

Influencing Factors of Patients with Chronic Diseases from Multiple Perspectives-Evidence from China

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Abstract

Objective: To investigate the influencing factors of chronic disease patients from multiple perspectives. Methods: 1660 cases were sampled by stratified cluster random sampling, 655 of them had one or more chronic diseases, the prevalence rate was 39.5%. Results: Sex, age, BMI, education and so on were significant influencing factors of chronic diseases from the point of view of personal characteristics; from the point of view of behavior characteristics, the longer sleep at night, the lower the probability of chronic diseases; sedentary will increase the prevalence, smoking people with chronic diseases the disease rate is higher, and the chronic disease rate is higher in the non-drinking population; from the perspective of social support, both objective support and emotional support have a significant impact on the probability of chronic disease. Conclusion: The prevalence of chronic diseases among residents in a certain district of China is high, so we should focus on the elderly with poor self-health evaluation, bad living habits and lack of social support, improve the level of prevention and treatment of chronic diseases, and improve the status of prevention and control of chronic diseases among local residents in a certain district of China.

Keywords: *Chronic diseases, Personal characteristics, Lifestyle, Social support*

I. Background

Chronic non-communicable diseases (hereinafter referred to as chronic diseases) refer to a group of diseases that lack clear evidence of infectious biological causes, long course and persistent non-healing diseases. [1] They account for more than half of the global burden of disease, and affect the health and quality of life of residents. It has become a major public health issue. In recent years, healthy living conditions have become a hot topic of global concern. [2, 3] The World Health Organization has clearly pointed out that chronic diseases have become the primary factor endangering the health of residents, and chronic diseases have begun. Gradually spread to young groups.[4] Up to now, the prevalence and development trend of chronic diseases in my country is not optimistic, and it has seriously threatened the life, health and property safety of Chinese urban and rural residents. [5] This article studies the influencing factors of patients with chronic diseases from three perspectives, and puts forward corresponding countermeasures and suggestions in a timely and effective manner, so as to improve the health of the whole people.

II. Methods

2.1 Data source

The criteria for inclusion in the survey were those of urban and rural residents in Baoshan and the criteria for excluding them were those with serious illness or serious cognitive impairment. Using self-designed questionnaires, the subjects were surveyed in house-holds, including: the general sociological demographic characteristics of the subjects, the lifestyle of chronic diseases and self-health management, health knowledge and social support.

2.2 Data collection

The survey was conducted one by one by the staff. A total of 2155 questionnaires were distributed, 2034 questionnaires were returned, and blank and other invalid questionnaires were eliminated. Finally, 1,660 valid questionnaires were obtained, with an response rate of 77%. In order to ensure the representativeness of the sample, the method of stratified random sampling is used to investigate the under the jurisdiction of a district of China, the community centers that need to be investigated by the proportion of the population are used, and the number of families to be investigated in the sample villages by a completely random sampling method is used, and each household randomly surveys one person. [6, 7] This study surveyed a total of 1660 subjects, which met the needs of the sample size of this survey.

In order to ensure the objectivity and authenticity of the investigation results, quality control of the whole investigation progress is required in the course of this study. Specific quality control measures include: stratification training of all personnel involved in the study before the study is carried out, professional investigators supervise the survey phenomenon, and answer and guide the corresponding questions that arise in the course of the investigation.

2.3 Statistical analysis

The data obtained from this study are included in the SPSS 20.0 software. For the related factors of chronic disease, the single-factor and multi-factor Logistic regression equation can be used to calculate the partial regression coefficient advantage ratio of variable factors, and the influencing factors related to the incidence of chronic diseases can be explored.

III. Results

3.1 Survey the basic situation of the population

A total of 2043 people were surveyed, with 1660 people in the valid questionnaire, and the effective recovery rate of the questionnaire was 77%. Men accounted for 40.5% of the population, and the number of people with an age distribution of 30-60 years was higher, accounting for 52.5%. The number of only children in the family was high, 72.7%, 85.5% of the respondents were married, the education was most prevalent in high school and above, the largest number of people with annual household income of 5-10 million yuan, 38.10%, 18.7% of the respondents drank alcohol, 23.8% smoked, self-assessment of health was very healthy/relatively healthy, accounting for 70.59 percent of the respondents, and the specific situation was Table 1.

