

Literature Review on the Influence of Health on Labor Supply for the Rural Middle Aged and Elderly People

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Abstract: Health, as an important component of human capital, plays an indispensable role in individual labor behavior. Healthy human capital can improve production efficiency, increase labor time, and is an endogenous driving force for long-term stable economic development. Our country's economy has entered a critical stage of shifting from high-speed growth to high-quality development, and the problems of aging population, labor shortage, and insufficient supply are posing challenges to economic development. Compared to young people, the mid-aged and elderly have rich work experience. Improving the labor supply for middle-aged and elderly people is not only beneficial for the full utilization of human resources in an aging society, but also helps alleviate the impact of aging on the social pension security system. This article systematically reviews and objectively evaluates the research on the influencing factors of the health of middle-aged and elderly people in rural areas and the impact of health on their labor supply both domestically and internationally. Based on this, research prospects in related fields are proposed. This article lays the foundation for exploring the influencing factors of individual health and evaluating the influence of health shocks on labor supply for middle-aged and elderly people living in rural China.

Keywords: Health; Human Capital; Middle Aged and Elderly People; Labor Supply.

1. Introduction

Health, as an important component of human capital, plays an indispensable role in individual labor behavior. Healthy human capital can improve production efficiency, increase labor time, and is an endogenous driving force for long-term stable economic development. For manual laborers, health is a key factor in obtaining remuneration in the labor market. Impaired health will directly reduce their work efficiency and shorten their working hours. Within a certain time frame, rational economic agents achieve utility maximization by continuously adjusting the time allocation of leisure, market labor, and household labor. However, diseases can shorten the supply time of labor, maximize utility, and even force workers to completely withdraw from the labor market, resulting in a loss of regional human capital.

Our country's economy has entered a critical stage of transitioning from high-speed growth to high-quality development, and issues such as aging population, labor shortage, and insufficient supply pose challenges to economic development. According to the data of the seventh national population census, by 2020, the total number of middle-aged and elderly people aged 45-69 in China will rise to 484 million, accounting for more than one-third of the total population. The number of young elderly people aged 60-69 has reached 147 million, which accounts for 30.44% of the total middle-aged and elderly population in China. Compared to young people, middle-aged and elderly people have rich work experience. Improving the labor supply for middle-aged and elderly people is not only beneficial for the full utilization of human resources in an aging society, but also helps alleviate the impact of aging on the social pension security system.

The "Lewis turning point" under the dual economic structure of urban and rural areas has emerged, and the siphon effect of urban agglomerations on rural human resources has been further strengthened. The influx of young rural labor into

cities is an undeniable fact, and the mid-aged and elderly have become the main force in the rural labor market. The aging of rural labor force is serious. The effective supply of labor force for middle-aged and elderly people depends on their health status. As they grow older, their health level decreases. In rural areas, middle-aged and elderly people have limited physical strength and limited labor supply. Currently, the use of agricultural mechanization in agricultural production activities is not yet widespread in China, it may lead to the phenomenon of forests without protection, land without cultivation, and livestock without feeding. In the long run, phenomena such as land abandonment and extensive cultivation will become increasingly severe. Therefore, exploring the influencing factors of the health of rural middle-aged and elderly people, evaluating the reduced labor supply for middle-aged and elderly people in rural areas due to health shocks, can provide reference for the government to formulate policies to improve the health level of rural middle-aged and elderly people and ensure sufficient supply of human capital. This article systematically reviews and objectively evaluates the research on health influencing factors and the influence of health attack on the supply of rural mid-aged and elderly labor force at home and abroad. On this basis, research prospects in related fields were proposed.

