

Self-employment and health inequality of migrant workers

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Abstract

Objective

This research aims to discuss the impact of self-employment on health inequality of migrant workers, and explore the mechanism and group differences of the influence of self-employment on health inequality in Chinese migrant workers.

Background

Self-employment is one of the main types of employment for migrant workers in China, it is important to promote self-employment of migrant workers for Chinese employment-first policy. However, self-employment will affect the life and behavior of migrant workers, as well as health inequality of them.

Method

This research uses the data from the 2018 China Migrant Workers Dynamic Monitoring Survey, and examines the impact of self-employment on health inequality of migrant workers by using RIF-I-OLS decomposition method.

Results

We find that self-employment will reduce the health inequality of Chinese migrant workers significantly, especially among migrant workers with low education, low income groups and low social integration. Further analysis shows that self-employment can directly promote the self-rated health of migrant workers. Moreover, it indirectly alleviates the health inequality of migrant workers by mediating effect of improving public welfare accessibility such as health records and health education.

Conclusion

It is necessary to allow and support migrant workers to engage in self-employment activities, the government should provide public services such as health education, health records and health rights for migrant workers, focus on the employment of migrant workers in city, especially those with low income and low education. Therefore, we believe that measures should be taken to enhance the sense of belonging of migrant workers in city, and promote migrant workers to truly achieve “urbanization of people”. In this manner, reducing the health inequality of migrant workers.

Introduction

Health is an important human capital [1]. According to the *World Health Statistics* released by WHO in 2021, the average life expectancy in the world is 73.3 years old, and the average healthy life expectancy is 63.7 years old. This indicates that although the life expectancy has been effectively improved, the level of healthy longevity still needs to be improved. As a group with high mobility, the health of immigrants is more vulnerable to the impact and influence of the uncertain social risks [2]. It is a significant discuss to improve and maintain the health of immigrants, and to explore the contributing factors of health inequality of immigrants.

As the largest developing country in the world, there are 285 million migrant workers in China. Migrant worker is a special group which was born in the process of Chinese urbanization and had made great contribution to urbanization and industrialization [3]. They grow up in rural areas, but work in cities, and often own land and homestead themselves in rural areas.As a key group of the migrant population, improving the health of migrant workers is an important part to promote the *Healthy China*, which can maintain social stability and health equity [4]. At the same time, health is the foundation for migrant workers to work and survival. It implies migrant workers' pursuit of happiness, security, and sense of gain, and their aspiration for better health [5]. However, as an integral part of Chinese domestic migration, migrant worker is a weak link in the realization of a healthy China strategy [6]. The determinants of migrant workers' health inequality has not been fully explained by the academic circle, especially from the perspective of migrant workers' self-employment. The interest of our paper is to study the impact of self-employment on the health inequality in migrant workers, which would be a new attempt.

Why do we think this study will be a new attempt? Self-employment is an important part of entrepreneurship, which including the occupation types of migrant workers in non-farm sector, and the self-employed workers can not only hire others, but also work for themselves [7].

Self-employment can promote employment, which can better the condition and optimize the employment structure of migrant workers, and has the important function for migrant workers to achieve a fuller and higher quality employment. Moreover, it affects the accumulation of human capital and economic empowerment of migrant workers [8], and also affects the health inequality of migrant workers. On the one hand, self-employment can make migrant workers having a more flexible work and life, and improving their quality of life, in that case, migrant workers will accumulate entrepreneurship and improve their ability to deal with complex events and risks [9],which is conducive to alleviating health inequality. On the other hand, self-employment might be a suboptimal choice for migrant workers in the labor market. Limited by human capital and social capital, self-employed workers have to take business risks independently, and that brings some financial burden and mental pressure [10], and may have a amplification effect on health inequality of migrant workers. Therefore, the relationship between self-employment and health inequality of migrant workers is difficult to obtain a consistent inference with the theoretical level. This provides a new perspective for our study, and we will test the association between self-employment and health inequality of migrant workers by empirical level.