Table 1 General characteristics of a sample of surveys in a district of China

Variable	Number of surveys (n)	Composition ratio (%)	Variable	Number of surveys (n)	Composition ratio (%)
Gender			Annual income (10,000)		
Male	673	40.5%	<2.5	179	10.8%
Female	987	59.5%	2.5-5	427	25.7%
Age.			5-10	632	38.1%
18<	3	0.2%	10-15	330	19.9%
18-30	120	7.2%	>15	92	5.3%
31-60	867	52.2%	Education		
61-70	495	29.8%	Illiteracy / semi-literate	30	1.8%
71-80	159	9.6%	Primary school	208	12.5%
>80	16	1%	Junior high school	466	28.1%
BIM			High school and above	956	57.6%
<18.5	1290	77.7%	Number of children		

18.5-23.9	154	9.3%	No	161	9.7%
24.0-26.9	149	9%	1	1199	72.2%
27.0-29.9	61	3.7%	2	244	14.7%
>=30	6	0.3%	3 or more	51	2.9%
Marital status			Self-assessment of health		
in marriage	1424	85.8%	Health	1618	97.4%
Unmarried / Divorced	236	14.2%	Unhealthy	42	2.5%
Drinking			Smoking		
no	1350	81.3%	no	1265	76.2%
yes	310	18.7%	yes	395	23.8%

3.2 Empirical analysis of the factors of the influence of chronic diseases from the perspective of personal characteristics

Starting from the individual characteristics factors, the specific analysis of gender, age, BIM, domicile, education, marital status, personal income, number of children, self-assessment of health and other factors on the extent of the impact on chronic diseases, through Logistic regression analysis, the results are as follows: (Table 2)

Table 2 Basic information for residents of a district in China, logistic regression results

Variable	Beta	S _z	Wald χ^2 value	P value	95% CI
Gender	0.660	1.108	0.100	0.033**	0.345-0.477
Age	0.232	0.008	0.084	0.050**	0.014-0.019
BIM	0.203	0.012	2.757	0.000***	0.226-1.116
Account situation	-1.404	0.712	3.892	0.578	0.061-0.991
Education	-0.249	1.065	4.403	0.032**	1.16-75.379
Marital status	1.611	0.618	6.787	0.154	0.059-0.671
Personal income	-1.405	0.750	3.510	0.061*	0.94-17.712
Number of children.	-0.960	0.554	3.009	0.183	0.129-1.133
Self-assessment of health	1.290	0.729	3.131	0.064*	0.066-1.149

Note: * p<0.1, ** p<0.05, *** p<0.01

The results showed that gender and age were significant factors in patients with chronic diseases, and regression showed that men were 0.66 times more likely to develop chronic diseases than women, and that beta values showed an increase in the risk of chronic diseases as the population grew older. BMI is a body mass index, an important factor in measuring weight health, and a higher BMI indicates that the more obese the population is, the more likely people with a higher BMI are to develop chronic diseases, and the risk is 0.203 times higher than that of normal-weight people, with a significant BMI being a significant factor for people with chronic diseases. Education and personal income are significantly related to chronic diseases, and the lower the level of education, the more likely to be chronic diseases, the higher the personal income, the more less likely to suffer from chronic diseases, indicating that higher education, better income residents pay more attention to disease prevention, have a better lifestyle, health level is higher. Surprisingly, the higher the prevalence of chronic diseases, the higher the self-assessment of health, indicating that people do not have a clear understanding of their health.

3.3 Empirical analysis of the factors influencing chronic diseases from a lifestyle perspective

Multifactor Logistic regression analysis from a lifestyle perspective begins with the assignment of factors, such as Table 3. Secondly, the general characteristics of residents in a district of China and lifestyle of chronic diseases to compare, specific analysis of the relationship between the various factors, as in Table 4.

Table 3 Analyzes the assignment of variables

Variable	Assign a value
Gender	Male = 1, female = 2
Education level	Un literacy = 1, primary school= 2, junior high school = 3 High school or Technical secondary school = 4, Junior college or the University = 5, Bachelor degree or above = 6
Marital status	Unmarried = 1, married = 2, divorced or widowed = 3
Self-assessment of health status	Very good = 1, good = 2, general = 3, bad = 4, very bad = 5
The length of sleep in the evening	0-5 hours = 1, 6-9 hours = 2, 10 hours = 3
Sedentary duration	Less than 3 hours = 1, 3-5 hours = 2, 6-9 hours = 3, 9 hours or more = 4
Smoking frequency	Never = 1, occasionally = 2, every day = 3
The frequency of alcohol consumption	Drinking once a week or less = 0 2 to 7 times a week = 1, more than seven times a week = 2
The intensity of physical activity per month	Never = 0, 1 to 5 days = 1, more than 5 days = 2
Dining	The rule is = 1, the pattern is = 2
whether it is sick or not.	Yes = 1, no = 2
Number of chronic ally diseases	None = 1, a kind = 1, two kinds = 2.....

