IMPACT OF THE ECONOMIC ACCESSIBILITY OF HEALTH SERVICES ON THE HEALTH OF THE ELDERLY IN CHINA

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Abstract

China is entering an aging society. An aging society will create a huge demand for healthcare services and increase healthcare costs for the entire society. Therefore, it is crucial to explore the factors that influence the health of the elderly. This study uses a sample from the China Family Panel Studies (CFPS) and employs a panel fixed-effects regression model to examine the impact of economic accessibility to healthcare services on the health of the elderly. The empirical results show that the economic accessibility of healthcare services has a significant impact on the health of the elderly. In the heterogeneity analysis section, this study demonstrated that the improvement effect of healthcare accessibility on the health of rural residents is more significant. Additionally, this study found that for elderly individuals over the age of 80, the effect of economic accessibility on health improvement is no longer significant. Therefore, financial support for medical insurance should be increased, further raising the reimbursement rates for healthcare services for Chinese residents.

Keywords: Economic Accessibility, Health Services, Health of the Elderly

Introduction

The COVID-19 pandemic has been an unprecedented challenge for health care provision (Byrne et al., 2021). In the early stage of this global pandemic, surging demand for medical services disrupted the order of medical institutions. For example, quite a lot of infectious people cannot access medical treatment timely in Wuhan, which caused chaos and panic at that time. Particularly, it raises the importance of academic research that explores the health effects of the accessibility of health services.

The study investigates the impact of healthcare accessibility on health outcomes in the context of a major infectious disease. Specifically, in this study, using individual-level data from the China Family Panel Survey in 2016, 2018, and 2020, we comprehensively assess the effect of healthcare accessibility on the health outcomes of elderly people in China by fixed effect regression model. Additionally, we examine heterogeneous effects based on individual characteristics to provide more accurate estimation results.

Research Objectives

1. To examine the influence of health service accessibility on the health of elderly people in China. Assess the relationship between health service accessibility and various health indicators among elderly individuals, such as physical health, mental well-being, and overall quality of life.

2. To investigate urban-rural differences in health service accessibility and its impact on the health of elderly people. Compare the accessibility and availability of healthcare services between urban and rural areas in China for the elderly population. Assess the differential effects of health service accessibility on health outcomes among elderly individuals residing in urban and rural regions of China.

3. To explore the heterogeneous effects of health service accessibility on the health of elderly people based on age and gender. Analyze how age groups and gender differences within the elderly population in China are differentially affected by health service accessibility in terms of health outcomes.

Scope of the Research

1. Population Scope

The population pyramids of the baseline cohort (CFPS 2010) showed consistency with China's Census in 2010. The Peking University Biomedical Ethics Review Committee provided ethical approval of the survey (Approval number: IRB00001052-14010). All respondents read a statement that explained the purpose of the study and gave consent to continue.

2. Variable Scope

The dependent variable used in this study is health outcome, it was measured from self-reported health.

Self-reported health has been widely used in existing studies (Duong et al., 2018; Johansson et al., 2020). In the CFPS, respondents were asked "How do you evaluate your health status?", the answers include: (1) Extreme health. (2) Very healthy. (3) Relatively healthy. (4) General. (5) Unhealthy. In this study, the options were reversed, therefore a higher indicator represents a healthy status. The question "Inpatient for illness in the past 12 months?" was used to measure inpatient in the past 12 months, the answer is: 1=yes 0=never. Moreover, to measure discomfort in the past 2 weeks, the question "Have you been unwell for the past two weeks" was used, the answer is：1=yes 0=never.

The independent variable used is economic accessibility. In CFPS, the question is "Where do you usually go to see a doctor?", the answers are as follows: 1=Clinic, 2=Community Health Service Station/Village Clinic, 3=Community Health Service Center/Township Health Center, 4=Specialized Hospital, 5=General Hospital. In this study, this variable was reversed so that higher points represent better health status.

While performing regression, there are multiple factors affecting dependent variables, therefore it is necessary to incorporate a series of control variables to ensure the accuracy of the estimates. In this study, control variables include information on the age, gender, health behaviors including smoking and drinking, employment, relationship with children.

3. Time Scope

The major data of this study are derived from China Family Panel Studies (CFPS) in 2016, 2018 and 2020.

Literature Review

Numerous studies have highlighted the significant impact of socioeconomic status on the health of older adults. A study by Zimmer & Kwong (2004) found that lower socioeconomic status was linked to higher rates of chronic diseases and reduced life expectancy among older individuals. Zhang et al. (2018) revealed that in rural China, self-rated health status and chronic conditions were significant and positively associated with both physician visits and hospitalizations rates. Social connections and support networks contribute significantly to the health and well-being of the elderly. A longitudinal study by Holt-Lunstad et al. (2010) highlighted the protective effects of social relationships on mortality risk in older adults. The physical and social environment in which older individuals live can influence their health outcomes. Factors such as air quality, accessibility to green spaces, and community safety have been shown to impact the health and mobility of the elderly. A series of studies indicated that living in a neighborhood with better environmental conditions was associated with higher physical activity levels and better overall health in older adults (Mao et al., 2022).

