How Do Medical Insurance and New Rural Social Pension Insurance Affect the Mental Health of the Rural Elderly? -- An Empirical Study Based on China Health and Retirement Longitudinal Study

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Abstract. At a time when China's common prosperity has entered a new stage of development, the rapid increase in medical costs is still a major concern for some families who are "returning to poverty due to illness". Can the new rural pension and medical insurance effectively relieve the mental burden of the elderly? Based on the microdata of individuals from 2015 China Health and Retirement Longitudinal Study (CHARLS), this paper explored the effects of medical insurance and New Rural Social Pension Insurance (NRSPI) on the mental health of the rural elderly using a fixed-effects model. It was found that participation in medical insurance significantly improved the mental health of rural elderly adults, while participation in the NRSPI had no significant effect on the mental health of the elderly adults. Based on an exploratory interpretation of the relevant mechanisms, this paper makes the following recommendations: medical service resources should be actively promoted downward, rural medical subsidies should be increased, while the design of the medical insurance system should be improved to increase farmers' motivation to participate in insurance, and the construction of cultural activities and facilities in communities in rural areas should be enriched to provide rich conditions for social participation of the rural elderly and to protect their mental health.

Keywords: Medical insurance; New rural social pension insurance; Rural elderly; Mental health.

1. Introduction

With the continuous development of the economy and society, China has stepped into an aging society. According to the annual statistics from the official website of the National Data of the People's Republic of China, the population over 65 years old in China has reached 200.56 million people in 2021, accounting for about 14% of the total population. Among them, most of the aging population lives in rural areas where the development is more backward. In February 2020, the State Council issued the Opinions of the Central Committee of the Communist Party of China and the State Council on Deepening the Reform of the Medical and Health Care System (hereinafter referred to as "Opinions"), proposing to improve the fair and moderate treatment guarantee mechanism, according to the level of economic development and fund. In 2016, the State Council established the State Council Leading Group for the Pilot Work of NRSPI to further promote the implementation of China's new rural insurance. China is paying more and more attention to the construction of pension insurance and medical insurance. So, can the current pension insurance and medical insurance participation in China form a protective effect on the mental health of the elderly? The analysis and answer to this question will help to provide a reference for the quality and efficiency of the construction of pension insurance and medical insurance system in China.

Current academic research on how pension insurance and medical insurance affect the physical health of the elderly is extensive and in-depth, and most of the existing literature focuses on how the physical health of the urban elderly population is affected by pension and medical insurance. At the same time, pension insurance and medical insurance have not been discussed in a unified analytical framework. In addition, most studies have ignored how pension insurance and medical insurance affect the mental health of the elderly, and even fewer studies have focused on the rural elderly. In this paper, we examine the effects of medical insurance and NRSPI on the mental health of the elderly from another perspective, taking the rural elderly as the target subject.

Based on the above discussion, this paper uses microdata from the 2015 China Health and Retirement Longitudinal Study (CHARLS) hosted by the China Center for Economic Research, National Development Research Institute, Peking University, and analyzes them using fixed-effects models, PSM, and other empirical methods. It is found that, first, participation in medical insurance has a positive effect on the mental health of rural elderly; second, participation in NRSPI does not have a significant promoting effect on the mental health of rural elderly.

Compared with previous studies, the contributions of this paper mainly lie as follows. First, this paper adopts national large-scale tracking survey data to estimate the impact of medical insurance and NRPSI on the mental health of rural elderly, which provides another angle of reference for related studies in academia and fills the gap in related literature to a certain extent. Second, this paper discusses and compares the impact of medical insurance and NRPSI on the mental health of rural elderly within a unified analytical framework, which integrates the two dimensions. Third, this paper adopts fixed-effects models, PSM and other econometric methods to empirically analyze the theoretical hypotheses and address the endogeneity problem, which makes the conclusions more robust. In addition, the possible innovations and marginal contributions of this paper are as follows. First, the research subject of this paper is the rural elderly, and there are fewer existing studies with the rural elderly as the subject. The research of this paper is helpful to provide the impact mechanism of the rural elderly for related studies, and provide research materials for the urban-rural comparison and the fairness and universality of social insurance. Second, this paper focuses on the research of medical insurance and NRPSI on the mental health of the elderly, and proposes policy recommendations for medical insurance and NRPSI to promote the mental health of the elderly.