2. Research on Factors Influencing Residents' Health

In 1961, at the 13th meeting of the World Health Organization and the Pan American Health Commission, health investment was first listed as an important component for promoting economic development. Subsequently, considering the dual attributes of investment and consumption in health, health and education were included in the category of human capital investment [1]. Individuals acquire a certain amount of health capital through inheritance from their parents, which decreases with age and increases in

depreciation rate. Consumers compensate for the health loss caused by age by purchasing medical services[2]. The similarities and differences in economic and social conditions among individuals can lead to significant differences in their investment measures and efforts towards their own health. Therefore, under the same conditions, middle-aged and elderly people with different income levels, medical security levels, and health awareness may have different reactions and lead to health differences. Becker constructs a household production function that incorporates consumers' demand for medical services into the model [2]. Grossman introduced the concepts of flow and stock based on the household production function, defining health as consumer goods and investment goods[3]. As a consumer product, health can free consumers from the pain of illness, provide physical and mental pleasure, and satisfy consumer utility; As an investment product, health is one of the elements of human capital, which can increase consumers' labor time and income in the labor market, increase the number of other goods available for purchase in the market, and improve consumer utility. In subsequent related research, domestic and foreign scholars mainly use Grossman's health needs theory to study the factors that affect individual health. From different perspectives, they analyze the internal mechanisms of the impact of different socio-economic factors on residents' health status in a targeted manner, mainly involving factors such as education, income, income gap, social capital, medical insurance, etc.

2.1. Related Research on the Impact of Education on Residents' Health

Education and health, as important components of human capital, have attracted the attention of many scholars for their complementary relationship and mechanism of action. Some scholars have studied the impact of the education level of residents in developed countries such as the United States, the United Kingdom, Canada, and Northern Europe on their health status [4-6]. Domestic scholars focus on domestic residents as research subjects, and most research results both domestically and internationally indicate that an individual's years of education can significantly improve their health level [7-11].

In terms of the mechanism by which education affects individual health levels, existing research results are mainly divided into the "budget constraint relaxation theory" and the "efficiency improvement theory" [10]. On the one hand, the senior intellectuals have more opportunities to earn high incomes, and budget constraints on health needs expand with increasing income. They are more inclined to purchase nutritious food and increase their own health investments, such as purchasing higher quality medical and health services, medical insurance, etc. On the other hand, educational levels improve individuals' awareness of health by optimizing the structure of health factor inputs [12, 13] and choosing healthy lifestyles to enhance the productivity of a healthy body [14-16].

2.2. Research on the Impact of Income on Residents' Health

Health, as an important component of human capital, differs from other human capital in that it is a consumer good that depreciates with age. People can only offset health losses by purchasing healthcare services, improving dietary structure, and increasing physical exercise. Income determines the quantity and quality of medical service

purchases.

The focus of domestic scholars' attention is mainly on the impact of income level on the health of rural residents and workers with unstable jobs, verifying that income inequality can further lead to health inequality. Research has found that the correlation between residents' health status and income varies between urban and rural areas, and the relationship between rural residents' health level and income is not significant, while urban residents generally have a positive correlation [17]. In addition to urban-rural differences, there are also differences in economic status between rural areas [17, 18], and groups with higher economic status in rural areas enjoy health advantages.

For the analysis of internal mechanisms, research has found that the relationship between income and health presents a bidirectional causal relationship, that is, income can affect an individual's health level, while health status can in turn affect their ability to obtain income [17]. It is precisely because of the causal effect between income and health that individual income level will have a certain degree of impact on their health within the same group at different stages of economic conditions. Based on Grossman's theory of health needs, some scholars have calculated a U-shaped Kuznets curve relationship between the health human capital and income of rural residents in China. That is, when the income level is low, farmers choose higher paying physical labor or increase labor time input in order to increase their income. When the income reaches a certain level, people begin to pay attention to health and thus improve their health human capital[19]. When studying the relationship between the health and income of migrant workers in Beijing, a regular cyclical relationship between their income and health can be discovered. The better the health status of migrant workers, the higher the unit time rate of return. However, income is obtained at the cost of health loss, which in turn leads to a decrease in unit rate of return. In order to maintain their original salary level, migrant workers choose to increase their labor time input, which may worsen their health. At the same time, the lower the economic status of migrant workers, the more severe the deterioration of their health condition [20].