Table 4 Comparison of general characteristics and lifestyle of residents in a district of China

Variable	Characteristics	Investigation Number	whether to suffer from chronic disease	
			x ² value	p value
Gender	Male	815	4.646	1.350
	Female	1216	c	
Education	1	38		
	2	252		
	3	549	12.253	*
	4	482		
	5	684		
Self-assessment of health status	1	140		
	2	561	3.142	*
	3	1401		
	4	498		
	5	148		
Sleep from time to time (Evening)	1	632	5.241	*
	2	1393		
	3	80		
Sedentary time every day	1	367		
	2	628	13.342	*
	3	867		
	4	186		
Smoking frequency	0	1006	10.543	*
	1	600		
	2	342		
The frequency of alcohol consumption	0	895	8.462	*
	1	771		
	2	782		
Weekly physical activity	0	762	13.564	*
	1	606		
	2	684		
Dining	1	1671	0.542	1.343
	2	342		

Note: * p<0.1, ** p<0.05, *** p<0.01

The results of the study on the general characteristics and lifestyle of residents and the prevalence of chronic diseases

show that the level of education and self-assessment of health are negatively related to the probability of chronic diseases, specifically, the higher the educational level, the better the health of the population with the lower the prevalence of chronic diseases; People who exercised slightly more physical activity per week had significantly fewer chronic diseases than those who did not do any activity.

3.4 Empirical analysis of the factors of influence of chronic disease patients from a socially supported perspective

From a social support perspective, whether residents of a district in China suffer from chronic diseases and self-assessment health status as a variable, the health self-assessment status of the information from the questionnaire "What do you think of your health?". The problem is set to 1 to 10 points, and the higher the score, the healthier it is.

This study, drawing on previous research results and combining research questionnaires, divides the arguments into four categories: basic situation, personal cognition and objective support and emotional support. The first category is the basic situation: In this study, the basic information is selected for gender, age, household registration, cultural level, annual income and marital status. The place of residence is mainly divided into local household registration and foreign household registration, marital status is mainly divided by the existence of a partner. The second category is personal cognition: including whether to actively acquire knowledge of chronic diseases and whether to actively prevent chronic diseases. The third category is objective support: mainly refers to the financial assistance to patients, this paper chooses whether the illness can obtain financial support. The fourth category is emotional support, and this study selects whether there is someone to take care of and accompany when you are ill. The age is a continuous variable. The specific definitions and assignments are shown in the Table 5.

Table 5 the main variables and assignments

Variable		Explain
Healthy state	whether you have a chronic disease	1 = Yes, 2 = No
	Self-assessment of health	1 = Very unhealthy... 10 = Very healthy
	Gender	1 = Male, 2 = Female
	Age	Continuous variables
	Household registration	1 = Local household registration, 2 = foreign household registration
Basic information	Literacy	1 = Unliterate or literate is very small, 2 = primary school, 3 = junior high school, 4 = high school / high school / secondary school, 5 = college / undergraduate, 6 = master's degree, 7 = PhD
	Annual income	1 = less than 25,000, 2 = 25,000-49,000, 3 = 50000-990000, 4 = 100000-149,000, 5 = greater than 150,000
	Marriage	1 = No partner, 2 = have a partner
Personal cognition	Health cognition	1 = will, 2 = will not
	Proactive prevention	1 = will, 2 = will not
Objective support	economic support	1 = Yes, 2 = None
Emotional support	Sick care	1 = Yes, 2 = None

Combined with the previous research and questionnaire content, from the basic information, health cognition, objective support, emotional support four dimensions as the dependent variables, the following 10 factors are independent variables, the use of gradual regression method to analyze the health and self-assessment of health of residents in a district of China, model 1 for the health model, model 2 for self-assessment health model. As in Table 6.

