

## A Study on the Healthy Behaviors of the Elderly in China and Its Influencing Factors on Healthy Lifestyle



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**ABSTRACT:** China has the largest group of elderly people in the world. With the deepening of aging in China, having a healthy lifestyle is an indispensable key factor to achieve healthy aging. In order to explore the health status and the influencing factors of the health status of the elderly in China, this paper takes the healthy behaviors characteristics of the elderly in China as the research object and uses the data of the Chinese general social survey (CGSS) in 2021 to study the health status of the elderly and the influencing factors of healthy behaviors on their healthy lifestyle. It is found that sports and mental health behaviors have a positive and significant impact on their healthy lifestyle. Based on the conclusion, this paper puts forward relevant suggestions in order to further improve the health level and health awareness of the elderly, and improve the elderly's quality of life.

**KEYWORDS:** Healthy lifestyle, elderly people, healthy behavior, influencing factors

### I. INTRODUCTION

The elderly are a group with fragile biological, psychological and social adaptability in the society, and they are most easily affected by the changes of internal and external environment. According to the results of China's eighth census, there are 264.02 million persons over the age of 60 in China, accounting for 18.70% of the population. China is not only a populous country, but also a country with the largest elderly population in the world. In less than 20 years, it has entered the state of population aging in developed countries, which has only appeared in nearly a century, and has become the country with the fastest aging speed and the largest elderly population. Today, China's population over the age of 60 accounts for one percent of the world's population.

Scholars have different emphasis on the definition of health, and a more unified definition is that health represents a positive physical and psychological status. Related studies have shown that the main cause of health problems of the elderly comes from the behavior of the elderly in their daily life. If the elderly want to have health, they must have healthy behavior. A good healthy lifestyle and healthy behavior can slow down the diseases caused by aging, avoid early death to a certain extent, reduce the symptoms of patients with chronic diseases and alleviate psychological problems. Especially in the context of a large number of patients with chronic diseases in China, improving their health level and healthy living awareness can increase their physical function, reduce symptoms, delay the deterioration of the disease and ease psychological problems.

With the deepening of the degree of aging in China, in order to know whether Chinese elderly are healthy, whether different behaviors have an impact on their health. Based on the data of Chinese general social survey (CGSS) in 2021, this study mainly explores the influencing factors of the elderly on their healthy lifestyle.

### II. ARTICLE REVIEW

The World Health Organization predicts that the number of people over 60 in the world will increase to 22% by 2050. And the aging population will have a comprehensive impact on health, health care, education, economy, welfare and social development (World Health Organization, 2011). Therefore, disease prevention for the elderly is very important. Dobriansky, P. J., Suzman, R. M., & Hodes, R. J. (2007) believed that aging is related to a progressive decline in health and function. The World Health Organization also pointed out that the demand for medical care of the elderly is higher than that of other age groups, so health promotion for the elderly is very important. The primary goal of health promotion is to reduce disease-related damage, maintain physical function, and ensure an individual's independence. Many scholars hold the view that health status and body function are affected not only by actual age, but also by healthy lifestyle (Daskalopoulou, Christina, et al., 2017; Kralj, C., et al., 2018), and it is a widely held view that a healthy lifestyle plays an important role in healthy aging (Bosnes, Ingunn, et al., 2019).

According to The World Health Organization and many scholars, the long-term effects of unhealthy lifestyles will lead to chronic diseases and other diseases (Steyn, K., & Damasceno, A., 2006). A healthy lifestyle (defined as a Med D pattern, moderate alcohol consumption, daily physical activity, and nonsmoking) is connected with a decreased prevalence of general

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obesity and abdominal obesity, for example. According to the findings of this cross-sectional study of an elderly Mediterranean population at high cardiovascular risk (Molenaar, Esther A. et al., 2009). Therefore, it is very necessary for the elderly to have healthy behavior. According to Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987), Health behavior is a spontaneous and multifaceted behavior carried out by individuals in order to maintain or improve their own health status in order to achieve self-satisfaction and realization. The healthy behavior of the elderly should not only maintain exercise, quit smoking and drinking, but also increase learning activities and social activities (Zheng, Z., & Chen, H., 2020; Ferreira, R. et al., 2022). Therefore, a healthy lifestyle can be seen as a combination of health-related behaviors in several different areas.