2.3. Research on the Correlation between Social Capital and Residents' Health

With the deepening of research, some scholars have considered the role of social capital in the study of residents' health issues. Social capital refers to various social relationship elements that create conditions for collective reciprocal actions, such as mutual trust, mutual assistance, and mutually beneficial social norms among people. Related studies have shown that the accumulation of social capital helps improve people's health status [21-28].

Research has found that social capital plays a role in sharing risks, increasing income, and promoting employment [22, 23], offsetting the negative influence of income inequality on residents' health under certain circumstances[25]. Using data from the China Health and Retirement Longitudinal Study (CHARLS), empirical regression analysis revealed that the probability of individuals self rating their health as "very good" increases with the rise of their social capital index, and the impact of social capital on self rating health has significant gender, urban-rural, and age differences. Adverse factors such as social isolation and social distrust will significantly affect individual mortality rates [24]. The larger the family size, the more guarantee and

support it has in terms of resource sharing and risk sharing, and the better the health status of family members[8]. Existing results indicate that social capital has a beneficial influence on the health of different groups, and has a significant positive impact on improving the physical fitness of vulnerable groups in rural areas, and migrant workers [26, 27, 29].

In the study of the types of social capital, different types of social capital were explored to evaluate the physiological, psychological, and overall health of Chinese residents, and it was found that social capital has a positive impact on residents' health[28]. The driving effect of structural social capital on the health level of migrant workers is greater than that of cognitive social capital.[26], and collective social capital has a greater impact on health inequality than individual social capital[30].

2.4. Research on the Influence of Medical Security System on Individual Health

In 2012, China basically achieved full coverage of basic medical insurance. In 2015, The government has invested a total of 1.05 trillion yuan to support the new rural cooperative medical fund and the urban employee basic medical insurance fund. Has the huge medical insurance expenditure achieved the expected goal? Does it improve the health status of residents? And the mechanism of the impact of medical insurance on health has attracted the attention of many scholars.

Most scholars have confirmed that medical insurance has a positive influence on residents' health. Based on the survey data on the living conditions of elderly people in urban and rural areas of Zhejiang Province, it has been proven that employee medical insurance can serve as a "moderator" to improve the health status of urban elderly people[31]; Using the difference in government subsidies for residents' medical insurance as a "natural experiment", and using the subsidy ratio of each city to the insured population as an instrumental variable, there is evidence that urban residents' insurance has a positive improve on individuals' evaluation of their own health status [32]. It has been found that participating in the New Rural Cooperative Medical Scheme can improve the quality of medical services can enhance the level of individual health of insured farmers, especially for underdeveloped areas in the central and western regions and elderly people in rural areas. It can enhance farmers' daily activity ability, reduce the probability of illness, and alleviate medical burden[33,34]; Medical insurance can improve the accessibility of individual medical services, the efficiency of public medical utilization, and participation in the New Rural Cooperative Medical Scheme can promote farmers' opportunities to choose designated medical institutions and enhance the utilization efficiency of medical services. Urban residents' medical insurance significantly promote individual purchase of medical services, especially for vulnerable groups such as children, low-income and impoverished farmers in western regions, and reduces patients' medical expenses. Increasing health insurance coverage can improve the utilization rate of medical care and personal health awareness[35-37].

Scholars have used medical insurance reform as a "quasi natural experiment" to measure the gap of the health condition of insured individuals before and after medical insurance reform. Based on the quasi natural experiment of city level medical insurance coordination, empirical research using micro survey data has found that the transition of insured individuals from low-level medical insurance to high-end

medical insurance can significantly improve the health level of residents[38]. The medical insurance reform has improved the odds of private enterprise employees participating in medical insurance in China, reduced the probability of employees falling ill, and increased the frequency of using preventive health care[39]. On the other hand, by comparing differences in health levels between the uninsured and insured populations, it was found that the utilization rate of medical services was lower, hospitalization costs were higher, and the health status was generally poorer[40].