Table 6 The impact of social support on the health of residents

Variable	Health Model 1			Self-assessment health model 2		
	The first step	Step two	Step three	The first step	Step two	Step three
Gender	-0.003	-0.016	-0.009	0.003	-0.010	-0.021
Age	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
Household registration	0.073	0.077*	0.077	0.004	0.005	0.009
Literacy	0.097***	0.098***	0.073***	0.128***	0.130***	0.139***
Annual income	0.045	0.048	0.035	0.188***	0.182***	0.159***
Marriage	0.045	0.028	0.065	-0.337***	-0.386***	-0.315***
Active cognition		-0.008	-0.042		0.062	0.064
Proactive prevention		-0.244***	-0.210**		-0.359***	-0.353***
economic support			0.094***			0.381***
Sick care			0.167*			0.338***
<i>cons</i>	0.942***	1.210***	0.905***	7.350***	7.841***	6.908***
<i>R</i> ²	0.108	0.117	0.157	0.061	0.062	0.083
<i>F</i>	12.23	9.57	10.31	22.74	16.21	17.31

Note: * p<0.1, ** p<0.05, *** p<0.01

The regression results showed that the factors affecting patients with chronic diseases in the residents' basic personal information were age, cultural level, etc., while the main factors in the residents' self-assessment health were age, literacy and annual income. You can see in Model 1 that when you add personal cognition, objective support, and emotional support, you see a 5% increase in ΔR^2 , and in Model 2 you can see a 2.1% increase in ΔR^2 when you include personal cognition, objective support, and emotional support. on.

IV. Discussion

With the development of social economy, the probability of chronic diseases in China is gradually expanding. China's Medium and Long-Term Plan for the Prevention and Control of Chronic Diseases (2017-2025) states that the proportion of chronic disease deaths in China's residents to the total number of deaths is as high as 86.6%, and the burden of disease has accounted for more than 70% of the total burden of disease, which has become a major public health problem affecting China's social and economic development. [8] Studying the influence factors of chronic diseases can effectively improve the awareness and ability of chronic disease prevention and control of residents, and contribute to the overall prevention and control of chronic diseases in China. [9] The results of this study show that in 2019 there are more factors affecting chronic diseases in a district of China, so residents need to further improve the level of prevention and treatment of chronic diseases.

First, the effects of demographic characteristics on the disease and health of chronic diseases.

This study found that age and cultural level have a significant impact on chronic diseases in the population, in which age and chronic diseases are negatively predicted. The greater likelihood of chronic diseases, which may be related to physical function, the older of body function is weaker, thus increasing the risk of chronic diseases. [10] The cultural level is positively related to chronic diseases, and the higher the level of education, the stronger the health awareness of the people, thus paying more attention to the prevention of chronic diseases, the results of this study show that the higher the BMI, the more likely people are to develop chronic diseases, the higher the BMI of people are more likely to suffer from cardiovascular diseases. age and marital status were negatively correlated with chronic diseases, and the older the older, the more non-partner people felt that their health was poorer. At the same time, the higher the level of education, the more positive the mentality, the healthier people who pay attention to prevent disease, and the more annual income, the more economic conditions are relatively good, so that there is more money to maintain their own health [11].

Second, healthy cognition and good lifestyle are important factors in preventing chronic diseases and promoting the health of the population. According to the results of the study, health cognition is an important factor to promote the health of residents, among which active prevention plays an important role in physical health and self-assessment of health, and both have negative effects, when residents have a certain understanding of their physical condition, pay attention to the usual eating habits, physical exercise, lifestyle, etc. can effectively reduce the occurrence of chronic diseases. [12] And actively prevent chronic disease can reduce the occurrence of chronic diseases in essence, to a certain extent can also bring good psychological effects to residents, promote their physical and mental health.

Third, objective support is an important factor for chronic ally patients. The reason why objective support will have an impact on the chronically ill, is because objective support mainly refers to objective practical or visible support, economic support is an important part of objective support, when the elderly get more objective support, indicating that the more money and material support to the people, so that to a certain extent to improve the living standards of residents, residents in the enjoyment of material life at the same time can be more comfortable participating in their own activities, enjoy spiritual life, so as not only to promote the physical and mental health of residents, more can enhance the social adaptation of the residents. This in turn promotes an improvement in overall health levels. Therefore, the Government may set up a subsidy mechanism to give the residents corresponding material support on the basis of ensuring the basic livelihood of the residents, and children can also enhance their objective support by helping the elderly to buy items, buying necessities and giving monetary help, so as to promote the health of the general population.

Fourth, emotional support can effectively improve the health of residents. Emotional support was positively correlated with chronic diseases in the population, and significant positive prediction of self-assessment health. Subjective support mainly refers to subjective experience or emotional support, including respect, concern and understanding of the residents themselves. When residents are sick or unwell, moderate care is conducive to relieve tension, relieve the stress of illness, let residents get out of the adverse effects of disease as soon as possible, better restore physical and mental health.

