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Socioeconomic Status and Health Level of Middle-aged and Old People -- Based on CHARLS Survey

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Abstract: The aging of the population in China is becoming increasingly serious, and the health status of the elderly has been widely concerned by scholars from all walks of life. The study of intermediate mechanisms can provide a better basis for formulating relevant policy interventions. Therefore, this paper combines domestic and foreign literature research, using the method of the logit model, to analyze the intermediate mechanism of socio-economic status affecting the health level of the elderly. This paper uses CHARLS data in 2018 to study the impact of socioeconomic status on the health status of middle-aged and elderly people. First of all, it combs the relevant literature at home and abroad, and makes descriptive statistics on the socio-economic status and health level of the elderly in China to understand their current situation. Secondly, we use the logit regression model to analyze the relationship between socioeconomic status and the health level of the elderly. The research found that: First, there is a significant positive correlation between socioeconomic status and the health level of the elderly. Second, from the perspective of gender differences, socio-economic status significantly affects the health level of men, while it has less impact on the elderly of women. Based on the results of the study, this paper puts forward targeted countermeasures and suggestions, which can reduce the degree of health inequality by improving the elderly's health behavior, material living conditions, family relations, good neighborliness, community health environment, etc.

Keywords: socioeconomic status, health level

1. Introduction

Health problem is the premise and foundation of people's work, and life has been a strong concern, physical and mental health is not only a necessity for personal development. It is more related to the country's social progress and economic development. Black's Report on Health Inequality in 1980 pointed out that economic development and scientific progress had not been able to alleviate the phenomenon of health inequality, and the morbidity and mortality rates were significantly different among groups at different social levels [1]. Since then, numerous studies have shown that health inequalities in multiple countries are mostly caused by social factors, economic factors, status inequality, and other factors. China has a vast territory and a large population. The ladder of economic development and the complex structure of urban and rural areas are bound to have a certain impact on the health level of residents. The relationship between socioeconomic status and individual health has been confirmed by many scholars at home and abroad, and two different views

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have been generated. One believes that socioeconomic status has a positive relationship with health level, and the higher the economic status, the healthier the population. The other view is that the level of health creates a difference in socioeconomic status, and healthier individuals are to achieve a higher socioeconomic status. However, as research in the field of social science, the degree and mode of influence on health levels will change due to differences in living habits and social environment among different populations in different periods.

The health level of residents is an important reflection of their quality of life and is also one of the indicators reflecting the development of the national economic level. Socioeconomic status also has a certain impact on residents' health. In recent years, domestic scholars have conducted studies on socioeconomic status measurement indicators, but there is a lack of research on the relationship between them, especially the analysis based on panel data. This study used CHARLS data to analyze the socioeconomic status and health level of residents, so as to explore the influencing mechanism of socioeconomic status on residents' health level, and put forward relevant policy suggestions accordingly.

2. Literature review

Since the 1970s, studies on the relationship between SES and health levels have been strictly analyzed using econometric methods. The socioeconomic status will cause the attention of researchers in the 1940 s, but the early study is based on a single index, such as income, education, or engagement in the industry. Along with the advancement of research, in the 50 s people began to use education, income, and occupation as a composite index, such as Cullumbine wrote in his paper [2]. The study showed that, even after controlling for other effects on health, economic status remained significantly associated with morbidity and mortality, although higher levels of education and economic status were associated with better health than lower levels of education and poor people. Dahl and Ross et.al. both believe that people with high economic status are also more likely to have access to medical and health service resources, a good living and working environment and better nutrition intake [3, 4]. Moreover, the positive effects of education and income on health persist throughout an individual's life. In terms of the impact of the income gap on health level, current studies like Subramanian et.al. basically believe that income inequality has a significant negative impact on the difference in the health level of residents [5]. Braveman et al. believed that social and economic status should be comprehensively measured by taking into account the multiple indicators involved to the greatest extent, and the relationship between these indicators and health should be examined separately [6]. Lowry et.al. found that older people are less likely to have access to health protective factors due to age constraints, and there may be an underlying mechanism by which socioeconomic status affects health [7]. The results of different indicators are different. Many scholars have focused on multiple groups in their studies on the relationship between the two and found that both the research on the health status of urban aromatic force and the health status and follow-up survey of the elderly population have confirmed the direct effect of SES on the health level: the health level of the urban labor force is distributed hierarchically with the level of economic status; High-income seniors have better happiness, self-rated health, and leisure activities; The elderly health status has obvious differences between environmental resources and social status differences in individual's social and economic status is its position in the social structure, which mainly embodied in the individual may control or the quality and quantity of social resources, has affected people lifestyle, behavior habit, resources, and knowledge acquisition ability, etc. Through multiple people's research on SES and health level, two viewpoints are finally formed: social causation theory and healthy choice theory. According to the social causality theory, socioeconomic status is the cause and health level is the effect. People with higher socioeconomic status are able to obtain better education and knowledge resources, so as to improve