The above results unanimously agree that medical insurance has a positive promotion effect on residents' health level. However, it is also found that China's medical insurance system still has certain shortcomings, such as incomplete coverage of rural medical insurance and outpatient services, weak portability of the incomplete medical insurance and basic medical service system.

3. Research on the Impact of Health Status of Middle aged and Elderly People on Labor Supply

At present, there is no consensus among domestic and foreign scholars on the impact of health status on the supply of elderly labor force. Some scholars believe that poor health conditions will be detrimental to the labor supply of the elderly, for several reasons. Firstly, poor health conditions can lead to a decrease in physical strength, reduced labor productivity, a decrease in the quantity of products produced per unit of time, and an increased risk of being eliminated by the labor market. Secondly, poor health conditions encourage elderly workers to increase their investment time in health, increase their preference for leisure, and thus tend to reduce their working time or withdraw from the labor market. Some foreign scholars have focused their research on analyzing the impact of the health status of elderly people in developed countries on their retirement intentions and behaviors. He focuses on studying the negative impact of health status on the labor supply of elderly Canadians . It was found that poor physiology health conditions will increase their willingness to withdraw from the labor market. The increase in pensions and other social benefits can help alleviate the economic pressure on elderly people, improve their welfare levels, effectively promote their withdrawal from the labor market, and increase their willingness to retire[41].

Scholars have focused on elderly people who have not yet retired and studied the impact of health on their anticipated retirement. They have found that the mental and physical health status of elderly people will significantly affect their expected retirement time, and chronic diseases will accelerate their retirement[42]. At the same time, there are gender differences in the impact of health status on retirement decisions among the elderly. For elderly men with poor health, their retirement expectations are about two years earlier than those of women. Based on HRS data from the United States, this study explores the impact of health, wealth, and income on the retirement expectations of the elderly. Through horizontal comparison, it is found that health has a greater impact on the retirement expectations of the elderly than income and wealth. Domestic and foreign scholars have also explored the impact of health on labor participation and labor supply time[43]. In terms of research on the impact of self-rated health among elderly Australians on labor supply, the results indicate that compared to young people, the health

level of the elderly has a greater impact on their labor supply. When the self-rated health level decreases from "good" to "average", the labor participation rates of elderly and young people decrease by about 7% and 1%, respectively[44]. Based on CHNS tracking data, selecting the lagged self assessed health (SHE) as an indicator to measure individual health, the study found that deteriorating health during the lagged period will significantly reduce an individual's labor supply and household income. Setting changes in health status as instrumental variables to address endogeneity caused by the reverse reciprocal causation between "health" and "working hours" [44]. If the Tobit model is used for empirical analysis, the results show that compared to the original health level, the deterioration of The physical health level of middle-aged and elderly people will cause a 24.7% reduction in their labor participation time[45]. Based on the health and elderly care tracking data from Zhejiang and Gansu provinces in China, self-assessment of health status, four common chronic diseases, and daily living ability (ADL) were used to evaluate the impact of residents' health stock and health shocks on labor time. The results showed that the labor supply time of workers would decrease with the decline of their health status. In addition, health shocks and chronic joint diseases could significantly reduce the labor time of workers[46]. However, as long as an individual's health condition can still support their participation in labor, they generally will not directly withdraw from the labor market, but will choose to stick to work.

