STUDY ON THE AGE STRUCTURE AND INFLUENCING FACTORS OF THE DISABILITY IN THE CHINESE ELDERLY

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ABSTRACT

Based on two phases of CHARLS baseline survey data, the paper analyzed the age structure of the disability in the Chinese elderly and the influencing factors of disability changes from the personal characteristics, habits and health status factors by using Logistic model. The results showed that the age structure of disability was consistent with the two phases of dynamic survey data, and the risk of disability increased rapidly in the Chinese elderly over 80 years old. Age had a significant impact on the probability of disability increase, while it was important to focus on the impact of the bad living habits and of regular physical examination. According to the results of data analysis, the paper proposed to innovate the elderly medical service system to reduce or delay the occurrence of disability.

Key words: Age Structure; Influencing Factors; the Disability in the Chinese elderly

1 Introduction

According to the prediction of research on long-term care service system, there would be more than 100 million people aged 80 or above, about 79 million elderly people lack of offspring's care, and about 100 million disabled and semi disabled elderly in 2050. In previous studies, the research about disabled elderly group used more national demographic data than dynamic panel survey data to analyze the micro living state of disabled elderly group. In the context of aging population, this paper analyzed the age structure changes of the disabled elderly and influencing factors through the national representative dynamic survey data, and put forward some suggestions on the related problems of disabled elderly.

2 Literature Review

Some studies mentioned the increasing population size of the disabled elderly (Fang libing, 2014; Wang Lezhi, 2015; Pan Linqing& Cao Sheng, 2016). Even if there were slight differences in the proportion of disabled elderly under several Statistical calibers, it was undeniable that the scale of disabled elderly will grow rapidly. Scholars pointed out that the proportion of the elderly with moderate and severe disability was rising, reflecting the growing needs of nursing and medical care, and the demands for a higher level of pension (Ou Xia, 2013; Cao Sheng, 2016; He Wenjiong, 2020).

It was found that age was significantly correlated with the probability of disability (Wang Lezhi, 2015; Li Xiaohe, 2019). The self-care ability of the elderly in the low age group is significantly higher than that of the elderly. The scale of the disabled elderly would show an inverted "V" distribution with the increase of age, and the disabled elderly most appear in the 70-74 age group (Jing Yuejun, 2017). Some studies also mentioned same distribution by counting the proportion of disabled elderly in different age groups (Cao Sheng, 2016**;** Liao Shaohong, 2021).

The existing research has provided many valuable references for the thesis, but through the analysis of the literature, the paper thought that there were still some deficiencies in the existing literature. There was less comparative analysis of multi-phases dynamic survey data. In addition, the existing research on the age structure of the disabled elderly mostly used small-size survey data, there were differences in the time, place and condition of the empirical materials as well as survey errors and statistical errors, and the use of national representative data was less.

3. Data and Methodology

The data source of the paper is the national representative survey database named CHARLS. CHARLS database is a set of China Health and pension tracking survey database launched by China Social Survey Center of Peking University. The paper used two phases of baseline survey data published in 2013 and 2015 respectively. According to the data of phase I of CHARLS, 10257 families were investigated and 17708 samples were obtained, while phase II of CHARLS investigated 10822 families and 18605 samples were obtained, of which 15770 were paired with phase I, accounting for 84.77%.

The paper examined the representativeness and validity of CHARLS database. The age correspondence between the first phase data of CHARLS and the sixth census data was basically consistent, which showed that the samples extracted by CHARLS were representative. According to the technical analysis idea of "representative data, more accurate data selection, more appropriate analysis technology, more robust analysis results", this paper used single variable descriptive analysis, dual variable interaction analysis and unconditional logistic

technology to analyze.

4 Results

4.1 Age distribution of the disability in the Chinese elderly

According to the cross analysis between the age cohort and different degrees of disability in the CHARLS data, the dynamic distribution of the elderly with different degrees of disability in the two phases.