2. Literature Review and Theoretical Hypothesis

2.1 NRSPI and Mental Health of the Elderly

China's existing social pension insurance system includes basic pension insurance for urban workers, flexible employment pension insurance for individual businessmen and women, pension insurance for urban residents and rural pension insurance. After 2009, new rural social pension insurance (NRSPI) was introduced. The NRSPI is a new insurance model compared to the rural pension insurance carried out in the past. In the past, the old rural pension insurance mainly consisted of farmers' own contributions, which was actually a self-saving model, while the most important feature of the new rural pension insurance is that it is a combination of individual contributions, collective subsidies and government subsidies, with three funding channels. The farmers' monthly basic pension is paid directly by the central government, and each insured farmer can receive it directly on a monthly basis once he or she reaches the age of 60. The pension insurance for rural elderly people is mainly based on the NRSPI. Regarding the impact of pension insurance on the mental health of the elderly, some foreign studies have shown that pension insurance affects the mental health of the elderly. First, the lack of pension affects the mental health of the elderly because the lack of resources reduces the ability of the elderly to deal with stressful life time and puts the elderly in a state such as depression, which leads to mental uneasiness (Adler, N. E., 1994). In contrast, pensions reduce anxiety and loneliness in the elderly (Case, A., and F. Wilson, 2000), thus promoting health in the elderly. In China, despite the low level of NRSPI coverage, it still improves the quality of retirement for rural insured elderly to some extent, although its policy effect is limited (Zhang, Y., 2016). Some scholars also found that social support has an impact on the physical and mental health of rural elderly, among which pension insurance has a positive impact on the physical and mental health of rural elderly, and the size of the impact is in the order of pension, pension insurance program, and new agricultural insurance (Tao Yuchun, 2014). In studies about social insurance and rural elderly health, it is also shown that pension insurance has a significant positive impact on the self-rated health and physical health of rural elderly (Liu Wei and Liu Changping, 2018; Ren Qin, 2015), and the receiving of NRSPI significantly improved the mental health of rural elderly, especially rural women and people with low economic place (Zhou Qin, Jiang Weige, and Guo Xin, 2018).

Meanwhile, income and its disparity also have an effect on the subjective well-being of older people, but income does not have a significant effect on the well-being of rural older people, while income disparity has a significant effect (Shouwei Qi and Shaofu Zhou, 2010).

On the other hand, it has also been shown that NRSPI has no effect on the depression index, which reflects mental health (Xie Chalk, 2015). Researchers suggest that this may be due to the lack of significant effect of NRSPI on the labor supply of rural elderly people and the influence of traditional perceptions of Chinese elderly people. The research literature on adult unemployment suggests that the condition of not working is often accompanied by low satisfaction with life and higher levels of depression. If pensions provide tangible economic security for rural elderly with a larger time composition effect (the happiness that arises when individuals can devote more time to happier activities), it may motivate rural elderly to withdraw from the labor market and enjoy life. In addition, despite the decline in the proportion of elderly people who rely on their children for their old age, nearly 70% of the elderly still believe that their children are the most dominant support of their life in old age. Under the domination of the notion, it is difficult for external intervention policies with little subsidy intensity such as NRSPI to rapidly improve the subjective welfare of rural elderly people in the short term (Xie Chalk, 2015). In general, domestic scholars' studies on the assessment of the effects of NRSPI policies have focused on two aspects: the first is the study of the relationship between NRSPI and rural families' intergenerational support and rural residents' retirement patterns, and the second is the study of NRSPI on rural elderly labor supply (Xie Chalk, 2015). The overall number of studies on NRSPI promoting the mental health of rural elder adults is relatively small.