V. Conclusions

Firstly, we should attach great importance to the effects of emotional factors on chronic diseases in all types of people. In the current process of chronic disease prevention and treatment, almost all departments focus on the impact of personal characteristics and lifestyle factors on chronic diseases, and often ignore the impact of emotional and psychological factors on chronic diseases. However, with the development of economy and social progress, the pressure of modern residents increased sharply, especially in the first and second-tier cities to fight young people, which led to people's psychological and emotional fluctuations, will have a certain impact on health. Therefore, in the future prevention and treatment process, government departments should pay special attention to psychological factors, the formulation of corresponding measures to relieve psychological and stress, so that people in life or work to maintain a happy mood, increase people's satisfaction with life and gain, thereby reducing the prevalence of chronic diseases.

Secondly, universal health education, advocacy for healthy lifestyle, and prevention and treatment in “cure without disease” and “no disease”. All parts of the country should actively carry out the prevention and treatment of chronic diseases, popularize relevant scientific knowledge, and establish a system of education and prevention of chronic diseases from top to bottom. Focus on strengthening the prevention and treatment of chronic diseases in rural and remote areas, strengthen the awareness of the scientific prevention and control of chronic diseases among the population, carry out regular medical examinations, and guide residents to re-examine their way of life, and widely publicize the concepts of treatment and non-disease prevention and treatment of chronic diseases from the perspective of the prevention and treatment of non-diseases. Use social media and online platforms to promote healthy lifestyles, such as less smoking, less alcohol, more exercise, and healthy eating.

Thirdly, reduce the existence of adverse factors and strive to create an objective external environment for the health of the whole population. We will actively respond to the country's healthy aging and healthy China's policies, strive to create a healthy external environment for the whole people, and build a good living environment, such as clean living environment, clean production work, prevention and control of occupational diseases and other aspects. Advocate green campaigns such as energy conservation and emission reduction, protect the ecological environment, reduce industrial waste emissions, and strengthen the monitoring and protection of air quality. In addition, pay attention to the residents' drinking water diet health, strengthen the supervision of water resources and food safety. In addition, according to relevant policies, the introduction of national public places to control smoking, such as risk factors, and comprehensively create a healthy external environment for the whole people.

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References

- [1] Benziger C P, Roth G A, Moran A E, et al. The global burden of disease study and the preventable burden of NCD, *Global Heart*, 2016, 11(4): 393-397.
- [2] World Health Statistics 2018: Monitoring Health for the SDGs, sustainable development development goals. Geneva: World Health Organization, 2018.
- [3] Chen A Y, Zhang L. Research on the health promotion of lifestyle and influencing factors for chronically ill patients in the old town of Guangzhou. *Chinese Journal of General Medicine*, 2019.
- [4] Li H, Ye H S, Xu Y. Analysis of the chronic disease swells of residents of Zhuhai City and its influencing factors. *Chinese Journal of Disease Control*, 2018, 22(1): 14-18.
- [5] Wu J, Li L, Li Y H, et al. The level of chronic disease prevention and control literacy of Chinese residents in 2016 and their influencing factors. *China Health Education*, 2018, 34(5): 22-26.
- [6] Ratzan S C, Weinberger M B, Apfel F, et al. The Digital Health Score-card: A new Health Literacy Metric for NCD Prevention and Care. *Glob Heart*, 2013, 8(2): 171-179.
- [7] Davey J, Holden C A, Smith B J. The correlates of chronic disease- related health literacy and its components among men: A systematic review. *BMC Public Health*, 2015, 15(1): 589.
- [8] Liu X, Peveri G, et al. Dose-response relationships between cigarette smoking and kidney cancer: A systematic review and meta-analysis. *Critical Rev Oncology / Hematolo*, 2019, 142: 86-93.
- [9] Intarakamhang U, Macaskill A. Multi-group Causal Model of Health Literacy and Behaviors on Family well-being among Thai Adults at Risk of Non-Communicable Diseases (NCDs). *Journal of Research in Health Sciences*, 2018, 18(4): e00429.
- [10] Berkman N D, Sheridan S L, Donahue K E, et al. Low health literacy and health outcomes: an updated systematic review. *Annals of Internal Medicine*, 2011, 155(2): 97.
- [11] GBD 2016 DALYs, HALE Collaborators. Global, regional, and national disability adjusted life years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*, 2017, 390 (10100): 1260-1344.
- [12] Mantwill S, Monestel-Umaña S, Schulz PJ. The relationship between health literacy and health disparities: a systematic review. *PLOS One*, 2015, 10(12): e0145455.