The inspiration of our paper comes from the observation of migrant workers in China, and the existing literature has laid a good foundation for this study. There are lots of academic research about the

relationship between self-employment and health, although there are still some controversies in these studies. For example, self-employment could promote the realization of self-satisfaction and work expectations [11–12], promote the health perception of individuals [13], and the health and work ability of the self-employed workers were both significantly higher than employee [14–15]. However, Rietveld et al believed that there was a significant negative effect of self-employment on health [16]. Although self-employment would increase job satisfaction of workers, it might also lead to some mental problems [17–19]. Meng and Xue believed that self-employment had a negative effect on the mental health of migrant workers [20]. Engaged in unstable low-status and low-wage employment, such as street vendors, personal and domestic services, would exacerbate the health instability of migrant workers in developing countries [21–22].

There are few studies on the relationship between self-employment and health inequality. Lewin found that the self-employed workers were more vulnerable to the threat of uncertainty and asset loss based on a study in Israel, and had significant health inequality with the employed workers [21]. Based on the survey data of 32,630 workers aged 20–59 in South Korea, Kim et al [7] found that compared with the employed workers, the self-employed workers had a higher probability of physical and mental health problems and a greater degree of health inequality. And Kalleberg found that the proliferation of informal employment, such as self-employment, had aggravated the inequality in Korea [23], the self-employed workers had a higher suicide rate [24] but poorer sleep quality [25] than employed workers in Korea. A Swedish-based study found that the self-employed workers always had poor health, but lower health inequality among low-income self-employed workers than formal employment [26]. Krittanawong et al concluded that self-employment was associated with higher cardiovascular risk [27]. Schneck believed that self-employment was an important source of increasing income inequality in the labor market based on a German research [28]. Berkowitz showed that self-employed workers were more likely to be uncovered by health insurance [29]. A Polish study concluded that there were different types of health gaps between self-employed and employed workers, which was reflected in the self-employed workers were more vulnerable to mental health but the employed workers more vulnerable to physical health [30]. Searson, on the other hand, discussed that the health differences between immigrants and non-immigrants [31].

In summary, as an important type of employment for migrant workers, self-employment has a significant impact on their health. Through the existing literature review, our research finds that the studies about determinants on health inequality of migrant workers are lack of the impact of self-employment, and it is not deep enough to explore the internal mechanism and analyze the group differences. Different from previous studies, this paper will make contributions from the following three aspects: Firstly, we discuss the impact of self-employment on health inequality of Chinese migrant workers from the perspective of self-employment, which has some innovation on academic perspective. Secondly, on measuring health inequality, we use the RIF-I-OLS decomposition method, and we analyzes the mediating mechanism of self-employment affecting health inequality based on mediating effect, our method reflects more scientifically and deeply. Thirdly, we find that the self-employment can indirectly alleviate the health inequality of migrant workers through the mediating mechanism health education and health record, and we believe that the

effect of self-employment is more significant in migrant workers with low income, low education and low social integration, which is innovative on academic viewpoints.

Data Sources And Variable Measures

Data sources

The data in this paper comes from 2018 *Dynamic Monitoring Survey Aata of Migrant Workers* released by the Chinese National Health and Wellness Commission. The object of this survey is the floating population aged 15 and above who have lived in the inflowing area more than a month without local household registration. The survey covers various aspects such as employment, mobility, household characteristics, income and expenditure, as well as health of the floating population. And the data covers 31 provinces, autonomous regions and municipality directly under the Central Government, with a sample size of 150,000, which is broadly representative of the whole country, thus it can examine the occupational characteristics and health status of the migrant population in all aspects. This paper mainly focuses on the migrant workers in the floating population, so we choose the floating population in this data with agricultural household registration (including Farmers to Citizens) as the research object, and limits the age of migrant workers between 17 and 59 years old, after the inclusion of all the variables, the sample size is 86438.