Unlike most research conclusions, most relevant literature at home and abroad has verified the negative impact of health on labor supply. However, the retirement system arrangements in urban and rural areas of China are different, and the degree and mechanism of health impact on labor participation decisions and labor supply time of middle-aged and elderly people in urban and rural areas may vary. Urban elderly people usually have stable work units, and generally retire from the labor market at retirement age. The retirement age for men is 60 years old, while for women it is 5 years lower than for men. Urban employees regularly pay social pension insurance, which provides economic security after retirement and increases their willingness to withdraw from labor supply. On the contrary, rural areas lack a sound social security system, and most elderly people in rural areas lack economic security after leaving labor. Therefore, the retirement behavior of rural residents still retains the traditional model of "working until old age"[47,48]. By comparing impact of rural and urban elderly health on their labor supply, it can be found that having hypertension significantly reduces the willingness of elderly people in urban areas to continue participating in labor, especially blue collar workers with lower levels of education in urban areas, while it does not have a significant influence on the labor participation willingness of the rural elderly people[49]. The possible reason for the difference is that, on the one hand, manual laborers with pension security in cities are more inclined to completely quit from the labor market when their health is compromised. On the other hand, for the rural elderly people, although their health may be compromised and their willingness to work may decrease, due to the lack of pension security, they still insist on working even if they subjectively expect retirement.

Some scholars use survey data from six national poverty-stricken counties to select chronic diseases as indicators of the health condition of rural residents, and use the number of

working days lost due to diseases as a measure of health status. The research results found that the nutritional intake and illness of rural residents significantly reduced their labor productivity[50-52]. Based on the same set of survey data and using the Heckman model for empirical analysis, the results show that for the residents living in rural areas, their physical fitness has a remarkable negative inhibitory effect on both agricultural and non-agricultural labor. Based on the 2006 China Health and Nutrition Survey data, the Probit model was used to verify the impact of health on labor force participation among Chinese rural residents. The empirical results show that, under other constant conditions, for every increase in health status by one level, the probability of rural residents participating in labor increases by 3.48%[50]. Using the nationwide large-scale tracking survey data collected from the rural fixed observation points established by the Agriculture and Rural Affairs from 2003 to 2007, and using the Heckman model for empirical analysis, the results show that poor health will significantly reduce the labor supply time of migrant workers[51]. The health status and age of individuals are the main factors affecting whether rural middle-aged and elderly people continue to work, and the quality of their health directly affects their labor participation rate. By analyzing the interrelationships between health, labor participation, and risk of elderly poverty in rural China, research has found that improving the health status of elderly people in rural areas can help increase their welfare ratio, labor participation rate, income level, and alleviate the poverty incidence rate of rural elderly population[52]. Based on the Heckman two-stage model, this study investigated the effects of chronic and acute diseases on agricultural labor participation and working hours of middle-aged and elderly people in rural areas [53]. Research has shown that chronic diseases significantly reduce the agricultural work hours of middle-aged and elderly people in rural areas, while acute diseases not only significantly reduce their labor participation probability, but also significantly reduce their agricultural work hours..

Scholars have constructed a life-cycle model that includes endogenous labor supply to analyze how air pollution affects the time endowment allocation of mid-aged and elderly between unhealthy time, leisure time, and working time. The study found that air pollution not only worsens the health level of middle-aged and elderly people, prolongs unhealthy time, but also triggers residents' concerns about health and increases their health preferences, which exacerbates the crowding out effect of air pollution on the working hours of mid-aged and elderly [54]. Scholars have established a theoretical connection between air quality and urban labor supply from the perspective of residents' retirement intentions, and used data from the China Health and Retirement Longitudinal Study to study the influence of air quality on residents' retirement intentions. Research has found that deteriorating air quality can lead to an increase in residents' willingness to retire through a direct channel of environmental comfort. The aggravation of air pollution will make female residents, rural residents, highly educated residents, high-income residents, and residents with high pensions more willing to choose early retirement[55]. Some scholars believe that China is currently facing multiple challenges such as low birth rates, insufficient labor supply, and air pollution. Based on the China Family Panel Studies (CFPS) data conducted in 2014, it can be found that atmospheric pollution plays a bad role on the labor supply of