### III. EMPIRICAL ANALYSIS

#### A. sample

This paper selects the data of Chinese general social survey (CGSS) in 2021 as the research data. CGSS is a comprehensive collection of data initiated by Renmin University of China in 2003, which to a large extent can represent the real situation of Chinese residents. The theme of this study is related to the healthy lifestyle of the elderly. Firstly, the data are screened to get the relevant data of residents over 60 years old, and at the same time, excluding the observed values, missing values and singular values of important variables such as "do not know" and "refuse to answer", the data used in this paper include 3196 samples, all of which contain complete information. Among the respondents, there were 1504 male elderly, accounting for 48.5%, and 1595 female elderly, accounting for 51.5%. The results show that in the past two weeks, 64.96% of the respondents affected their study and work to varying degrees because of health problems, and only 35.04% of the respondents did not affect their lives because of health problems. Thus, it can be seen that the current lifestyle of the elderly is not healthy.

#### B. Analysis

Dependent variable: healthy lifestyle of the elderly. Due to the lack of relevant data that directly reflect your lifestyle, this paper selects "in the past four weeks, due to health problems affecting the frequency of your work or other daily activities" as the explained variable. In the original variable, 1, 2, 3, 4, 5 respectively means always, often, sometimes, rarely, never, because considering that the variable is surveyed in the last four weeks, the time span is short, so the variable is redefined. 1 is defined as having health problems affecting work or other aspects of everyday living in the previous four weeks, and 2 is defined as no health problems affecting work or daily life. In order to show whether the elderly maintain a healthy lifestyle.

Core explanatory variables: in this paper, health behavior is mainly divided into four aspects: nutritional behavior, sports behavior, social adaptive behavior and mental health behavior.

Nutritional behavior. According to the research design and existing research, this paper uses BMI to reflect the nutrition of the elderly. Because there is no specific value directly given in the data, this paper uses two items: "your current height is (cm)" and "your current weight is (jin)". The BMI value of the elderly is calculated through the formula of BMI: weight / height squared, and is defined as normal and assigned as 2. The rest is assigned to 1.

Sports behavior. This paper uses "whether they are often engaged in physical exercise in the past year" to reflect the sports behavior of the elderly. The answers "never", "rarely", "sometimes", "often" and "very frequently" are assigned to 1, 2, 3, 4 and 5 respectively according to the Likert scale method. The higher the score, the higher the physical activity of the elderly.

Social adaptive behavior. In this article, according to "whether you often socialize / visit in your free time in the past year" to reflect the social adaptability of the elderly, the answers "never", "rarely", "sometimes", "often" and "very frequently" are assigned to 1, 2, 3, 4 and 5 respectively according to the Likert scale. The higher the score, the higher the degree of social adaptation of the elderly.

Mental health behavior. This article uses "how often you feel depressed or depressed in the past four weeks" to reflect the mental health status of the elderly. The answers "always", "often", "rarely", "sometimes" and "never" are assigned to 1, 2, 3, 4 and 5 respectively according to the Likert scale. The higher the score, the better the mental health of the elderly.

Control variables: self-rated health is closely related to objective health status, and the data can reflect the health status of the general population in China. However, the factors affecting self-rated health are more complex. In addition to individual characteristics, there are also social factors. Therefore, this paper also takes into account other variables that may have an impact on the healthy lifestyle of the elderly, such as gender, the highest level of education, political outlook, marital status, family economic status.

**Table 1. General data sheet of interviewees**

		Frequency	Percentage
Gender	Male	1504	48.5
	Female	1595	51.5
Highest level of education	Without any education.	571	18.4

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	Private school and literacy class	40	1.3
	Primary school	936	30.2
	Junior middle school	856	27.6
	Vocational high school	15	0.5
	Ordinary high school	395	12.7
	Technical secondary school	122	3.9
	Technical school	6	0.2
	College (Adult higher Education)	56	1.8
	College (formal higher education)	37	1.2
	Bachelor degree (adult higher education)	24	0.8
	Bachelor degree (formal higher education)	37	1.2
	Graduate student or above	4	0.1
Political status	The masses.	2587	83.5
	Members of the Communist Youth League.	28	0.9
	Democratic parties.	1	0.0
	Communist	483	15.6
Family economic level	Well below average	311	10.0
	Below average	1057	34.1
	Average	1469	47.4
	Above average	243	7.8
	Well above average	19	0.6
Marital status	Unmarried	42	1.4
	Cohabitation	76	2.5
	Have a spouse in their first marriage	2192	70.7
	Remarried spouse	69	2.2
	Separated	23	0.7
	Divorced	57	1.8
	Widowhood.	640	20.7