2.2 Medical Insurance and Mental Health of the Elderly

China's existing social medical insurance system includes basic medical insurance for urban workers; basic medical insurance for urban residents; and new rural cooperative medical insurance. Rural residents in China mainly participate in the new rural cooperative medical insurance, and the medical insurance mentioned in the following refers to the new rural cooperative medical insurance. There is no consensus on whether there is a link between medical insurance and mental health of the elderly. Some foreign scholars found that the presence or absence of medical insurance had a significant positive effect on the self-rated health status of the elderly through a study on the utilization of medical services of the elderly in the United States, and the elderly with medical insurance had better self-rated health status (Card, Dobkin, Maestas, 2008), because medical insurance effectively reduces health risks and its popularity is conducive to improving the health of the elderly (Gao S, 2009). (Gao S, 2009). Among them, the care services, medical services and mental services in medical insurance are decisive factors that affect the health of the elderly (Grossman, 1972). Some domestic scholars also believe that medical insurance is associated with the mental health of the elderly. In a study on the health performance of basic urban workers' medical insurance, some scholars found that basic urban workers' medical insurance can improve the short-term health and long-term health status of the workforce, including physical and mental health (Chen, H., and Deng, P. Y., 2016). Some empirical studies also showed that compared to no medical insurance, the physical and mental health self-assessment status of the elderly who participated in medical insurance was improved (Zhu, X. T., and Xu, H. F., 2016). This is because the insurance provided by the current formal support (e.g., pension insurance and medical insurance) can effectively relieve the mental stress of the elderly, which is beneficial to their mental health (Tao, Yuchun, and Shen, 2014), resulting in significant improvements in both physical functional health and mental health of the elderly (Zhang, Pengfei, 2020). Also, participation in higher-grade medical insurance is more conducive to improving the health of residents (Ma Chao, Gu Hai, and Sun Xuhui, 2017). In addition, some foreign scholars have found that factors such as social insurance and welfare equity can affect the subjective well-being of the elderly, which in turn affects their mental health (DOLAN P, TESSA P, 2008). And some scholars in China have shown that having medical insurance can improve the happiness of the elderly (QI Shouwei, ZHOU Shaofu, 2010); participation in basic medical insurance also significantly improves the sense of equity of urban and rural residents (GUO Jie, WU Yufeng,

2021). In other words, medical insurance and medical services benefit the physical and mental health of the elderly (Liu, 2014; Wang, 2014).

On the other hand, some domestic and foreign scholars also believe that there is no significant association between medical insurance and mental health of the elderly. Some foreign scholars have pointed out that medical insurance does not have much effect on the health level of the elderly (Ross C E, 2000; Chen G, 2014), and the expansion of medical insurance does not necessarily improve the health level of the elderly (Levy, Meltzer, 2004). Some scholars in China have also found, based on empirical studies, that medical insurance alleviates the economic poverty of sick elderly people to some extent and improves access to medical services, thus enhancing the physical health of rural elderly people, but the coefficient of the effect of social insurance on the mental health of rural elderly people is not significant (Liu W and Liu C, 2018), and the medical insurance system also fails to significantly improve the mental health of elderly people (Zhou Qin and Jiang Weige, 2018). Although participation in medical insurance has an enhancing effect on the health of the workforce, there is urban-rural heterogeneity, with urban medical insurance enhancing the physical and mental health of the urban workforce, but the new agricultural cooperative has not led to a significant improvement in the mental health of the rural workforce (Zhang Qi, Wu Chuanqi, 2018).

In general, domestic and foreign research on medical insurance and its impact on health is relatively well developed, and has gone through the process of theoretical research to empirical analysis, although there are different research conclusions, but they are not contradictory to each other. The differences are caused by different research methods and research objects (Xue Xindong, Jian Xiaojing, 2015). Combining the above literature review with the relevant controversies in academia, this study proposes the following hypotheses: participation in various types of medical insurance has a positive impact on the mental health of rural elderly; NRSPI has no significant contribution to the level of mental health of rural elderly.

3. Data Description and Empirical Design

3.1 Sample Selection and Data Sources

The data used in this paper are from the 2015 China Health and Retirement Longitudinal Study (CHARLS), hosted by the China Center for Economic Research, National Development Research Institute, Peking University. This data has a large sample size, covering 150 county-level units and 450 village-level units across China, and contains rich information on the economic, health, and medical conditions of individuals and households. Based on the research object and purpose of this paper, on the one hand, due to the fact that Chinese rural elderly can receive pensions over the age of 60, and on the other hand, older elderly may not be comparable, while the reliability of the questionnaire is reduced, this paper limits the sample to rural elderly aged 60-75. After removing the samples with missing variables, a total of 4661 individual samples were active.