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their ability to understand problems, solve problems and regulate health, and have a more comprehensive understanding of healthy behaviors and habits, health and health care knowledge. In addition, people of high economic status also have easier access to health services, better living and working conditions, and better nutritional intake. Mamet et.al believes that when material conditions reach a certain level, people will participate in life activities to improve their health [8]. And healthy choice theory for individual health is decided by social and economic status differences, with health good people will move upward in social mobility to gain higher social and economic status, and the health of poor people will appear in the economic decline phenomenon when the first to lose their jobs and flows to the bottom. Although some achievements have been made in studying the relationship between SES and health level, it is still necessary to study the changing trend of the relationship between economic status, age, and health in different periods and different countries and regions.

3. Data

CHARLS is the first nationally representative survey of the older population that enables the study of the health of the older population in China patterned after the US Health and Retirement Study (HRS) and related aging surveys around the world. CHARLS is a longitudinal survey that aims to be representative of the residents in mainland China aged 45 and older, with no upper age limit. To ensure sample representativeness, the CHARLS baseline survey covered 150 countries/districts and 450 villages/urban communities across the country, involving 17,708 individuals in 10,257 households, reflecting the mid-aged and older Chinese population collectively. The PSU information is the same as in previous waves.

4. Variable Setting

4.1 Health Level of the Elderly

The health level of the elderly was used as the explained variable in the study, and self-rated health in CFPS data was selected as the evaluation index. In the questionnaire, respondents answered, "How healthy do you think you are? "The choice includes five grades: very good, good, fair, poor, and very poor, with the value of 1,2,3,4,5. And this paper changed this variable into a dummy variable with the first two levels equal to 1 and the last three levels being 0.

4.2 Socio-economic Status

Socioeconomic status was used as the explanatory variable, and income and years of education were selected as evaluation indicators. The main independent variable of the study is the individual's socioeconomic status, measured by two indicators: personal income and highest education level. Due to different research fields and research emphases, the selection of socioeconomic status measurement indicators is also different, roughly divided into single-index and multi-index methods. The single index is based on the International Standard Occupational Prestige Scale. At the same time, the multi-index method selectively uses income, education, occupation, assets, housing, and so on to be included in the measurement of socioeconomic status. Although there is no unified standard for measuring socioeconomic status, it is found through the study of relevant literature that income and education are mostly used to measure socioeconomic status. Therefore, this paper chooses personal income and the highest educational background to measure socioeconomic status. Personal income is the level of annual income, which is grouped into groups: "Below 101,000 yuan 101,000 ~ 10,000 yuan" 10,000 ~ 30,000 yuan "30,000 ~ 60,000 yuan" 60,000 ~ 100,000 yuan "100,000 ~ 150,000 yuan" more than 150,000 yuan" , and assign a

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value of 1~7 (below 10,000 yuan =1, above 150,000 yuan =7). So, we set up a dummy variable again and assigned 1 and 0 to different levels.