women who have already given birth. Air pollution significantly increases the burden of childcare for women who have already given birth, thereby reducing working hours. Families with sparse social networks and mothers who engage in freelance work and have low education levels are more severely negatively affected by air pollution[56]. There is also literature based on the theory of family time allocation to construct an analysis framework for labor supply decision-making behavior under health shocks. No significant promotion effect of environmental pollution on individual labor participation has been found, and health can significantly increase the probability of labor participation. However, the detached pollution health shock is prone to labor supply substitution behavior, which will significantly reduce the probability of labor participation. Men, new generation labor force, moderate education level, non-agricultural work, poor health investment awareness, and labor force north of the Huai River are more likely to reduce labor participation when they suffer from pollution health shocks [57].

The article incorporates air pollution factors into the theoretical analysis framework of health capital. Using PM2.5 calculated by CIESIN and wage income and demographic data released by the the National Bureau of Statistics, Constructing a panel threshold model to analyze the impact of air pollution and wage income on health capital at different stages of economic development. Furthermore, the per capita loss of health capital is measured according to different levels of pollution and income standards. Research has found that there is a causal relationship between air pollution, household income, and health capital. The magnitude of health capital loss caused by air pollution depends on the marginal substitution rate of health capital; Both air pollution and wage income have a significant impact on health capital. Under a single economic threshold, air pollution exacerbates the risk of mortality in the population and enhances the marginal impact of wage income on health capital; In recent years, the per capita health capital loss caused by air pollution has shown an exponential upward trend. Due to the coexistence of high pollution and high opportunity costs, the per capita health capital loss in high-income provinces is much higher than that in middle-income provinces [58]. During the 14th Five Year Plan period, how to efficiently allocate China's labor supply in terms of time and space has become a major issue in promoting high-quality economic development in China. This study found that for every 1 microgram/cubic meter ($\mu\text{g}/\text{m}^3$) increase in PM2.5 concentration in urban air, labor supply time will decrease by 0.0410 hours/week. Between 2012 and 2016, this negative impact showed an upward trend followed by a downward trend. The negative impact of air pollution on labor supply time has significant spatial heterogeneity. Air pollution can negatively affect the physical and mental health of labor force, thereby reducing labor supply time. This means that in the future, it is of practical significance to continuously improve air quality and accurately match the spatial and temporal allocation of labor supply and demand in China [59]. Against the backdrop of unresolved air pollution issues, clarifying the relationship between air pollution, labor supply behavior of workers, and human capital efficiency can provide reference for leveraging advantageous human capital, formulating environmental regulation policies, and evaluating investment returns in environmental governance. The author used data from the China Labor Dynamics Survey (CLDS) and Air Quality Index

(AQI) to empirically test the impact and mechanism relationship of air pollution on individual labor supply and human capital efficiency. The research results indicate that air pollution significantly suppresses the labor supply of workers, but the negative impact of air pollution will decrease as income increases. (2) The influence of ambient air pollution on the labor supply behavior of workers with different job natures of workers exhibits significant heterogeneity. Therefore, continuing to promote environmental regulations, optimize urban air quality, and reasonably handle the relationship between environmental regulations and employment will not only help alleviate the pressure of labor supply shortage caused by population aging, but also promote the rational flow of labor resources in China, enhance the efficiency of human capital, and promote the high-quality development of the Chinese economy [60]