**Table 2. Single factor analysis of variance table**

		<i>N</i>	<i>Average value</i>	<i>Standard deviation</i>	<i>F</i>	<i>Significance</i>
Gender	Male	1504	3.68	1.330	27.445	0.001
	Female	1595	3.43	1.347		
Highest level of education	Without any education.	571	3.13	1.309	14.401	0.000
	Private school and literacy class	40	3.00	1.396		
	Primary school	936	3.38	1.371		
	Junior middle school	856	3.73	1.296		
	Vocational high school	15	3.53	0.990		
	Ordinary high school	395	3.86	1.296		
	Technical secondary school	122	4.04	1.209		
	Technical school	6	3.33	1.633		
	College (Adult higher Education)	56	4.25	1.014		
	College (formal higher education)	37	3.97	1.166		
	Bachelor degree (adult higher	24	4.17	1.204		

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	education)						
	Bachelor degree (formal higher education)	37	4.08	1.115			
	Graduate student or above	4	3.75	1.893			
Political status	The masses.	2587	3.49	1.351	9.895	0.001	
	Members of the Communist Youth League.	28	3.86	1.268			
	Democratic parties.	1	5	.			
	Communist	483	3.84	1.273			
Family economic level	Well below average	311	2.80	1.443	53.020	0.001	
	Below average	1057	3.33	1.311			
	Average	1469	3.80	1.268			
	Above average	243	3.98	1.246			
Marital status	Well above average	19	3.53	1.504			
	Unmarried	42	3.07	1.332	5.564	0.001	
	Cohabitation	76	3.50	1.428			
	Have a spouse in their first marriage	2192	3.62	1.328			
	Remarried spouse	69	3.84	1.290			
	Separated	23	3.48	1.163			
	Divorced	57	3.47	1.390			
	Widowhood.	640	3.33	1.367			

**Table 3. Statistical tables of variable assignment, meaning and description**

	<i>Variable name</i>	<i>Variable assignment and value range</i>	<i>Mean value</i>	<i>Standard deviation</i>
Control variable	The highest level of education	No education = 1, Private school, Literacy class = 2, Primary school = 3, Junior high school = 4, Vocational high school = 5, Ordinary high school = 6, Technical secondary school = 7, Technical school = 8, College = 9, 10, Undergraduate = 11, 12, Graduate and above = 14	3.83	2.23
	Family economic level	Well below the average = 1, Below the average = 2, The average = 3, Above the average = 4, Much higher than the average = 5	2.55	0.80
	Gender	Male = 1, Female = 2	1.51	0.50
	Political outlook	Masses = 1, Members of the Communist Youth League = 2, Democratic parties = 3, Members of the Communist Party = 4	1.48	1.08
	Marital status	Unmarried = 1, Cohabitation = 2, First marriage spouse = 3, Remarried spouse = 4, Separated = 5, Divorce = 6, Widowed = 7	3.87	1.68
Core explanatory variable	Nutritional behavior	BMI abnormal = 1, BMI normal = 2	1.60	0.48
	Sports behavior	Always = 1, Often = 2, Rarely = 3, Sometimes = 4, Never = 5	3.23	1.78
	Social adaptive	Never = 1, Rarely = 2, Sometimes = 3, Often = 4, Very frequently = 5	2.55	1.22

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	behavior				
	Mental health behavior	Always = 1, Often = 2, Rarely = 3, Sometimes = 4, Never = 5	3.88	1.14	
Explained variable	Healthy lifestyle	Yes = 1, No = 2	1.64	0.47	

All the data in this paper are processed by SPSS, and the dependent variables' healthy lifestyle is re-coded as 1 and 2. According to the results of single factor analysis of variance, there are significant differences in healthy lifestyle among the elderly with different gender, education level, marital status, family economic level and political outlook. Therefore, these variables are used as control variables. Taking sports behavior, nutritional behavior, social adaptive behavior and mental health behavior as the core explanatory variables, a binary Logistic model was established to analyze the factors affecting the healthy lifestyle of the elderly.

### IV. RESULT

This paper mainly adopts the method of forced entry strategy for logistic regression, constructs model 1 and model 2, and adopts forced entry strategy. Model 1 is to introduce the benchmark model of 1 control variable. Model 2 is the whole model of introducing control variables, nutrition behavior variables, sports behavior variables, social adaptive behavior variables and mental health status variables. The overall test results and Logistic regression results of the two models are shown in the table below.