3.2 Empirical Model Setting

In order to verify the theoretical hypothesis proposed earlier, this paper intends to construct a fixed effects model for discussion and analysis. The specific empirical analysis model is shown in equations (1) and (2).

$$Depressed_i = \alpha_0 + \alpha_1 Nrps_i + \alpha_2 X_i + ProvinceFE + \varepsilon_{it}{}^1 \quad (1)$$

$$Depressed_i = \beta_0 + \beta_1 Insured_i + \beta_2 X_i + ProvinceFE + \varepsilon_{it}{}^2 \quad (2)$$

where the subscript i denotes an individual. The explanatory variable $Depressed_i$ is the degree of depression of individual i. The degree of depression is derived from the detailed depression questionnaire scale, and higher scores indicate higher levels of depression. The core explanatory variables in Eqs. (1) and (2) are whether the individual receives the NRSPI $Nrps_i$ and whether or not they have medical insurance $Insured_i$ the dummy variables. Therefore, α_1, β_1 are the core

parameters to be estimated in this paper. X_i are a series of individual control variables. In addition, to prevent the effect of regional differences, this paper also controls for the fixed effect of the individual's province of $ProvinceFE$ which allows the results to be compared within the same province. ${\varepsilon_{it}}^1$ and${\varepsilon_{it}}^2$ are the perturbation terms of the two models, respectively. Finally, in order to prevent the interference caused by the heteroskedasticity problem, all empirical results in this paper are statistically inferred using heteroskedasticity-corrected robust standard errors.

4. Basic Empirical Results

4.1 The Impact of Pensions on the Mental Health of Rural Elderly

The results of the baseline stepwise regression of the previous empirical model equation (1) are shown in Table 4. Among them, the explanatory variable is Depressed score of older adults, and a larger variable indicates a higher level of depression among individuals. Column (1) does not control for any control variables and province fixed effects, column (2) adds province fixed effects, and column (3) further restricts individual control variables. It can be seen that the core explanatory variable of whether or not one receives the new rural social pension insurance is even significantly positive under the univariate regression. In contrast, the results in the more tightly controlled column (3) are not significant, so the positive effect of new rural social pension insurance on the mental health of the elderly is not supported by the evidence.

Table 1. Effect of Pensions on the Mental Health of Rural Elderly

	(1)	(2)	(3)
Explained variables.	Depressed	Depressed	Depressed
Nrps	0.396**	0.229	0.039
	(0.199)	(0.203)	(0.173)
Gender			1.238***
			(0.177)
Age			-0.009
			(0.020)
Edu			-0.188***
			(0.056)
Marry_Status			0.282***
			(0.063)
body_pain			4.204***
			(0.216)
hypertension			-0.532***
			(0.179)
chro_disease_num			0.531***
			(0.067)
Health			3.170***
			(0.239)
Provincial fixed effects	Uncontrolled	Control	Control
Observations	4,661	4,661	4,661
R-squared	0.001	0.049	0.312

Note: Observations are at the individual level, and the sample is rural older adults aged 60-75 years. ***, **, and * indicate statistically significant at the 1%, 5%, and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. "Control" means the fixed effect was controlled for, "uncontrolled" means the fixed effect was not controlled for. The individual control variables are gender, age, education, marital status, body pain, hypertension, number of chronic diseases, and health condition.

4.2 Impact of Medical Insurance on the Mental Health of Rural Elderly

The results of the baseline stepwise regression of the previous empirical model equation (2) are shown in Table 5. Similarly, the explanatory variable is Depressed score of older adults, and a larger variable indicates a higher level of depression among individuals. Column (1) does not control for any control variables and province fixed effects, column (2) adds province fixed effects, and column (3) further controls for individual control variables. As can be seen, the core explanatory variable Insured with or without medical insurance is statistically significantly negative at the 1% level regardless of the level of control. Thus, medical insurance has a significant contribution to the mental health of rural older adults, and the theory of this paper is confirmed.

Table 2. Impact of Medical Insurance on the Mental Health of Rural Elderly

	(1)	(2)	(3)
Explained Variables.	Depressed	Depressed	Depressed
Insured	-1.628***	-1.433***	-0.982***
	(0.432)	(0.428)	(0.373)
Gender			1.227***
			(0.177)
Age			-0.012
			(0.020)
Edu			-0.177***
			(0.056)
Marry_Status			0.272***
			(0.063)
body_pain			4.202***
			(0.215)
hypertension			-0.528***
			(0.179)
chro_disease_num			0.540***
			(0.067)
Health			3.151***
			(0.238)
Provincial fixed effects	Uncontrolled	Control	Control
Observations	4,661	4,661	4,661
R-squared	0.004	0.051	0.314

Note: Observations are at the individual level, and the sample is rural older adults aged 60-75 years. ***, **, and * indicate statistically significant at the 1%, 5%, and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. "Control" means the fixed effect was controlled for, "uncontrolled" means the fixed effect was not controlled for. The individual control variables are gender, age, education, marital status, body pain, hypertension, number of chronic diseases, and health condition.