Measurement on health inequality of migrant workers

In this paper, the dependent variable is the health inequality of migrant workers. But health inequality is not a variable which can be directly measured; it needs to be measured by inequality index that is generated by individual health indicators in the sample. There are different ways to measure the level of health; we use the Self-rated Health in this paper, which is shown as “How do you feel about your health?” in the questionnaire, and we put the answer “Healthy” is assigned to 4, “Basically healthy” = 3, “Unhealthy, but I can take care of myself” = 2, “Unable to take care of myself” = 1. This health variable is a positive variable. Health inequality is usually measured using the Gini coefficient and the concentration index, we use the concentration index to measure the degree of health inequality. The concentration index requires that the health variable is a continuous variable between 0 and 1, so the Self-rated Health variable needed to be standardized. And the health inequality in our study is the inequality which is related to economic income, so we need a rank variable to measure the deviation of individual's economic income relative to the overall sample, and the economic income variable is selected as “How much did you earn last month (or last employment)?”, and the rank variable R is the fractional rank of individuals in the sample sorted by per capita income from low to high. The specific method is as follows:

Firstly, the treatment of the dependent variable. We use the methods of Donnell et al to indirectly standardize the self-rated health variable by an ordered probit model[32], this will adjust the self-rated health variables to continuous variables in $[0-1]$ interval. Before measuring the health inequality, it is necessary to construct a production function equation of individual health. Our individual health variable is

the self-rated health Sah_i^* , which is an ordered categorical variables, values from 1 to 4, and the basic regression model is set as the ordered probit model:

$$Sah_i^* = j, \quad \delta_{j-1} < Sah_i \leq \delta_j, j = 1, \dots, 5$$

1

Sah_i^* in Eq. (1) is the self-rated health of individual i , δ is the cut point to be estimated, and Sah_i is the potential continuous variable behind Sah_i^* , which can be expressed by the equations with a series of explanatory variables.

$$Sah_i = \alpha + \beta x_i + \epsilon_i$$

2

In Eq. (2), Sah_i is the latent variable of self-rated health of individual i , x_i is all explanatory variables, ϵ_i is the error term, α is the constant term and β is the regression coefficient.

According to the health equation of self-rated health Sah_i to a series of explanatory variables x_i , based on Eq. (2), we can estimate the predicted value of Sah_i , named \hat{Sah}_i , and the range of Sah_i is $(-\infty, \infty)$, and then we make it normalization by dispersion standardization to get H_i :

$$H_i = \frac{\hat{Sah}_i - \min \hat{Sah}_i}{\max \hat{Sah}_i - \min \hat{Sah}_i}$$

3

Secondly, the treatment of the rank variable. The rank variable (R) is the fractional rank of the individuals sorted by economic income in the sample, which measures the degree of deviation of the economic income ranking relative to the sample, and R is the order of the i -th person in the sample sorted by his or her income. The formula is:

$$R_i = \frac{i - 0.5}{n}$$

4

where i represents the i -th individual in the sample, and n is the sample size.

Explanatory variables and control variables

The core explanatory variable in this paper is self-employment, which is defined as employer or self-employed economy. The corresponding question is "What is your current employment status?", we assigns a value of 1 to migrant workers who answered "self-employed" and "I am a employer", and 0 to those who answered "be employed". The control variables include personal characteristics, family characteristics, work characteristics and regional characteristics. The control variables of personal characteristics include

gender, age, education and political status of migrant workers. The control variables of family characteristics include marriage, number of children, family size and monthly household income. The control variables of work characteristics include whether migrant workers moved across provinces, length of mobility, work hours in a week and medical insurance. The control variables of regional characteristics include living in the eastern, midland, western and northeastern regions. The control variables are shown in Table 1.

Table 1 Descriptive statistics of variables

Variable	Variable Definitions	Mean	Standard Error
Dependent Variable			
Self-rated Health	"Healthy" =4, "Basically healthy" = 3, "Unhealthy, but I can take care of myself" = 2, "Unable to take care of myself " = 1.	3.881	0.351
Explanatory Variables			
Self-employment	Self-employment =1,others=0	0.444	0.497
Personal Characteristics			
Gender	Man=1,Women=0	0.566	0.496
Age	Continuous variable of Age	37.360	8.712
Education	primary school and below=1,junior high school =2,high school =3,university and above =4	2.250	0.887
Political status	Communist =1,others=0	0.037	0.188
Family Characteristics			
Marriage	First marriage & remarriage =1,Divorce, widowhood, cohabitation =0	0.961	0.194
Number of Children	Number of children in the respondent's family	1.536	0.750
Family Size	Total number of respondents' households	3.471	0.958
per capita income	The average monthly income level of the respondents ' families	7.609	0.601
Work Characteristics			
Inter-provincial mobility	Inter-provincial mobility =1,others=0	0.518	0.500
length of mobility	Time to live in a mobile area (years, continuous variable)	7.618	6.085
Work Hours	Working hours per week, continuous variable	60.710	20.123
Medical Insurance	With a medical insurance =1,without=0	0.952	0.213
Regional Characteristics			
Eastern	Living in the eastern=1,Others=0	0.469	0.499