Economic factors are an undeniable influencing factor in the accessibility of health services. A study utilizing 25 international databases in low- and middle-income countries found that there was a significant increase in the utilization of healthcare services when costs were increased (Lagarde & Palmer, 2011). In China, the notable expansion of insurance coverage and improved reimbursement for inpatient services coincided with an increase in the utilization and accessibility of healthcare, for example, hospital admissions experienced a substantial increase, growing by 2.5 times from 3.6% in 2003 to 8.8% in 2011 (Meng et al., 2012).

The above literature acknowledges the existing research on various factors affecting the health of elders from multiple perspectives, as well as the examination of the effects of health services accessibility. However, there exist the specific gap in knowledge regarding the impact of health services accessibility on the health outcomes of elders in China. This gap indicates that there is limited research specifically focusing on this relationship within the Chinese context.

Research Methodology

1. Research Methodology

The panel data fixed effects regression model is used in this study. It is particularly useful when you want to control for unobserved heterogeneity, including characteristics that are unique to each entity but remain constant over time.

The fixed effects regression model is constructed as follows:

$$Health_{it} = \alpha + \beta Accessibility_{it} + \sum \delta Control_{it} + \theta_i + \eta_t + \varepsilon_{it}$$

Where $Health_{it}$ represents the health of an individual i in year t. $Accessibility_{it}$ denotes economic accessibility of health services for individual i in year t. $Control_{it}$ represents a series of control variables. θ_i is the individual fixed effect. η_t is a year fixed effect. ε_{it} is a random error term. β captures the effect of economic accessibility of health services on health outcomes.

2. Research Steps

This paper first introduces the research background and presents the research question. Then, it uses a two-way fixed effects model to examine the impact of economic accessibility on the health of the elderly, followed by an analysis of heterogeneity. Finally, the conclusions are discussed, and policy recommendations are provided.

3. Data Collection

The major data of this study are derived from China Family Panel Studies (CFPS) in 2016, 2018 and 2020. The CFPS is a nationally representative, biennial household survey

that has been performed since 2010, organized by the Institute of Social Science Survey, Peking University.

4. Data Analysis
   Data analysis was conducted using Stata 17.0 software.

Research Results

Table 1 presents the statistical description of the sample, with a sample size of 14,533. The mean of self-reported health is 3.699, with a standard deviation of 1.164. The mean of economic accessibility to healthcare services is 0.247, with a standard deviation of 0.323.

Table 1 Statistic description

Variable	Observations	Mean	Std.	Min	Max
Self-reported health	14,533	3.699	1.164	1	5
Accessibility	14,533	0.247	0.323	0	1
Age	14,533	68.22	6.281	60	98
Gender	14,533	0.480	0.500	0	1
Urban	14,533	0.470	0.499	0	1
Smoking	14,533	0.260	0.439	0	1
Drinking	14,533	0.147	0.354	0	1
Relationship	14,533	4.248	0.790	1	5

Table 2 presents the results of the baseline regression, which examines the effect of economic accessibility to healthcare services on self-reported health. First, the regression results without control variables are reported, and the results are shown in Column (1). The coefficient of economic accessibility is significantly positive, indicating that an improvement in economic accessibility can significantly enhance the health status of the elderly. Then, Column (2) reports the regression results with control variables included. The coefficient of economic accessibility remains significantly positive, further confirming the improvement effect of economic accessibility on the health status of the elderly.

Table 2 baseline regression results

	(3)	(4)
	Self-reported health	Self-reported health
Accessibility	0.1812***	0.2034***
	(0.0314)	(0.0313)
Age		0.0059***
		(0.0015)
Gender		-0.1407***
		(0.0225)
Urban		-0.0708***
		(0.0204)
Smoking		-0.0842***
		(0.0252)
Drinking		-0.2447***
		(0.0288)
Relationship		-0.1539***
		(0.0122)

	(3)	(4)
	Self-reported health	Self-reported health
Cons	3.6541***	4.0589***
	(0.0123)	(0.1190)
Individual fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
R^2	0.0161	0.0441
F	33.2650	65.5710
Observations	14533	14533

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Subsequently, this study examines heterogeneity. The results are shown in Table 3. First, the sample is divided into urban and rural elderly, and regressions are conducted separately. Column (1) reports the regression results for rural elderly, with a coefficient of 0.302, significant at the 1% level. This indicates that economic accessibility significantly improves the health status of rural elderly. Column (2) reports the regression results for urban elderly, where the coefficient remains significantly negative, but it is smaller compared to the results for rural elderly. These heterogeneity results suggest that the effect of economic accessibility on improving health is greater for rural elderly than for urban elderly.

The study also examines whether the effect of economic accessibility on the health of the elderly varies by gender. Column (3) reports the regression results for females, with a coefficient of 0.1923, significant at the 1% level. Column (4) reports the results for males, with the coefficient slightly larger than that for females. Therefore, the effect of economic accessibility on health is greater for males, but the gender difference is minimal.

