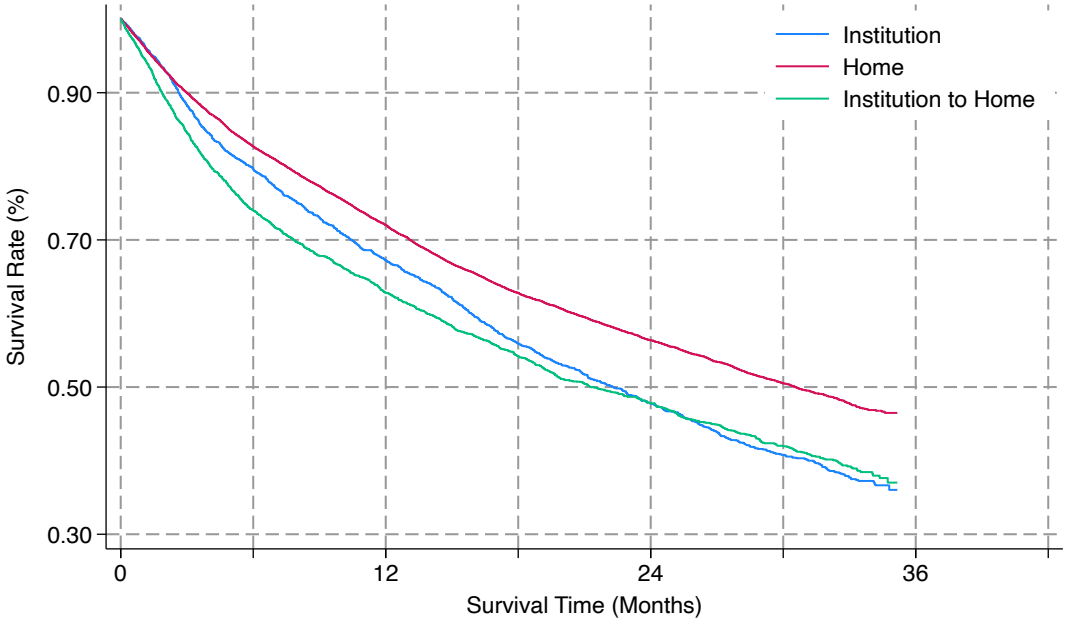

Table 1: IV results: Impact of choosing institution care on mortality within 6 months (Instrumental Variable: whether there is an institution with LTCI agreement within 1 km)

	(1) Original in institutions	(2) Original in Nursing Hospital	(3) Original in Older-Adult Care Institution
Institution care	-0.091***	-0.154***	-0.035
	(0.023)	(0.032)	(0.038)
Observations	5,514	2,633	2,881
R-squared	0.043	0.053	0.048
Coef. of first stage	0.505***	0.553***	0.437***
	(0.011)	(0.015)	(0.016)

Note: Controlling of gender, age, education level, marital status, years of disability, and application area. Robust standard errors in parentheses. *** p<0.01. ** p<0.05. * p<0.1.