Western	Living in the western=1,Others=0	0.280	0.449
Northeastern	Living in the northeastern =1,Others=0	0.053	0.223
Mediating Variable			
Health Record	Without health record, and never heard of it=1,without established a health record, but have heard of it =2,Established a health record =3	2.633	1.022
Health Education	Have received health education =1,haven't=0	0.815	0.389

Measurement methods

Calculation of Concentration Index

This paper uses a concentration index to measure the health inequality among migrant workers. Based on the above treatment of health and income rank variable, according to the method of Donnell et al (2008) [32],the health concentration index (CI) is expressed as:

$$CI = \frac{1}{n} \sum_{i=1}^n \frac{H_i(2R_i - 1)}{\bar{H}}$$

5

where H_i is the health of individual i , R_i is the rank of income, \bar{H} is the mean of the health variable H_i , n is the sample size. The value of health concentration index CI is in the range of $[-1,1]$, and the health variable in this paper is a positive variable, that is, the larger the value, the better the health of the individual. Therefore, when $CI > 0$, the group with higher income has better health, means health inequality is expressed as “pro-rich”. When $CI < 0$, health inequality is expressed as “pro-poor”. When $CI = 0$ means that there is no health inequality.

RIF-I-OLS Decomposition

According to Eq. (5) above, we have calculated the degree of health inequality by the concentration index. Next, we need to decompose the concentration index to examine the effect of various factors on health inequality. We use the RIF decomposition method, the RIF-I-OLS decomposition method is a regression decomposition method based on the recentered influence function, the idea of this decomposition method is to use the RIF’s estimation of the concentration index, and then establish a connection between the concentration index and the explanatory variable, and thus achieve regression decomposition. Specifically, it can be achieved in two steps:

Firstly, to calculate the RIF value of the concentration index.

$$RIF(h, R; \nu^{CI}) = \nu^{CI}(F_{h,R}) + IF(h, R; \nu^{CI})$$

6

where ν^{CI} represents the functional of the concentration index. Then, the RIF value can be regarded as dependent variable, and we can put it in the regression.

$$E[RIF(h, R; \nu^{CI})] = E[\nu^{CI}(F_{h,R}) + IF(h, R; \nu^{CI})] = \nu^{CI}(F_{h,R})$$

$$\nu^{CI}(F_{h,R}) = E[RIF(h, R; \nu^{CI})] = E_x\{E[RIF(h, R; \nu^{CI}) | X = x]\} = E_x(\beta^T X + \epsilon) = \beta^T X$$

7

Empirical Results

The Health Inequality on Self-employment of Migrant Workers and Decomposition

To examine the impact of self-employment on health inequality of migrant workers, we use the RIF-I-OLS decomposition method to estimate the RIF value of the concentration index and analyze the health inequality results from subtle changes from the health distribution, which is able to examine the impact of changes in explanatory variables on health inequality. Table 2 presents the decomposition on health inequality by RIF-I-OLS method, model *a* to model *d* shows the decomposition results by adding control variables in turn. The result shows that self-employment has a significantly negative effect on the health inequality of migrant workers, indicating that when migrant workers more likely to choose self-employment, the degree of health inequality will decrease. However, the results in Table 2 show that the coefficient of self-employment is still small, indicating that although self-employment has a statistically significant effect on health inequality of migrant workers, probably because health inequality of migrant workers do exist objectively, thus the change of self-employment can hardly make a significant effect this objective fact.