4.3 PSM Estimation

The baseline findings in this paper have demonstrated that medical insurance has a significant contribution to the mental health of rural older adults. However, there may be significant differences between older adults with and without medical insurance, which may pose serious endogeneity problems. Since propensity score matching (PSM) plays an important role in reducing the correlation between treatment variables and observable variables, this paper proposes to make the causal inference of the article more accurate by means of PSM. In PSM matching, the propensity score values are obtained by Logit regression with treat variables on control variables. The individuals in the control group with the closest propensity score are the paired samples of the experimental group, which can minimize the systematic differences between the experimental group and the control group and thus reduce the estimation bias. Therefore, before estimation, a balanced hypothesis test of

covariates is also required, i.e., whether the variables become balanced between the experimental and control groups after matching, i.e., whether the means of the experimental and control group covariates are significantly different after matching. If there is no significant difference, further model estimation is supported.

Within the framework of the empirical analysis in this paper, the treatment group was older adults with NRSPI (medical insurance) and the control group was older adults without NRSPI (medical insurance). The estimation results of the PSM are shown in Table 6: where the explanatory variable is the Depressed score of older adults, where a larger variable indicates a higher level of individual depression. Both columns control for individual variables and provincial fixed effects. The estimated coefficient of the core explanatory variable Nrps in column (1) was 0.060, which did not pass the significance test; the core explanatory variable in column (2) was Insured, which remained significantly negative.

In summary, the estimation results of PSM are highly consistent with the baseline regression results of this paper: NRSPI does not affect the mental health of older adults, while medical insurance has a significant contribution to the mental health of rural older adults. Therefore, the conclusions of this paper are highly robust.

Table 3. PSM estimation results

	(1)	(2)
Explained variables.	Depressed	Depressed
Nrps	0.060	
	(0.176)	
Insured		-0.964**
		(0.385)
Gender	1.216***	0.636
	(0.184)	(0.389)
Age	-0.008	-0.037
	(0.021)	(0.046)
Edu	-0.171***	-0.111
	(0.058)	(0.115)
Marry_Status	0.280***	0.257**
	(0.066)	(0.119)
body_pain	4.233***	4.362***
	(0.224)	(0.451)
hypertension	-0.452**	-0.298
	(0.186)	(0.384)
chro_disease_num	0.538***	0.441***
	(0.069)	(0.131)
Health	3.035***	3.489***
	(0.248)	(0.513)
Provincial fixed effects	Control	Control
Observations	4,661	4,617
R-squared	0.309	0.296

Note: Observations are at the individual level, and the sample is rural older adults aged 60-75 years. ***, **, and * indicate statistically significant at the 1%, 5%, and 10% levels, respectively. Values in parentheses are heteroskedasticity robust standard errors. "Control" means the fixed effect was controlled for, "not controlled for" means the fixed effect was not controlled for.

5. Discussion

5.1 Pension Insurance

The foreign literature shows that pensions have a more significant effect on the mental health of older adults (Adler, N. E., 1994; Case, A. ,and F. Wilson, 2000), but the empirical results in this paper

fail to support this conclusion. Individualism is prevalent in many countries, especially in Europe and the United States, where older people live with their children less often and pensions are a life support and financial support for them. In contrast, as a Chinese collectivist culture country, the most common way of old age is to live at home and with children. The traditional concept of raising children for old age leads to the fact that older people in China are not fully financially independent and separated from their children in old age, and they can get more financial support from their children and grandchildren. The study of rural China concluded that the financial support provided by children meets the needs of older people arising from their health and financial status, and conducive to the mental well-being of older adults (Cong & Silverstein, 2008), which diminishes the protective effect of pensions on the mental well-being of older adults.

On the other hand, relevant studies in the field of psychology show that human mental health is adaptive, and some scholars divide mental adaptation into adaptation to the natural environment and social environment (Kong Weimin). If a person has been at the same social level, his mental condition generally tends to be stable and shows a kind of self-adaptation to the real life. Entering the old age stage, the mental health of the elderly has already appeared a certain degree of adaptability, and the tendency of development also tends to be stable. As a kind of daily-type subsidy, the pension is only issued to solve some difficulties to a certain extent, which is not enough to change a person's living condition, and its effect is not obvious. In other words, the effect of economic factors such as pensions on the mental health of the elderly may be moderated by other more important and direct influencing factors.

