

Analysis of Risk Management Ability of Chronic Disease on General Practice Team in Shandong Province, China

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Abstract: This study aimed to understand and analyse the ability of general practice team in chronic disease risk management, and to explore the risk factors that affect the ability of general practice team in chronic disease risk management. So as to provide theoretical and empirical basis for improving the risk management level of chronic diseases on general practice team. We used the mean and standard deviation ($\bar{x} \pm SD$) and frequency (%) to describe the distribution of quantitative and qualitative data respectively. The *t* test and ANOVA test were used to compare the difference of risk management ability of chronic between different groups. The multiple linear regression analysis was used to analyse the influencing factors of risk management ability of chronic on general practice team. The scores of risk management ability of the general practice team in chronic disease prevention, chronic disease diagnosis and treatment, chronic disease rehabilitation and nursing dimensions were as follows (55.88±13.00), (84.52±18.85) and (36.26±15.39). The risk management ability of the general practice team at the level of chronic disease prevention and chronic disease diagnosis and treatment was at a medium to high level, and the risk management ability of the general practice team at the level of chronic disease rehabilitation and nursing was at a low level in Shandong Province. There were many factors that affect the chronic disease risk management ability of general practice team, the core factors included higher refresher course, degree of promotion, awareness of chronic disease risk management, working pressure and welfare benefits. It is necessary to implement improvement measures from system level, management level and individual level to optimize the community chronic disease risk management ability of general practice team.


1 INTRODUCTION


According to the World Health Organization's (WHO) global report on chronic diseases in 2014, the number of deaths from chronic diseases had reached 38 million in 2012 and was expected to reach 52 million in 2030, of which 20% were caused by cardiovascular diseases, chronic respiratory diseases, cancer and diabetes (Mendis, 2014).


"Healthy China Action (2019-2030)" showed that nearly 180 million elderly people suffer from chronic diseases, and one person suffered from a variety of chronic diseases. The incidence and mortality of chronic diseases were high, which brings great risks to people and also becomes a major public health problem affecting the country's economic and social development (Jiang, 2020).


With the increasing severity of chronic diseases, it is very important to implement scientific and effective risk management of chronic diseases. The World Health Organization suggested that community-based comprehensive prevention and control is one of the effective strategies to prevent and control the risk of chronic diseases (Lee, 2022). To prevent and reduce the occurrence of chronic diseases and reduce the burden of chronic diseases


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has become the focus of community chronic disease management (Zhou, 2013). However, at present, the risk management of chronic diseases in the community is affected by the fragmented management mode and the traditional medical mode, and there are some problems, such as imperfect management information system, poor effect of prevention and health care, serious mental health problems, insufficient medical resources, incomplete service items, and poor self-health management awareness of residents (Wang, 2017; Tey, 2016). In order to improve the comprehensive service quality and service efficiency of community health, the General Practice Team (GPT) management mode with general practitioners as the core and community nurses and public health doctors as the auxiliary has become one of the basic chronic disease risk management modes (Harris, 2011).

This study integrated health management and risk management, and analysed the ability of GPT in chronic disease risk management, and explored the risk factors that affect the ability of general practice team in chronic disease risk management. This study might provide theoretical and empirical basis for improving the risk management level of chronic diseases in GPT, so as to strengthen the prevention and control effect of chronic diseases, reduce the burden of chronic diseases and improve the quality of life of residents.

2 METHODS

2.1 Study Design and Participants

Chinese and English literature, laws and regulations, and policy documents related to chronic disease risk management in general practice teams were searched. A total of 4656 literatures were searched, and irrelevant literatures were excluded. Finally, 279 literatures were included. Two researchers extracted the related projects of chronic disease risk management of general practice team. Based on consulting experts in related fields and community workers, the study constructed a project collection to evaluate the chronic disease risk management ability of general practice team.

Data of the current study (N=278) were collected from a survey on risk management ability of general practice team in Shandong province, China. The random stratified cluster sampling method was applied to select the survey subjects. Three cities of Shandong province and 18 community health service centers were chosen by equal ratio randomly

according to the development of economy and the geographical location. Then, all members of the general practice team were chosen as the survey respondents.

In order to control the information bias and loss, the collaboration institutes research meeting had been held several times to discuss the quality control. Pilot investigation was carried out to test the reliability and validity of the questionnaires. The interviewers were trained in order to increase the skill of interviewer.