As shown in Table 4, under the condition of 5% significance level, the model significance test passed, it can be seen that there is a significant linear relationship between the two model independent variables and dependent variables as a whole. At the same time, comparing the probability of Hosmer-Lemeshow test of the two models  $\text{sig} > 0.05$ , we can see that the goodness of fit of the model is better. Through the comprehensive comparison of the  $\sim 2$  times logarithmic likelihood value, Cox & Snell R value and Hosmer-Lemeshow ( $\text{sig}$ ) of the two models, it is found that the comprehensive fitting effect of model 2 is the best, so this paper makes the final analysis according to the analysis results of model 2.

The formula of the model is:

$$p_i = F(y) = F\left(\partial + \sum_{j=1}^n \beta_j X_j\right) = \frac{1}{1 + e^{-\left(\partial + \sum_{j=1}^n \beta_j X_j\right)}}$$

The linear expression of Logistic regression model is obtained by logarithmic transformation of the above formula:

$$\ln\left(\frac{P^i}{1 - P^i}\right) = \partial + \sum_{j=1}^n \beta_j X_j$$

**Table 4. Table of comparative test results of models**

Model	Accuracy rate	-2 logarithmic likelihood	Cox -Snell R <sup>2</sup>	Nagelkerke R <sup>2</sup>	Hosmer-Lemeshow test (sig)
1	0.65	3828.907a	0.058	0.080	0.183
2	0.745	3315.528a	0.202	0.278	0.435

As can be seen from Table 5, the analysis results of Model 2 show that after controlling the variables such as gender, higher education level, political outlook, marital status and family economic status, under the condition of controlling the first kind of error of 0.05, the significance test results of the health behavior variables of the elderly are as follows: the sports behavior and mental health behavior of the elderly have positive and significant effects on the healthy lifestyle. Nutritional behavior and social adaptive behavior did not pass the significance test.

**Table 5. Results of logical regression model**

Variables	Model 1			Model 2		
	Coefficient	Standard error	Occurrence ratio	Coefficient	Standard error	Occurrence ratio

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	Gender	0.299**	0.081	13.793	0.185*	0.088	4.440
Control variables	Family economic level	-0.385**	0.052	55.629	-0.143*	0.058	6.155
	Marital status	0.048*	0.024	3.987	0.029	0.026	1.177
	Political status	0.036	0.038	0.917	0.104*	0.040	6.574
	Cultural level	-0.135**	0.019	50.829	-0.082**	0.021	15.733
Core explanatory variable	Mental health behavior				-0.929**	0.049	35.070
	Sports behavior				0.150**	0.025	37.010
	Social adaptive behavior				-0.036	0.035	1.041
	Nutritional behavior				-0.075	0.087	0.752
	Constant term	1.460**	0.213	47.151	4.318**	0.364	140.824

## V. DISCUSSION

### A. The influence of sports behavior on healthy lifestyle

In the case of setting control variables, the appropriate active sports behavior of the elderly has a significant positive impact on the healthy lifestyle of the elderly. The regression results show that the incidence of lifestyle problems in the elderly with low frequency of sports behavior is 37 times higher than that of the elderly with low frequency of sports behavior. The key reason why most elderly people get sick in their old age is the lack of exercise, which is consistent with the idea that increasing physical activity and changing a healthy lifestyle can reduce the ability of the elderly and slow down their physical decline (Fielding, Roger A., et al., 2017; Stathi, Afroditi, et al., 2018).

### B. The influence of mental health behavior on the healthy lifestyle of the elderly.

In the case of setting control variables, the appropriate positive mental health behavior of the elderly has a significant positive impact on the healthy lifestyle of the elderly. The regression results show that the more frequently the elderly feel depressed or depressed, the higher the probability of problems with a healthy lifestyle, and the occurrence ratio will increase by 35 times. The mental health and lifestyle of the elderly have a vital impact on their quality of life and well-being. This is consistent with the idea put forward by scholars that keeping mentally active is regarded as the most important determinant of healthy aging (Huijg, Johanna M., et al., 2017; Tavares, Renata Evangelista, et al., 2017; Conkova, N., & Lindenberg, J., 2020).