Research on the correlation between health and supply of middle-aged and elderly labor force. Lan Y (2022) empirically tested the impact and differences of the impact of health shocks on labor supply for middle-aged and elderly disabled people based on 2477 samples of middle-aged and elderly disabled people from the China Health and Retirement Longitudinal Study (CHARLS) data. The research results indicate that health shocks have a significant negative effect on the labor supply of middle-aged and elderly disabled people, and there are age and gender differences in the impact of health shocks on the labor supply of middle-aged and elderly disabled people [61].Zhu W (2019) believes that the level of labor supply is an important factor in socio-economic development, and health status is one of the key factors determining the level of labor supply. This study investigated the impact of health status on labor supply, and the results showed that health status has a significant impact on the labor supply level of mid-aged and elderly. The impact of health on labor participation varies among different groups under different levels of welfare security, with health having the smallest impact on labor supply for the urban employment insurance group. Variables such as gender, age, income, participation in medical insurance, and household registration also have an impact on labor supply [62] Cao R and Hao L (2018) analyzed the basic laws and characteristics of aging population by combining health and labor supply patterns, and explored the theoretical mechanism of the impact of health on the labor market under the background of population aging. Empirical tests have found that good health conditions increase labor supply time; There is an interactive effect between health and labor supply time, and increasing labor supply time can improve health; There is heterogeneity in the impact of health on labor supply time under different household registration statuses [63] Peng X and Yang T (2021) believe that studying the impact of chronic diseases on elderly social labor participation behavior shows that chronic disease has a important negative influence on elderly labor participation. The increase in disease severity leads to a significant decrease in labor supply for elderly patients, and there are gender and age differences in the status of elderly social labor participation; Individual, family, and societal variables can also affect elderly labor participation, with gender and age differences in their impact [64].Ning G and Gong J (2022) theoretically and empirically demonstrate the relationship between the health condition of mid-aged and elderly employees measured by chronic disease indicators and their working hours and wage income. The research results show that middle-aged and elderly employees with

chronic diseases tend to self insure by increasing their working hours. The increase in working hours and time lost due to illness among middle-aged and elderly employees squeezes out health investment time, leading to health deterioration. Chronic diseases not only increase the demand for self insurance among middle-aged and elderly employees with male, agricultural household registration, unstable employment, and lower economic status, but also reduce their health level due to the increase in working hours [65]. Ren Q and Shen Z (2019) investigated the influence of hypertension on the participation of impoverished farmers in agricultural labor, and provide reference for relevant policy design based on the research conclusions. The results indicates that hypertension had a negative impact on the agricultural labor supply of both male and female farmers from impoverished rural families, and this negative effect had a greater impact on rural women and mid-aged and elderly people above 45 years old. In addition, male patients with hypertension will significantly increase their wives' household chores, leading to an increased burden of family care for rural women and hindering their agricultural labor supply [66]

4. Literature Review and Research Prospects

At present, there are abundant research achievements in the fields of environmental pollution, residents' health, and labor supply in both domestic and foreign academic circles. In terms of research on the impact of residents' health status, social science literature is mainly based on Grossman's health needs theory, taking the perspective of residents' socio-economic factors as the entry point, and deeply analyzing the mechanisms by which factors such as income, education, social capital, and medical insurance affect residents' health. The research on health and labor market performance mainly focuses on analyzing the impact of impaired physical health on people's labor supply behavior.

The development of the economy and society and the realization of a better life for the people are inseparable from labor input, and health is the most important factor of production for middle-aged and elderly people. The damage caused by the health loss of middle-aged and elderly people is not only manifested as impaired physical function and increased economic burden, but also affects their labor supply efficiency and working time in the labor market. Against the backdrop of population decline and aging labor force, the health loss of mid-aged and elderly people will further reduce the effective supply of labor and drive up labor costs. In addition, health inequality is the main aspect that causes social inequality, and many scholars have proven that there is a pro rich health inequality in China, where people with social advantages (wealth, power, or status) are more likely to access medical services. Currently, the level of medical insurance coverage for middle-aged and elderly people is relatively low, which cannot significantly reduce their medical burden, making them susceptible to a vicious cycle of "disease poverty disease" and further widening the wealth gap. In the future, greater efforts should be made to improve the medical service system for middle-aged and elderly people, accelerate the filling of gaps in rural health services, and improve the equalization of urban and rural medical security. This will further enhance the physical fitness and immunity of the middle-aged and elderly population, improve the level of healthy human capital and labor supply, and lay a solid

foundation for promoting high-quality economic development.

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