2.2 Ethics Approval and Consent for Participate Statement

This study was approved by the Ethics Committee of Weifang Medical University, and written informed consent was obtained from all participants.

2.3 Statistical Analysis

The EpiData 3.1 was used to build a database. SPSS 20.0 and AMOS 24.0 software were used to analyse the data. The mean and standard deviation ($\bar{x} \pm SD$) and frequency (%) were used to describe the distribution of quantitative and qualitative data respectively. The *t* test and ANOVA test were used to compare the difference of risk management ability of chronic between different groups. The multiple linear regression analysis was used to analyse the influencing factors of risk management ability of chronic on general practice team. All analyses were two tailed and statistical significant probability was determined by $P \leq 0.05$. The Multiple Linear Regression Model describes how the dependent variable changes with the changes of multiple independent variables. Partial regression coefficient β indicates the average change of the dependent variable when the independent variable changes by one unit while the other independent variables remain the same. The methods of independent variables entering the equation include forward method, backward method and stepwise regression method. This study used stepwise regression method.

3 RESULTS

3.1 Basic Situation of the Sample

There were 278 eligible residents recruited in the current study and 278 residents actually participated

in. The participation rate was 100%. Basic situation was shown in Table 1.

3.2 The Score of Risk Management Ability of Chronic Disease on GPT

The study integrated health management and risk management. According to the theory of tertiary prevention of chronic diseases, the general practice team's chronic disease risk management ability was divided into three dimensions: chronic disease prevention, chronic disease diagnosis and treatment, chronic disease rehabilitation and nursing. After two rounds of Delphi expert consultation, 24 projects to assess risk management capabilities had been formed. The abilities ranged from 1 to 10 points from low to high, and the scores ranged from 24 to 240 points (Table 2).

3.3 Influencing Factors of Risk Management Ability of Chronic Disease on GPT

3.3.1 Single Factor Analysis

The dependent variable of the study was the risk management ability of chronic disease on general practice team. Independent variables were as follows, gender, age, education level, professional title, training time / 1 month(h), higher refresher course, training effect, working pressure, degree of promotion, Awareness of chronic disease risk management, project service proficiency, satisfaction with one's ability, incentive mechanism and welfare benefits. The factors with statistical differences included training time, higher refresher course, training effect, working pressure, degree of promotion, Awareness of chronic disease risk management, project service proficiency, satisfaction with one's ability, incentive mechanism and welfare benefits (Table 1).

Table 1: Basic situation of general practice team.

Variables	Frequency (%)	Ability score ($\bar{x} \pm SD$)	t/F
Gender			
Male	132(47.48)	174.35±41.45	0.752
Female	146(52.52)	178.74±42.80	
Age (year)			
<25	8(2.88)	169.63±58.89	1.636
25~	76(27.34)	185.68±40.34	
35~	117(42.09)	173.15±39.74	
45~	77(27.34)	173.79±44.99	
Education level			

Variables	Frequency (%)	Ability score ($\bar{x} \pm SD$)	t/F
Technical	36(12.95)	180.06±42.44	0.436
College degree	112(40.29)	178.42±42.85	
>Bachelor	130(46.76)	174.19±41.64	
Professional title			
None	44(15.83)	178.32±43.41	1.809
Primary	123(44.24)	180.58±42.67	
Intermediate	95(34.17)	174.34±41.42	
Senior	16(5.76)	155.59±34.61	
Training time / 1 month(h)			
0	66(28.57)	159.94±39.34	4.985**
<10	110(47.62)	183.82±43.62	
10~	42(17.18)	182.43±41.72	
50~	13(5.63)	179.92±28.24	
Higher Refresher course			
Yes	103(37.05)	187.57±41.49	13.263**
No	175(62.95)	167.63±41.26	
Training effect			
Very good	89(38.53)	186.40±37.66	2.724*
Better	92(39.83)	170.32±42.92	
Common	48(20.77)	170.83±47.86	
None	2(0.87)	159.00±0.00	
Working pressure			
None	7(2.52)	198.86±55.77	4.062**
Low	7(2.52)	206.86±28.02	
Common	87(31.29)	180.63±47.71	
Greater	150(53.96)	176.34±40.41	
Stressful	27(9.71)	176.65±43.02	
Degree of promotion			
Difficulty	249(89.57)	157.26±40.03	12.141**
Easy	29(10.43)	180.50±41.57	
Awareness of chronic disease risk management			
None	4(1.44)	146.00±28.87	7.317**
Common	60(21.58)	160.55±45.89	
Yes	214(76.98)	181.74±39.98	
Project service proficiency			
Dissatisfied	2(0.72)	171.00±0.00	6.455**
Common	55(19.78)	158.80±41.09	
Satisfied	221(79.50)	181.15±41.49	
Satisfaction with one's ability			
Dissatisfied	10(3.60)	182.40±32.55	4.797**
Common	67(24.10)	162.92±43.97	
Satisfied	201(72.30)	180.94±41.13	
Incentive mechanism			
Dissatisfied	45(16.19)	164.49±40.43	5.487**
Common	137(49.28)	173.27±43.24	
Satisfied	96(34.53)	187.19±39.33	
Welfare benefits			
Dissatisfied	63(22.66)	168.10±45.16	4.402*
Common	130(46.76)	173.85±42.71	
Satisfied	85(30.58)	187.29±37.00	

