

Keywords

Medical insurance equity; Rural middle and old people; Mental health; Difference-difference model

Background

Population aging is a global challenge. In rural China, elderly residents face urgent mental health issues due to limited healthcare and insufficient funding. The integration of urban and rural medical insurance policies by the Chinese government aimed to improve healthcare equity and provide health protection for this vulnerable group. This study investigated how enhanced medical insurance equity affects the mental health of elderly residents in rural China, offering insights into revising medical insurance systems amid global aging.

Method

- In 2016, China implemented the consolidation of rural and urban medical insurance.
- Data sources: China Health and Retirement Longitudinal Study (CHARLS) data from 2015 and 2018.
- Model: Difference-in-Differences Model

According to the basic steps of the DID model, two dummy variables were constructed: First, a group dummy variable, which marks the samples that participated in the new rural cooperative medical care in 2015 and the urban and rural resident medical insurance in 2018 as the "experimental group" with a value of 1; and marks the samples that participated in the new rural cooperative medical care in both 2015 and 2018 as the "control group" with a value of 0. Second, a policy time dummy variable is based on 2016 as the dividing line.

$$Health_{it} = \beta_0 + \beta_1 did_{it} + \beta_2 treat_i + \beta_3 post_t + \beta_4 control + \varepsilon_{it}$$
$$did_{it} = treat_i * post_t$$

- Model: Propensity Score Matching and Differences-in-Differences (PSM-DID)
- Model: Mediation Effect (Mediating Variable: Medical Reimbursement Ratio) . The regression equation is as follows:
$$Health_{it} = \beta_0 + \beta_1 did_{it} + \beta_2 treat_i + \beta_3 post_t + \beta_4 control + \varepsilon_{it}$$
$$M_{it} = \gamma_0 + \gamma_1 did_{it} + \gamma_2 treat_i + \gamma_3 post_t + \gamma_4 control + \varepsilon_{it}$$
$$Health_{it} = \mu_0 + \mu_1 did_{it} + \mu_2 M_{it} + \mu_3 treat_i + \mu_4 post_t + \mu_5 control + \varepsilon_{it}$$

Results

- The baseline regression analysis showed that enhanced medical insurance equity notably lowered CES-D scores among rural elderly residents (-1.060, p < 0.01).—See Tab.1
- Robustness Test: PSM-DID.—See Tab.2 and Fig.1
- The effect was particularly strong for those with healthy behaviors (-1.236, p<0.01). Regional disparities were also evident, with significant improvements in the east (-1.073, p < 0.05) and west (-1.662, p < 0.05), while in the central region it was statistically insignificant. -See Tab.3
- The study found that increased medical reimbursements, resulting from equity enhancements, fostered better mental health among rural seniors.- See Tab.4 and Tab.5

	(1) CES-D	(2) CES-D
did	-1.060*** (0.323)	-0.958*** (0.324)
treat	0.356 (0.236)	0.357 (0.238)
post	1.348*** (0.128)	1.091*** (0.166)
age		0.00209 (0.00598)
gender		-0.229* (0.121)
education		-0.392*** (0.147)
marital		-0.0692 (0.154)
exercise		0.0998 (0.144)
social		-0.595*** (0.120)
smoke		0.102 (0.137)
drink		-0.627*** (0.131)
income		-0.0000185*** (0.00000370)
examination		-0.192 (0.121)
Outp		-0.0177 (0.0370)
_cons	7.477*** (0.0915)	8.889*** (0.523)
N	11 736	11 644

Table1 The Impact of Medical Insurance Equity Improvement on the Mental Health of Rural Elderly People (DID)