For the education level, the question in the questionnaire is "What is the highest degree you have completed? The options are divided into 11 groups and assigned a value of 1~11: No formal education (illiterate)=1, Did not finish primary school=1, Sishu/home school=3, Elementary school=4, Middle school=5, High school =6, Vocational school=7, Two-/Three-Year College/Associate degree=8, Four-Year College/Bachelor's degree=9, Master's degree=10, Doctoral degree/Ph.D.=11. For ease of calculation, we divided these eleven groups again into high, medium, and low education groups by creating three dummy variables describing the level of education.

The demographic variable in this paper is gender, age, and marital status. The gender variable reflects the difference between the sexes and is coded as "male" =1, "female" =0. The marital status variable is recoded as a dummy variable as "Married" =1, "Single" =0. The specific description of variables is shown in Table 1.

Table1: Summary statistics

Variable	Description	Obs	Means	Std. Dev.
Result variables				
Health outcomes				
Self-reported health	Very good, Good=1, Very poor, Poor, Fair=0	18,009	.2507635	.4334647
Socioeconomic status				
Yearly income	High income=1, Low income=0	18,009	.2534844	.4350179
Education level	High education level: dummy1=1, otherwise equal to 0; Median education level: dummy2=1, otherwise equal to 0; Low education level: dummy3=1, otherwise equal to 0.	18,009	.6481759 .3518241 .1285468	.4775527 .4775527 .334707
Demographic variables				
Gender	Male=1, Female=0	18,009	.4720418	.4992316
Age	Age when interviewed.	18,009	61.37131	9.87715
Marital Status	Married=1, Single=0.	18,009	.8655672	.3411262

5. Research Methods

The logistic regression model is adopted in this paper. First, regression analysis was conducted on the relationship between control variables and health level to verify the influence of control variables, and independent variables were gradually introduced to construct a basic model. In this model, the dependent variable was health status, the independent variable was personal income and the highest education level, and the control variable was gender, age, and marital status. Then heterogeneous effect was tested.

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6. Result

First, by testing the influence of control variables on a health level. It can be seen from the results that all two of the three control variables have a significant impact on the dependent variable (see Table 2). Through regression, this paper can see that the p-values of gender and age are less than 0.05, so at a significance level of 5%, indicating that these two control variables significantly impact health status. Within the determined sample distribution range, there is no significant relationship between marital status and health status. The control variable does not significantly affect the dependent variable, so the regression analysis fails to pass the significance test. However, in the conventional scenario, considering this variable is an important factor affecting the dependent variable from the perspective of demography, marital status will be retained in the model even if it is not significant.

Table 2: Regression of the control variables

	Self-reported Health
Age	-.0050606
Gender	.0544243
Marital status	.0048422
N=18009, F-statistics=98.22, Prob>F=0.0000, Adj R-squared=0.0159, Root MSE=0.43	

After determining the significant role of control variables, personal income and education level were introduced into the model equations to test the direct relationship between socioeconomic status and health level. Because education has eleven different gears, this paper divides it into three dummy variables: the first four gears as one variable, the fifth and sixth gears as the second, and the remaining seven through eleven as the third. Since a similar situation exists for the health variable, this paper creates a dummy variable that assigns the first three levels a constant value of 0 and the rest a value of 1. Then, this paper does the regression. In the subsequent parameter tests, the P values of gender, marital status, highest education level, and age were all less than or equal to 0.01, indicating that these variables significantly impacted health status. Thus, the six independent variables significantly impacted the health level, as shown in Table 3.

Table 3: Results of Final Model

	Self-reported Health
Income	.0815914
Education (Low)	-.0415141
Education (High)	.0639397
Age	-.003143
Gender	.0258647
Marital status	.0055856
N=18009, F-statistics=91.52, Prob>F=0.0000, Adj R-squared=0.0293, Root MSE=0.42707	

To further study the impact of socioeconomic status on health status, this paper controlled the basic information of individuals. It examined the health differences between individual income levels and the highest education level groups. Based on the basic model, the final results are shown in Table 3. The results of the model show that age, education, and personal income all have a specific effect on

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health. Those aged 18 to 29 were less likely to have unhealthy health conditions than those aged 70 and over. It can be seen that as age increases, the individual's harmful state increases. There is a positive relationship between personal income and health status. The higher the income of a group, the better the health level, which also proves the viewpoint of social causality theory.