*P < 0.05, **P < 0.01

Table 2: The score of risk management ability.

Dimension/Project	Ability score ($\bar{x} \pm SD$)
Chronic disease prevention	55.88±13.00
Dynamic management of health records	8.19±2.24
Collect patient information	8.17±2.35
Health education	8.04±2.15
Health monitoring	8.54±2.10
Health care guidance	6.96±2.87
Concept guidance for medical treatment	7.77±2.24
Health consultation	8.20±2.20
Chronic diagnosis and treatment	84.52±18.85
Physical examination	8.45±2.13
Disease screening	7.73±2.35
Follow-up	7.48±2.85
Exercise guidance	7.90±2.29
Sleep and rest instruction	7.71±2.49
Behavior guidance	8.47±1.90
Dietary guidance	8.68±1.94
Environmental hygiene guidance	7.57±2.50
Mental health guidance	7.35±2.75
Appointment registration	5.13±2.98
Medication guidance	8.16±2.53
Chronic disease rehabilitation and care	36.26±15.39
Therapeutic evaluation	7.01±2.98
Rehabilitation treatment plan	6.68±3.10
Traditional Chinese medicine rehabilitation	7.38±2.70
Rehabilitation training	6.82±3.09
Hospital bed at a patient's home	4.25±3.83
Remote health monitoring	4.11±2.62

3.3.2 Multivariate Analysis

We used multiple stepwise linear regression analysis for multivariate analysis. The dependent variable of the study was the risk management ability of chronic disease on general practice team. Independent variables were 10 factors with statistical differences by single factor analysis. The inclusion criteria for entering the equation was 0.05, and the exclusion criteria for removing the equation was 0.10.

The F statistic value of multiple regression model was 11.091(P<0.001), which indicated that the model had statistical significance. The collinearity diagnosis resulted that *TOL*>0.8 and *VIF*<1.3. It showed that there was no collinearity problem in this regression equation. The main factors affecting the risk management ability of chronic disease on general practice team included higher refresher

course, degree of promotion, awareness of chronic disease risk management, working pressure and welfare benefits. The estimated values of parameters were shown in Table 3.

Table 3: Multiple stepwise linear regression analysis.

Factors	β	SC	t	TOL	VIF
Constant	98.264		3.971**		
A	18.791	0.221	3.634**	0.903	1.107
B	-29.232	-0.253	-4.182**	0.908	1.101
C	18.854	0.181	3.013**	0.926	1.080
D	-8.758	-0.169	-2.807**	0.920	1.087
E	11.193	0.133	2.130*	0.856	1.168

*P < 0.05, **P < 0.01. SC: Standardization Coefficients

- A- Higher refresher course;
- B- Degree of promotion;
- C- Awareness of chronic disease risk management;
- D- Working pressure;
- E- Welfare benefits.

4 DISCUSSION

In recent years, a series of policy documents on chronic diseases have been published by China, and good policy effects have been achieved. The Medium-and Long-term Plan for Prevention and Treatment of Chronic Diseases in China (2017-2025) was released, and it was proposed that the comprehensive prevention and treatment mechanism of chronic diseases should be improved, which was led by the government, coordinated by departments, mobilized by society and participated by the whole people in January, 2017(The State Council, 2017). "Healthy China Action (2019-2030)" included the prevention and treatment actions of four chronic diseases (cardiovascular and cerebrovascular diseases, cancer, chronic respiratory diseases and diabetes) into the major actions of Healthy China in July 2019(The State Council, 2019). Although the prevention and treatment of chronic diseases in China has made some achievements, the overall mortality rate and death toll of chronic diseases are still at a high level, and the prevention and treatment of chronic diseases still faces important challenges. In particular, the comprehensive prevention and control mechanism of chronic diseases in primary medical and health institutions was not perfect, and chronic disease prevention and control personnel lack information exchange and chronic disease risk management experience. Chronic diseases still bring huge risks to residents. This study combined the concept of health management and risk management