## VI. Conclusion and suggestion

### A. Conclusion

This paper makes use of the data of Chinese general social survey (CGSS) in 2021 to explore the influencing factors of healthy behavior and healthy lifestyle of the elderly. The results show that not every kind of healthy behavior has a positive influence on the healthy lifestyle of the elderly. The sports behavior and mental health behavior of the elderly have a significant positive impact on the healthy lifestyle, while nutritional behavior and social adaptive behavior do not show a significant positive impact.

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According to the results, the following relevant suggestions are put forward, that is, as a group of the elderly, they should maintain good healthy behavior in their daily life, and only in this way can they stay away from diseases, reduce psychological problems and improve their quality of life. The government, society, community and medical workers should make joint efforts to enable the elderly to obtain more health knowledge, improve health awareness, improve their quality of life, and further improve the overall health level of the elderly through different channels.

In addition to considering the effects of nutritional behavior, sports behavior, social adaptive behavior and mental health behavior on the healthy lifestyle of the elderly, it also takes into account characteristics such as gender, education level, marital status, family economic level, political outlook and so on. However, it should be pointed out that the health status of the elderly may be affected by a region's medical integrity, cultural and economic conditions, individual living habits, health awareness and medical awareness and other factors. Therefore, the conclusions drawn in this paper need more data and evidence to verify and explain.

### **B. Suggestion**

This paper puts forward the following suggestions, hoping to help guide the elderly to establish a healthy lifestyle in line with their own, so that the elderly can constantly improve their health, make rational use of medical and health services, and make rational use of health care expenses. Alleviate the pressure of the aging population on the economy.

Raise the awareness of the elderly about their own health. Levy, B. R., Slade, M. D., & Kasl, S. V. (2002) pointed out that to some extent, health knowledge can influence personal health actions, both of which play a significant role in the health of the elderly. The research of Sorensen, K., Van der Broucke, S., & Fullam, J. (2012) shows that the elderly's understanding of their own health improves their health behaviors, health outcomes and quality of life to some extent. The increase of health knowledge and self-cognition of the elderly can not only help them improve their awareness of disease treatment, but also enhance disease prevention and self-care awareness, and avoid incorrect health behavior. Then promote the effective use of existing medical resources. Especially in the context of the world pandemic, be able to make a correct judgment of their own health, science to deal with public events. The publicity scope of health knowledge should be expanded to enable the elderly to acquire knowledge from more ways. At the same time, for some universities for the elderly, we can expand the scale and increase the number of related courses.

Strengthen public efforts. As what Behrens, Gundula, et al. (2013) pointed out, public health efforts should be strengthened to encourage people to live with recommended levels of physical activity and healthy habits. He, Zhifei, et al. (2016) believes that in addition to focusing more on the elderly's health knowledge and behavior, the government, society, medical institutions, and health staff should collaborate to assist the elderly, especially in rural areas, improve their health. Most hospitals in China mainly provide medical services, with few publicity activities on disease prevention and health promotion, and the elderly also lack information on these activities. In China, the community is mainly responsible for pension services, so the community should increase health education for the elderly, undertake more pension services, health management and the prevention and treatment of geriatric diseases. The community can implement targeted strategies by establishing health records to provide individual health education and social support for individuals who need to focus on.

Improvement of sports health. It is a widely held view that exercise is of great help to the elderly in promoting health and preventing diseases, especially some chronic diseases. Exercise can effectively relieve pressure while reducing fat, blood pressure and blood lipids, and improving cardio-cerebrovascular function. In addition, the interaction between healthy diet and exercise health affects the health status of the elderly. Exercise can not only effectively control appetite and consumption of body calories, but also maintain and strengthen the cardiopulmonary function of the elderly to relax joints and muscles, and restore elasticity and softness to a certain extent.

Mental health. Unhealthy psychological status is one of the important reasons for the high incidence and severity of the disease (Berkman, Nancy D., et al., 2011). The physical function of the elderly gradually declines as they age, making them more susceptible to physical discomfort and diseases, which has a negative impact on their mental health; mental health and physical health are linked. Negative mental health behavior will cause irreparable losses to physical health. At the same time, most of the elderly live idle at home after retirement. Due to the change of social role, some elderly people will have some feelings of powerlessness, anxiety, depression and so on. Engaging in social activities benefits the elderly's life satisfaction and well-being, particularly in lowering depression. (Siegrist, J., & Wahrendorf, M. 2009). Therefore, the elderly should be encouraged to engage in social activities in order to improve their health.

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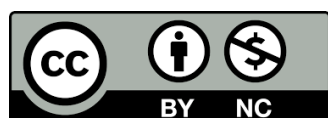
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