The positive correlation between education level and health is obvious. According to the results after grouping, taking the middle education level group as the reference group, the health level of the low education level group is -0.04 times that of the reference group, and the health level of the high education level group is 0.06 times that of the reference group. Although personal income and the highest education level positively impact health, the impact is not monotonic. It may be due to differences in age, living environment, and other factors that change the effect of education and income on health.

7. Heterogeneous Effect

Tables 4 and Table 5 show the result of the heterogeneous effect, in which this paper tests whether the impact on health is different across different gender groups. This paper found that income and education affected women's health less. And when this paper thinks that it's probably related to women. The mechanism behind it may be that females have a relatively lower rate of obesity and a longer life span than males. As a result, they are more likely to have a higher awareness of health consciousness, so the changes caused by objective factors are relatively small.

Table 4: Estimation Results of Male Group

	Self-reported Health
Income	.0845406
Education (Low)	-.0474103
Education (High)	.0556588
Age	-.0036292
Marital status	.0215724
N=8501, F-statistics=55.7, Prob>F=0.0000, Adj R-squared=0.0312, Root MSE=0.44018	

Table 5: Estimation Results of Female Group

	Self-reported Health
Income	. 0757274
Education (Low)	-.0343247
Education (High)	. 0773519
Age	-.002679
Marital status	. 0060863
N=9508, F-statistics=42.48, Prob>F=0.0000, Adj R-squared=0.0213, Root MSE=0. 41501	

8. Discussion

The mechanism behind the result of the heterogeneous effect may be that female has a relatively lower rate of obesity and a longer life span than male. As a result, they are more likely to have a higher awareness of health consciousness, so the changes caused by objective factors are relatively small.

This study found that there were statistically significant differences in health self-evaluation among residents with different education levels, and the higher the education level, the better the

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self-evaluation results; The higher the professional reputation, the better the self-assessment health results,

In general, most residents think their health level is average. Mossey et.al. and Idler et.al.'s research continues to show that self-assessment of health is a subjective reporting indicator with high reliability [9, 10]. For example, Lundberg et al. conducted a reliability and validity test on self-assessment of health and other health problems [11]. The research results show that the overall reliability of self-assessment health is good, consistent with the previous results on the effectiveness of self-assessment health assessment and the basis for making these judgments.

9. Conclusion

In this paper, the latest data from 2018 were used, and the measurement indicators and control variables to measure socioeconomic status were selected based on previous research results. The logistic regression model was used to explore the impact of socioeconomic status and health level, as well as the temporal effect of this impact. Studies have shown that socioeconomic status does have a significant impact on an individual's health. The phenomenon that higher education leads to better health status and higher income leads to better health status is widespread.

With the rapid development of the economy, China is in the stage of accelerating the evolution of society. The difference between urban and rural areas is increasing, and the problem of social differentiation and health inequality will continue to exist. In addition, our country is stepping into an aging society, and the proportion of the elderly is increasing, which brings about the health problem of social groups worth attention. Therefore, it is of great practical significance to pay attention to the health of people with low social and economic status, pay attention to social equity, adjust public social resources and health policies, and make use of the influence of social and economic status on health to improve the overall health level of the whole colonial population.

To sum up, the widening income gap will indeed cause adverse effects on personal health. In the process of pursuing higher income, Chinese people are also pursuing the participation level of social and economic status in various fields such as politics and economy. Improving the medical and health level, improving the accessibility of residents' education, and improving the mobility between social classes become important ways for people to obtain social and economic status identity and improve their overall health level. Therefore, at the policy level, it mainly contains the following enlightenment: First, constantly improve and improve the level of medical security, establish and improve the medical old-age security system in rural areas, actively increase the income of low-income poor groups, so as to constantly reduce the income gap and reduce the health inequality between urban and rural residents. The second is to actively strengthen the support for the training and education of urban and rural residents, especially the enterprise's training subsidies for workers in urgent need of social skills, so as to indirectly improve people's socioeconomic status and alleviate the negative impact of the income gap on the health of residents.

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