theory, and relied on the theory of tertiary prevention of chronic diseases. It investigated the chronic disease risk management ability of general practice team, and analysed the risk factors that affect it from three dimensions: chronic disease prevention, chronic disease diagnosis and treatment, and chronic disease care and rehabilitation.

The results showed that the GPT's risk management ability of chronic disease prevention level was above the middle level (55.88 ± 13.00 , Score range:7-70). Among them, the ability of health education, health care guidance and concept guidance for medical treatment were low. The possible reasons included the lack of perfect TCM(traditional Chinese medicine) health care policies and regulations for chronic diseases(Wang, 2017), lack of TCM and nursing professionals(Jia, 2020). Besides, Nationally, the rural population occupies only a few health resources, and the graduates of medical colleges and universities who choose township hospitals were rare, and health education and publicity were weak. Some primary medical institutions lack systematic planning for chronic disease risk management, and the publicity and education work was scattered (Nagourney, 2020). The GPT's risk management ability of chronic disease diagnosis and treatment level was above the middle level (84.52 ± 18.85 , Score range:11-110). Among them, the score of disease screening, follow-up, sleep and rest instruction, environmental hygiene guidance, mental health guidance and appointment registration were low. Although the primary medical institutions organized residents' health check-ups every year, follow-up visits every quarter, measure their blood pressure and blood sugar, guide their lifestyle, observe their illness and give medication guidance, the general practice team feedback that their chronic disease diagnosis and treatment ability had not reached a high level. The reason might be that grass-roots job training was not in place, limited to theoretical knowledge training, ignoring the combination of theoretical knowledge and practical skills training, which could not meet the development requirements of chronic disease risk management (Bunschoten, 2019). The GPT's risk management ability of chronic disease rehabilitation and care was the medium low level (36.26 ± 15.39 , Score range:6-60). Among them, the score of therapeutic evaluation, rehabilitation treatment plan and rehabilitation training were low. And the score of hospital bed at a patient's home and Remote health monitoring were very low. At present, the rehabilitation was only limited to exercise, but the rehabilitation of chronic

diseases covering five prescriptions was not really carried out, and muscle exercise and balance training were neglected (Reynolds, 2018). The rehabilitation and home-based rehabilitation led by primary medical institutions have not really landed.

Single factor analysis results showed that the risk factors that affect the chronic disease risk management ability of general practice team included training time, higher refresher course, training effect, working pressure, degree of promotion, Awareness of chronic disease risk management, project service proficiency, satisfaction with one's ability, incentive mechanism and welfare benefits. This was only a preliminary assumption. We further verified these risk factors with multiple stepwise linear regression model. The results showed that the risk factors of entering the regression equation included higher refresher course, degree of promotion, awareness of chronic disease risk management, working pressure and welfare benefits. They were the core factors that affect the general practice team's chronic disease risk management ability. Among them, the degree of promotion and working pressure were negatively correlated with the chronic disease risk management ability of general practice team, that was, the more difficult the promotion of professional title was, the greater the job stress was, the lower the risk management ability was (Rachmawati, 2019). In addition, the awareness of chronic disease risk management, welfare benefits, higher-level study and general practice team's chronic disease risk management ability were positively correlated, that was, the stronger the awareness of chronic disease risk management, the better the welfare benefits, the higher education, the higher the risk management ability (Hadi, 2020).

5 CONCLUSIONS

The risk management ability of the general practice team at the level of chronic disease prevention and chronic disease diagnosis and treatment was at a medium to high level, and the risk management ability of the general practice team at the level of chronic disease rehabilitation and nursing was at a low level in Shandong Province. There were many factors that affect the chronic disease risk management ability of general practice team, the core factors included higher refresher course, degree of promotion, awareness of chronic disease risk management, working pressure and welfare benefits. It is necessary to implement improvement measures

from system level, management level and individual level to optimize the community chronic disease risk management ability of general practice team.

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CONFLICTS OF INTEREST

All authors declare that they do not have any conflict of interest on this research.

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