Traditional depression theories and realities suggest that the higher the economic level, the stronger the protective effect on the psyche (Adler, N. E., 1994), but the empirical results in this paper did not find this. Combining relevant domestic and foreign literature can be summarized that the main influencing factors that are central to mental health, especially depression, are social participation, cognitive level, and physical exercise (Zhang, Chong, 2016; Lu, J., 2017; Liu, C., 2018). According to most scholars in China, these influencing factors that play a central role in older people's mental health are more significantly influenced by urban-rural differences, education level, and subjective will of older people, and less directly influenced by pensions (Zhang Ye,Cheng Lingguo, 2016; Tao Yuchun,Shen Yu, 2014; Ren Qin,Huang Jie, 2015). This actually weakens the paths and ways in which pensions can protect the mental health of the elderly. In terms of social participation, both data and reality show that cities have a wide variety of social or community activities, and many cities have universities for the elderly and clubs for the elderly, and these activities and places provide more opportunities and ways for social participation for urban elderly. On the contrary, there are fewer social and community activities in rural areas, and rural elderly people have fewer kinds of social participation, fewer opportunities, and lower subjective willingness, and more rural elderly people choose to do farm work and take care of children in their leisure time. In terms of cognitive level, studies by foreign scholars (Almedom, 2005) have also found that participation in social activities can slow down the cognitive decline process of the elderly and help protect their mental health. In terms of physical exercise, it has been proved that urban elderly people participate in physical exercise more frequently than rural elderly people because cities provide more relevant measures and spaces (exercise space), such as urban running tracks, urban green areas, gyms, etc., while rural elderly people also have exercise facilities, but their diversity and coverage are not as wide as those in cities, and they are affected by their own subjective consciousness and education. The frequency of physical exercise in rural areas is lower due to their own subjective awareness and education level.

It can be argued that the effect of pensions on the mental health of older adults may be influenced by other intermediate factors or pathways that diminish the effect of pensions on alleviating the mental health status of older adults.

5.2 Medical Insurance

The empirical results above suggest that participation in medical insurance has a positive impact on the mental health of rural older adults. Then, about how participation in medical insurance can alleviate the mental stress of the elderly, this paper tries to explain in the following aspects.

The national and international literature and related depression theories suggest that a person is more likely to be depressed when faced with experiencing a major crisis and coping with a major life event (Shrout P E, Link B G, Dohrenwend B P, 1978). According to Dohrenwend's literature, major life events can be classified into 12 categories, two of which are inaccessibility to treatment, illness, or injury. Research in psychology points to two hypothetical models of social support, the main utility model and the buffer model (Cohen S, Wills T A,1985). The main utility model argues that social support is considered to maintain the individual's physical and mental health in ordinary times, i.e., it promotes people's health regardless of experiencing stress. The buffer model argues that social support provides people with the ability to cope with special situations (e.g., life events), attenuates people's overreaction to stress, or blocks stress, thereby indirectly enhancing people's well-being. As a major life event, the expense of treatment can be a relatively large burden for families at any level, and return to poverty due to illness is a recurring reality. Medical insurance is more effective in relieving hardship and alleviating the burden during special times, and high-quality social support can buffer the social pressure of rural elderly people due to illness or reduced income from paying medical bills. This has the effect of the "buffer model" (Tao, 2014). In addition, the payment of medical insurance can provide a certain sense of mental security to the elderly, and due to conscious motivation, the elderly can be motivated to maintain their health by the act of paying medical insurance (Zhang Qi, 2018). From the available literature and data, it is clear that participation in medical insurance makes older adults more willing to take medications or participate in the treatment of underlying diseases, such as chronic diseases (Chen, 2013), and the negative impact of chronic diseases on mental health has been widely demonstrated (Zhang Han, 2017; Li, Jiasen, 2016), so if participation in medical insurance can motivate older adults to participate in the treatment of chronic diseases, it also has a has a protective effect.

Based on the above empirical results and discussion of mechanisms, it can be concluded that participation in medical insurance is associated with mental health, and the exact causal relationship remains to be verified.

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