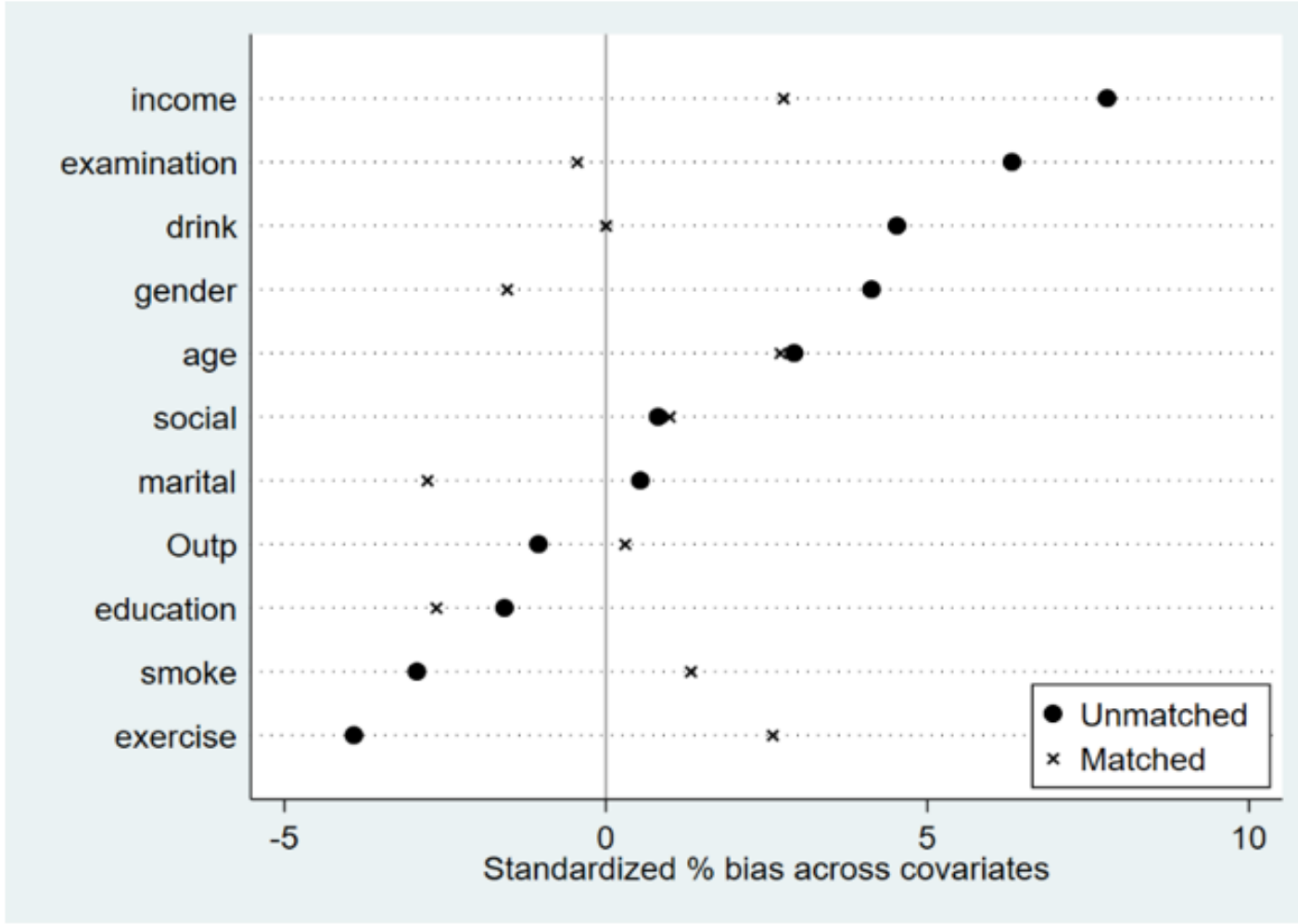


Figure 1. Standardization deviation between covariates (%)

variables	(1) CES-D	(2) CES-D
did	-1.471*** (0.425)	-1.511*** (0.424)
Treat	0.374 (0.305)	0.380 (0.303)
Post	1.657*** (0.302)	1.680*** (0.344)
Age		0.00358 (0.0107)
Gender		-0.119** (0.215)
education		-0.0836 (0.267)
Marital		0.0321 (0.277)
Exercise		-0.127 (0.257)
Social		-0.808*** (0.214)
Smoke		-0.0245 (0.246)
Drink		-0.372 (0.230)
Income		-0.0000181*** (0.00000687)
examination		-0.00846 (0.217)
Outp		-0.0724 (0.0726)
_cons	7.401*** (0.210)	8.522*** (0.565)
N	3 644	3 644

Table2 The Impact of Medical Insurance Equity Improvement on the Mental Health of Rural Elderly People (PSM-DID)

	ORR
did	0.895** (0.367)
treat	-0.00954 (0.251)
post	0.139 (0.189)
control variables	control

Table14 The impact of medical insurance equity improvement on the mediating variable results.

	CES-D
did	-1.582* (0.834)
treat	0.976 (0.605)
post	1.368*** (0.408)
control variables	control
ORR	-0.0646*** (0.0160)

Table15 Mediation effect analysis results

Group Estimation	N	Control variables	CES-D
Panel A: grouped by healthy behaviors			
healthv behaviors	4031	control	-0.567 (0.498)
unhealthy behaviors	7613	control	-1.236*** (0.422)
Panel B: grouped by region			
east	4 572	control	-1.073** (0.451)
central	3 958	control	0.681 (0.662)
west	3 114	control	-1.662** (0.658)

Table13 heterogeneity analysis

Conclusion

- Medical insurance equity notably enhanced the mental well-being of rural seniors, largely through higher reimbursement rates that acted as a mediator. The initiative not only bridged the healthcare disparity between urban and rural regions but also bolstered social health and welfare.
- A fair medical system can mitigate social inequities and health disparities, thus elevating life satisfaction and happiness. Furthermore, the paper exemplified a Chinese approach for healthy population aging and highlighted the efficacy of policy reforms in tackling healthcare inequities.

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