Heterogeneity analysis was conducted based on different age groups. First, Column (5) reports the impact on elderly individuals aged 60-70, with a coefficient of 0.2374, significant at the 1% level. Column (6) reports the impact on those aged 70-80, where the coefficient is slightly smaller but still significant. Column (7) reports the impact on those over 80 years old, where the coefficient is not significant, indicating that economic accessibility does not improve the health of this older age group.

Table 3 Heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Rural	Urban	Female	Male	Age 60-70	Age 70-80	Age > 80
Accessibility	0.3020***	0.1303***	0.1923***	0.2103***	0.2374***	0.1480***	0.1372
	(0.0485)	(0.0401)	(0.0463)	(0.0423)	(0.0409)	(0.0539)	(0.1118)
Age	0.0084***	0.0036*	0.0045**	0.0071***	0.0184***	0.0034	-0.0039
	(0.0023)	(0.0020)	(0.0022)	(0.0022)	(0.0044)	(0.0062)	(0.0120)
Gender	-0.1784***	-0.1027***	-	-	-0.1476***	-0.1423***	-0.0613
	(0.0329)	(0.0303)	-	-	(0.0299)	(0.0381)	(0.0791)
Urban	-	-	-0.1043***	-0.0363	-0.0468*	-0.1187***	-0.0699
	-	-	(0.0286)	(0.0292)	(0.0259)	(0.0367)	(0.0841)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Rural	Urban	Female	Male	Age 60-70	Age 70-80	Age > 80
Smoking	-0.0802**	-0.0807**	-0.0359	-0.0879***	-0.0679**	-0.1296***	-0.0343
	(0.0357)	(0.0357)	(0.0615)	(0.0277)	(0.0328)	(0.0441)	(0.0995)
Drinking	-0.2659***	-0.2167***	-0.1845***	-0.2618***	-0.2594***	-0.1777***	-0.4108***
	(0.0420)	(0.0392)	(0.0699)	(0.0316)	(0.0362)	(0.0523)	(0.1235)
Relationship	-0.1416***	-0.1631***	-0.1359***	-0.1720***	-0.1681***	-0.1362***	-0.1092**
	(0.0175)	(0.0168)	(0.0174)	(0.0170)	(0.0157)	(0.0212)	(0.0451)
Cons	3.8411***	4.1772***	4.0916***	3.9036***	3.3029***	4.2105***	4.6360***
	(0.1774)	(0.1581)	(0.1675)	(0.1719)	(0.2923)	(0.4667)	(1.0144)
R^2	0.0537	0.0407	0.0293	0.0505	0.0482	0.0458	0.0600
F	44.1547	32.5905	17.2461	40.7115	45.6979	16.8901	3.2339
Observations	7708	6822	7550	6981	9314	4307	910

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Discussion

As the proportion of elderly individuals in China's population increases, the country is entering an aging society. An aging society will create a huge demand for healthcare services and increase healthcare costs for the entire society. Therefore, it is crucial to explore the factors that influence the health of the elderly, and healthcare accessibility is an important factor determining whether elderly people can receive timely healthcare services. This study uses a sample from the China Family Panel Studies (CFPS) and employs a panel fixed-effects regression model to examine the impact of economic accessibility to healthcare services on the health of the elderly.

The empirical results show that the economic accessibility of healthcare services has a significant impact on the health of the elderly. As the accessibility of healthcare services improves, the self-rated health status of the elderly also improves. China is a developing country, and its healthcare system and medical insurance schemes are still not fully developed. Some residents continue to face economic barriers when accessing healthcare services, especially the rural population, whose economic conditions are often poor. The high cost of healthcare services poses a significant obstacle to them receiving timely and professional treatment. Therefore, when the accessibility of healthcare services improves, elderly individuals may be able to receive more timely and comprehensive healthcare, thus improving their health status. This study, through empirical analysis, has demonstrated this promoting effect.

In the heterogeneity analysis section, this study demonstrated that the improvement effect of healthcare accessibility on the health of rural residents is more significant. In China, different residents have different types of medical insurance. Urban employees have urban employee medical insurance, while rural residents generally have urban and rural resident medical insurance. The reimbursement rate of the urban and rural resident medical insurance is relatively low, meaning rural residents have to pay more out-of-pocket costs when accessing

healthcare services, and they are usually more sensitive to the cost of healthcare. The improvement in economic accessibility means a reduction in healthcare costs for rural residents, making it easier for them to access healthcare services. Additionally, this study found that for elderly individuals over the age of 80, the effect of economic accessibility on health improvement is no longer significant, whereas for those aged 60-80, economic accessibility can significantly improve their health status.

Recommendations

The results of this study offer important policy recommendations. First, financial support for medical insurance should be increased, further raising the reimbursement rates for healthcare services for Chinese residents. This would help reduce the medical burden on individuals and minimize cases of poverty caused by illness or the inability to afford medical care. Secondly, emphasis should be placed on ensuring healthcare accessibility for rural residents, reducing the inequality in healthcare services between urban and rural populations. More comprehensive healthcare services and health education should be provided to rural residents, enabling them to receive timely check-ups. Additionally, the protection for major illnesses should be strengthened, so that rural residents with serious health conditions can receive timely healthcare services.

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