Table 1 Dynamic Age Cohort Distribution of the Elderly with Different Degrees of Disability %

Age Groups	CHARLS Phase I			CHARLS Phase II		
	Mild	Moderate	Severe	Mild	Moderate	Severe
60-64	28.95	16.37	14.29	27.70	19.27	16.67
65-69	23.13	15.20	11.69	22.07	19.27	12.75
70-74	19.37	17.54	19.48	20.01	19.27	19.61
75-79	15.33	20.47	14.29	15.73	17.43	15.69
80-84	9.31	17.54	23.38	9.10	13.30	21.57
85-89	3.01	7.60	12.99	4.17	5.96	9.80
90+	0.89	3.90	5.26	1.23	3.92	5.50

The data of CHARLS of two-phase baseline survey showed that there was slight difference in the dynamic distribution of the elderly with different degrees of disability, and the distribution trend was basically the same. Table 1 showed that there were more people with mild disabled between 60 and 70 years old, and obvious changes were shown in the Chinese elderly between 70 and 80 years old with severe disability increased more. The elderly with severe disability were more than 80 years old, which was in line with Chinese life expectancy and the fact that the age of 70 to 80 years old is an important watershed for health. It was worth mentioning that there were two peaks of severe disability in 70-74 age group and 80-84 age group in two phases of CHARLS data.

4.2 Analysis on the influencing factors for the disability changes in the Chinese elderly

Due to the pairing between phase I and phase II of CHARLS, panel data could be formed. This paper analyzed the influencing factors of disability changes by using the panel data formed by the paired samples in two phases of CHARLS baseline survey. In the assignment of disability changes, the assignment would be "1" if the disability degree increased, while the assignment is "0" if the disability state didn't change or decrease. In this paper, age variable and other influencing variables of personal characteristics, living habits and health status were introduced to be estimated by logistic multiple regression shown in Table 2.

Table 2 Logistic Multivariate Regression Estimation of the Disability Changes (n=2712)

Variables	Occurrence Ratio
Independent variable	
Age (60-64 years old =1)	1.423 ***
Other Personal Characteristic Factors	
Gender (Female =0)	1.356 ***
Degree of Education (Uneducated =0)	1.132 **
Economic Income Status (No Income =0)	1.153 **
Living Habits Factors	
Smoking Habits (Smoking =0)	2.791 ***
Drinking Habits (High Frequency of Drinking =0)	1.765 ***
Regular Exercise (No Exercise =0)	1.923 ***
Social Activities (Less Social Activities =0)	1.215 **
Regular Physical Examination (Regular Physical Check-Ups=0)	3.234 ***
Health Status Factors	
Chronic Disease Status (Over 3 =0)	1.418 ***

Health Status at Age 15 (Self-evaluation of Health is Poor or very Poor =0)	1.103 [**]
Fit of the Model	
McFadden's Adjust R^2	0.219 [***]
BIC	-129732.434
Correct Classification of Predicted Percentage	71.64%

Note: * p < 0.05,* * p < 0.01, * * * p < 0.001

The goodness of fit showed that the model had good estimation ability (McFadden's Adjust R^2=0.219, P < 0.001, Correct Classification of Predicted Percentage=71.64%). The result have shown that age as independent variable had a significant effect on the increase of disability when other variables were controlled (P < 0.001). Probability of disability growth would increase by 42.3% with increase of one age group on average. Among the controlled variables of living habits, smoking increased the risk of disability to 179.1%, and regular physical examination would greatly reduce the increased risk of disability. In addition, a variety of chronic diseases had increased the risk of disability to a certain extent, while the physical health in childhood had slight effect on the increased risk of disability.

5. Conclusion

Based on two phases of CHARLS baseline survey data, the paper analyzed the age structure of disability in the Chinese elderly and analyzed the causes of disability changes from the personal characteristics, habits and health status by using Logistic model. The results showed that the age structure of disability was consistent with the two dynamic survey data, and the risk of disability increased rapidly in the Chinese elderly over 80 years old. Age had a significant impact on the probability of disability increase, while it was important to focus on the impact of the bad living habits and of regular physical examination.

Estimation model had shown that personal characteristics, lifestyle and health status were important influencing factors of disability. Therefore, it was important to innovate the medical and health service system for the elderly to prevent or slow down the occurrence of disability. We should strengthen the prevention and control function of chronic diseases, and cultivate the health awareness of the elderly by publicizing the knowledge of healthy lifestyle, setting up preventive health care projects and increasing the investment of health care resources. We should

make knowledge of hygiene widely available in the community, improve the bad habits of the elderly and reduce the incidence rate of chronic diseases in the Chinese elderly. In addition, physical exercise and regular physical examination are important ways to reduce the risk of disability and maintain health. Therefore, it is necessary to improve and optimize the sports infrastructure construction and the regular physical examination system for the elderly, so as to promote the maintenance of the health capital of the elderly and reduce the probability of disability.

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