We also pay attention to the other variables. From the perspective of individual characteristics, men have lower health inequality compared to women, indicating that there is a gender health gap and female migrant workers are more vulnerable to health risks. The health inequality of migrant workers increases significantly with increasing age, higher education of migrant workers have lower health inequality, but communist variable has no significant effect on the health inequality of migrant workers. From the perspective of family characteristics, the health inequality of married migrant workers is relatively lower, the degree of health inequality of migrant workers is higher when a family has more children, and the larger family size and higher household income will decrease the degree of health inequality. From the perspective of job characteristics, inter-provincial mobility significantly reduces health inequalities, but with the time of migration increasing, migrant workers face higher health inequality. The health inequality is worse when migrant workers has longer work time, And medical insurance has significantly decreased the health inequality of migrant workers. From the perspective of regional characteristics, the degree of health inequality is lower when migrant workers living in eastern, but the degree of health inequality is higher when migrant workers living in western and northeastern region.

Table 2 Impact of self-employment on health inequality of migrant workers:

RIF-I-OLS decomposition method

Variable	a	b	c	d
Self-Employment	-0.0022*** (0.0005)	-0.0018*** (0.0005)	-0.0012** (0.0006)	-0.0016*** (0.0006)
Gender	-0.0021*** (0.0005)	-0.0020*** (0.0005)	-0.0019*** (0.0005)	-0.0019*** (0.0005)
Age	0.0295*** (0.0014)	0.0258*** (0.0015)	0.0229*** (0.0016)	0.0226*** (0.0016)
Education	-0.0062*** (0.0010)	-0.0029*** (0.0010)	-0.0041*** (0.0010)	-0.0039*** (0.0010)
Political status	0.0003 (0.0014)	0.0006 (0.0014)	0.0006 (0.0014)	0.0005 (0.0014)
Marriage		-0.0060*** (0.0014)	-0.0061*** (0.0014)	-0.0060*** (0.0014)
Number of children		0.0137*** (0.0035)	0.0150*** (0.0035)	0.0168*** (0.0035)
Family size		-0.0246*** (0.0034)	-0.0249*** (0.0034)	-0.0235*** (0.0034)
Per Capita Income		-0.0716*** (0.0057)	-0.0675*** (0.0057)	-0.0589*** (0.0059)
Inter-Provincial Mobility			-0.0022*** (0.0005)	-0.0015*** (0.0006)
Length of Mobility			0.0165*** (0.0026)	0.0163*** (0.0026)
Work Hours			-0.0091*** (0.0017)	-0.0087*** (0.0017)
Medical Insurance			-0.0051*** (0.0012)	-0.0051*** (0.0012)
Eastern				-0.0013* (0.0008)
Western				0.0027***

				(0.0008)
Northeastern				0.0033**
				(0.0013)
Constant	-0.0024**	0.0537***	0.0612***	0.0542***
	(0.0010)	(0.0042)	(0.0044)	(0.0046)
R-squared	0.0081	0.0106	0.0118	0.0123
Sample Size	86348			

Note : ***, **, * are statistically significant at 1%,5%,10%, robust standard error in parentheses.

Robustness Test

We conduct robustness test from the following three aspects: 1. Eliminating the impact of urban differences. Floating population usually migrates to big cities, in China, cities can be divided by city size and economic development conditions, according to this, and we eliminate megacities like Beijing, Shanghai, Guangzhou and Shenzhen. In table 3, model (1) shows that after excluding four megacities, migrant workers' choice of self-employment can still significantly reduce the degree of health inequality. 2. Excluding outliers: 5% truncated tails before and after the income variable. Outliers may lead to untire results and the regression curve may deviate from the true trend, thus affecting the true relationship between the variables. Since health inequality is income-related inequality, this paper makes a truncation of the income rank variables of migrant workers by 5% before and after, the results of model (2) in Table 3 show that the effect of self-employment on health inequality is still significantly negative. 3. Segmentation explanatory variables. In this paper, the explanatory variables are divided into subsistence self-employment and opportunity self-employment according to the employment status of migrant workers. Opportunity self-employment is defined as hiring at least one worker, corresponding to "employers", subsistence self-employment is defined as not hiring others, corresponding to "self-employed workers". The results in Table 3 show that both opportunity self-employment and subsistence self-employment have a significant negative effect on health inequality, the results show that the research conclusions are robust.

Table3 Robustness Test

Variable	(1)	(2)	(3)	(4)
Self-Employment	-0.0017***	-0.0026***		
	(0.0006)	(0.0006)		
Opportunity Self-Employment			-0.0020**	
			(0.0010)	
Subsistence Self-Employment				-0.0010*
				(0.0006)
Other Variables			control	control
Constant	0.0578***	0.0334***	0.0539***	0.0554***
	0.0049	0.0051	(0.0046)	(0.0045)
R-squared	0.0132	0.0070	0.0122	0.0122
Sample Size	77,463	80801	86438	86438

Note : ***, **, * are statistically significant at 1%,5%,10%, robust standard error in parentheses.

Heterogeneity

Individuals with different characteristics will have different levels of health, so this paper conducts a sub-sample test on the migrant workers based on the differences in education, income and social integration. According to the education of migrant workers, migrant workers are divided into three levels: (1)primary school and below, (2)junior high school, (3)senior high school and above. According to the income of migrant workers, reflected in the questionnaire as: “How much was your personal income last month ?”The data shows that the sample average income of migrant workers last month is RMB 4796.85. Based on this, this paper divides the samples of migrant workers into two groups, the samples with income higher than RMB4796.85 are recorded as (1)high income migrant workers, the samples with income lower than RMB4796.85 are recorded as (2)low income migrant workers. According to the social integration of migrant workers, this paper uses the residence willingness of migrant workers to stay in inflow area as proxy variable, which is reflected in the questionnaire as “If you intend to stay in this city, how long do you expect to stay?”We put the answer “I don’t want to stay here” and “I have no idea” is assigned to 0, “I plan to stay here but I don’t know how long”=1, “I will stay here for 0-4years”=2, “I will stay here for 5-9years”=3, “I will stay here for more than 10years”=4, “I plan to settle here”=5. According to this, we have generated a social integration variable, and residence willingness of migrant workers more than 5 years is recorded as (1) high social integration, residence willingness of migrant workers less than 5 years is recorded as (2) low social integration.

Model *a* in Table 4 is a sub-sample test by education. The RIF-I-OLS decomposition results show that self-employment can significantly reduce the health inequality of migrant workers for primary schools and below migrant workers, but it is not significant for the other three subsamples. Model *b* in Table 4 is a sub-

sample test by income. The results show that self-employment can significantly reduce the health inequality of migrant workers for low-income migrant workers, but the effect for high-income migrant workers is positive and it is not significant, indicating that the increase of the probability of migrant workers choosing self-employment can significantly reduce the degree of health inequality for low-income migrant workers. Model *c* in Table 4 is a sub-sample test by social inclusion. The RIF-I-OLS decomposition results show that self-employment has a significantly negative effect on health inequality for the low social inclusion migrant workers, but has no significant effect on migrant workers with high social integration. The above results show that self-employment can alleviate the health inequality of migrant workers, and particularly significant in migrant workers with low-education, low-income and low social inclusion.

Table 4 Heterogeneity

Variable	a. by education			b. by income		c. by social inclusion	
	(1)	(2)	(3)	(1)	(2)	(1)	(2)
Self-Employment	-0.0043** (0.0017)	0.0002 (0.0007)	-0.0014 (0.0008)	0.0006 (0.0007)	-0.0017** (0.0008)	-0.0012 (0.0008)	-0.0024*** (0.0008)
Other Variable	Control	Control	Control	Control	Control	Control	Control
Constant	0.0427*** (0.0126)	0.0540*** (0.0063)	0.0216*** (0.0068)	0.0029 (0.0064)	0.0645*** (0.0067)	-0.0012 (0.0008)	0.0492*** (0.0064)
R-squared	0.0086	0.0064	0.0078	0.0006	0.0105	0.0162	0.0100
Sample Size	15983	42754	27701	33963	52475	41907	44531

Note: ***, **, * are statistically significant at 1%,5%,10%, robust standard error in parentheses.

Further Discussion

The effect of self-employment on self-rated health of migrant workers

This part discusses the impact of self-employment on the self-rated health of migrant workers. Table 5 shows the effect of self-employment on health of migrant workers using the ordered probit model. Models (1) to (4) show the regression results of adding control variables in turn. The results show that after adding the control variables of individual characteristics, family characteristics, job characteristics and regional characteristics gradually, self-employment has a significant positive effect on health of migrant workers, indicating that when migrant workers incline to choose self-employment, their physical health will also improve. Self-employment can significantly promote the health of migrant workers.

Unlike the other developing countries in the world, migrant workers in China are more likely to engage in wage employment based on an employment relationship, accumulate wealth and acquire capital, then turn

to self-employment. Migrant workers engage in heavy physical hired work is more common, while self-employment may lead to higher income and a freer working environment [33]. Grossman's demand of health theory believes that investment in health is an important way to maintain health[1], and thus compared with traditional employment with poor environment and high labor intensity, migrant workers' choice of self-employment can reduce the health depletion from work, and have a positive impact on health.

Table 5 The Effect of Self-employment on Migrant Workers' Health

Variable	(1)	(2)	(3)	(4)
Self-employment	0.0509*** (0.0115)	0.0468*** (0.0116)	0.0849*** (0.0125)	0.0988*** (0.0128)
Individual Characteristics	control	control	control	control
Family Characteristics	--	control	control	control
Job Characteristics	--	-	control	control
Regional Characteristics	--	--	--	control
Pseudo R2	0.0425	0.0466	0.0497	0.0510
Sample Size	86438			

Note: ***, **, * are statistically significant at 1%,5%,10%, robust standard error in parentheses.

Mechanism Analysis of Self-employment Affecting Health Inequality of Migrant Workers

The empirical results above show that the increase of the probability on migrant workers choosing self-employment can reduce the degree of health inequality, this part attempts to discuss the mechanism of this effect. We choose the accessibility of public welfare obtained by migrant workers as a mediator variable, and divides it into two pathways: acceptance of health education and the establishment of health records. As a group of dominated by physical labor, migrant workers are vulnerable to diseases, while they are not well-educated, so it is necessary for their communities and work units to provide them with health education, such as the prevention of occupational disease, infectious disease and chronic disease, the reproductive health, maternal and child health, mental health, self-help of public emergencies, and other aspects of health education. At the same time, the establishment of health records is a new product under the development of Internet technology in recent years. Health records are not only a tool for recording illnesses and treatment processes, but also an integration of information centered on residents' health. The establishment of health records is an important guarantee for the community to carry out various health care works and meet the needs of the floating population for health services, such as prevention, medical and health, rehabilitation, health education, fertility guidance. It is also a basic measure to improve the accessibility of basic public services in health and family planning for the floating population.

Table 6 shows the results of mediating effect test using the health education variable as a mediator variable, the results reflect that the increasing probability of migrant workers choosing self-employment can improve the probability of receiving health education, and health education of migrant workers can make them acquire more health knowledge, so that they can have better protection for themselves in the workplace, which is conducive to promoting individual health and reducing the occurrence of health inequality. At the same time, self-employment also promotes the use and understanding of health records for migrant workers, and the establishment of health records can observe the changes of individual health and analyze the trend of disease development and treatment effect, which is conducive to health care decision-making and maintenance of individual health. As a basic safeguard measure for the demand of prevention and medical care, health records can meet the basic needs of residents, and have a more significant health promotion for the migrant workers with lower income, thus reducing health inequalities.

As the main source of labor in the Entity Industry, the migrant workers have made great contributions to Chinese industrialization and urbanization. But most migrant workers in cities are engaged in high-intensity work, which seriously damages their health. In recent years, with the gradual relaxation of some restriction policy on the floating population in cities, the health status of migrant workers has been paid attention to and gradually improved, but at the same time, the health gap in migrant workers has begun to appear, different employment status and employment relationship are some of the reasons of health inequality in migrant workers. Therefore, it is necessary to take measures to protect the health of migrant workers and to promote health equality among them. And it is an important way for promoting a fairer health field of migrant workers to improve the accessibility of migrant workers' public health welfare. Health and health inequality are not only derived from genetic and hereditary factors, but also from the physical environment and behavior habits of individuals, as well as the imbalance between supply and demand of public health services. Therefore, health inequality can be intervened by risk management and equalization of public welfare. By providing health education and establishing health records for the migrant workers, it can not only provide health knowledge for migrant workers, improve their incorrect lifestyles and reduce the incidence of diseases, it can also intervene, assess and manage the health and diseases of migrant workers, identify potential health risks and respond to health needs through scientific and technological way, which will improve the health status of migrant workers and alleviate the health inequality of them.

Table 6 Mechanism Analysis of Self-employment Affecting Health Inequality

Variable	Mediator Variable		Dependent Variable:	
	Health Education	Health Record	Health Inequality	
Self-Employment	0.0865*** (0.0112)	0.04073*** (0.00331)	-0.00155*** (0.000571)	-0.00167*** (0.00060)
Health Education			-0.00365*** (0.000674)	
Health Record				-0.00253*** (0.00064)
Other Variables	control	control	control	control
Constant	1.217*** (0.0928)	0.61086*** (0.02733)	0.0575*** (0.00458)	0.06033*** (0.00488)
R-squared	0.0333	0.0377	0.0126	0.0133
Sample Size	86438			

Note: ***, **, * are statistically significant at 1%,5%,10%, robust standard error in parentheses.

Conclusion And Suggestion

Improving health and reducing health inequality among migrant workers are important elements in promoting *Healthy China*. This paper uses the 2018 China Migrant Workers' Dynamic Monitoring Survey Data and examines the impact of self-employment on health inequality of migrant workers through the concentration index decomposition and RIF-I-OLS decomposition methods. We find that there is pro-rich health inequality among migrant workers. While self-employment can significantly improve the health of migrant workers, it is also an important reason in expanding the degree of health inequality among migrant workers. Each unit increase in the probability of migrant workers choosing self-employment was associated with a statistically significant reduction in the degree of health inequality. Further analysis shows that self-employment will alleviate the health inequality of migrant workers by mediating effect of improving the accessibility of public services, such as promoting health education and establishing health records. And the mitigation effect of self-employment on migrant workers' health inequality is more significant among migrant workers with low-education, low-income and low social integration.

Based on the above finding, this paper has the following recommendations: Firstly, migrant workers should be allowed and supported to engage in self-employment activities, and also should be provided policy protection and financial support, these will be helpful for migrant workers to enhance their ability to develop themselves. Secondly, accelerate advancing the equalization of public services between urban and rural areas, provide public services such as health education, health rights and health records for migrant workers, and improve their accessibility to public services by promoting more urban public services to

benefit migrant workers. Furthermore, the employment of low-income and low-education migrant workers in cities should be paid more attention, provide multi-channel employment methods to improve their self-employment selectivity, and provide them with skills training for employment. Finally, eliminate system defect about social mechanism of upward mobility among migrant workers, especially by breaking the restrictions on household registration and children education of migrant workers, so as to enhance their sense of belonging in the city, It can really realize the great goal of *Urbanization of Human Beings*.

Declarations

Ethics approval and consent to participate

We declare that we have no financial and personal relationships with other people or organizations that can inappropriately influence our work, there is no professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled "Self-employment and health inequality of migrant workers". The study was exempt from human subjects' approval (non-identifiable data; not human subjects). We confirm that all methods were carried out in accordance with relevant guidelines and regulations. We confirm that all experimental protocols were approved by a named institutional and/or licensing committee. We confirming that informed consent was obtained from all subjects and/or their legal guardian(s).

The study protocol was approved by the ethics review board of Aihui university of finance and economics. We have obtained written informed consent from all study participants. All of the procedures were performed in accordance with the Declaration of Helsinki and relevant policies in China.

The data that support the findings of this study are available on request from corresponding author upon reasonable request. The data are not publicly available due to privacy or ethical restrictions.

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Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

Author contributions

Deshui Zhou designed the study and conducted the primary statistical analysis. Xin Wen and Deshui Zhou contributed to the writing. All authors contributed to the revisions.

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