The Relationship Between the Number of Chronic Diseases and Living Environment Among Dementia Patients

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Abstract
Aim: To understand the Relationship Between the Number of Chronic Diseases and Living Environment Among Dementia Patients. Methods: The study use the Aged Care Service Demand Questionnaire to obtain the subjects' information on activities of daily living, physical health, mental health, and social resources and economic conditions et al.. The current research use Chi-square independence test for analysis. Results: In the current study, 64.95% of the dementia patients suffer from at least one chronic disease, but for those who live at home, only 14.54% of the dementia patients suffer from one and more chronic diseases. There are statistically difference between living at home and institutions in terms of the number of chronic diseases ($P<0.0001$). Conclusion: There are closely relationship between chronic diseases and living environment, the public should realize the dementia patients could combine many chronic diseases at the same time due to their living environment.

Keywords: dementia; living environment; chronic disease

Introduction

A recent report shows that around 9.9 million newly diagnosed dementia patients in year 2015 globally (Wang, 2015). Dementia is a slowly progressive brain disease, which could not be effectively cured at present (Ke & Li, 2014). In the developed countries, dementia has become the fourth-leading cause of death, after heart disease, cancer and stroke. The proportion of people over age 65 with mild dementia is around 10%, with moderate and severe dementia is about 5% (Ke & Li, 2014; Kang et al., 2011; Tang, 1999). In China, the population of dementia is estimated as over 4 million, the consumption of medical expenses is about 20￥ billion in early 1990s due to dementia (Zhao et al., 2007). More than half of the older people dementia needs institutional care. The health expenditure due to dementia is astonishing each year, it brings a heavy burden to the society and family, therefore, it has become an important subject in gerontology research (Tang & Xiang, 2003).

More and more research argue that living environment plays an important role in the dementia patients' disease progress, the specially designed and renovated living environment could bring good effects to dementia patients. Moreover, there is a positive correlation between the incidence rate of dementia and the living environment as well as the social communication (Ke & Li, 2014; Tang & Xing, 2003; Day et al., 2000; Cohen & Weisman, 1991; Bicket et al., 2010; Wu & Meng, 1995). Besides, poor environment could accelerate the speed of dementia patients' disease progress (Reilly et al., 2006; Smith et al., 2004). Usually, the older people develop more than one disease at the same time, the aim of the current is to explore the relationship between the number of chronic diseases and the living environment of dementia old people. Study findings will add to the limited research of this area, and this may make the society to aware the importance of environment for the dementia old people.

Methods

This work used the data of year 2014 from the study which conducted in eight districts in Shanghai city by the Shanghai Health Development Research Center (SHDRC) in 2013 and 2014. The investigated districts includes three central districts and five suburban districts, which were randomly selected.

1. 1 Participants

A total of 19422 older residents were investigated in 2014, participants' age is between 52 to 105 years old, the average age is 84.28. And 1109 of them were diagnosed as dementia by doctor (male 313, female 796), there are 1106 older dementia participants' above 60 years old (include 60 years old). Information on dementia patients' health status were recorded by the investigator. The prevalence rate of dementia is 10.75% in health institutions, 12.60% in nursing homes, 1.83% in community (home residents).

1.2 Investigation methods

The Shanghai Long-Term Care Needs Assessment Questionnaire is an official tool to obtain the information from the older people. The questionnaire includes items refers to activities of daily living (ADL), body health, mental health, cognitive status, physical status, clinical diagnosis and social resources of the older people. The

questionnaire is used as an official tool by the Shanghai Municipal Government to evaluate the demands of long-term care services of the older people in Shanghai.

1.3 Statistical analysis

The Microsoft Excel 2010，SAS version 9.30 and R were used for data analysis. The associations between the number of chronic diseases and living environment of the home living dementia people were analyzed with the Chi-square independence test. Similarly, the relationship between the number of chronic diseases and their living places were analyzed with Chi-square independence test. The independence of variables could detected by Chi-square test. The significance level is 0.05.

Results

2.2 The general characters of dementia people

Table I shows the general information of people who live in Old People's Home, or Nursing home, or live at home. In this investigation, the dementia people mainly living in Old People's Home in every age group, those living at home's dementia old people accounts for the lowest proportion of the whole investigated dementia people. Most of the female dementia old people living at home and Nursing Home, and most of the male dementia old people living at Old People's Home. The age and gender has a statistically significant difference between people who live at home, Old People's Home, and Nursing Home ($P<0.05$).

Table 1 The general characters of dementia older people who live at home, Old People's Home, and Nursing Home

		Home n =209(%)	Old People's Home n=510 (%)	Nursing Home n=351 (%)	*P*-Value
Age（years old）					0.0178
	60~	10(0.93)	26(2.43)	13(1.21)	
	70~	19(1.78)	100(9.35)	59(5.51)	
	80~	118(11.03)	270(25.23)	182(17.01)	
	90~	62(5.79)	114(10.65)	97(9.07)	
Gender					0.0138
	Female	161（15.05）	165（15.42）	262（24.49）	
	Male	48（4.49）	345（32.24）	89（8.32）	

2.3 The analysis of the association between the number of chronic diseases and living environment of the home living dementia people

In the analysis of the number of chronic diseases and living environment of the dementia people, the disease group is categorized as three group, when the number of disease is 0, 1 and ⩾2. In the home environment, the differences between the number of diseases and home environment ('which floor they are living', 'do they have steps in their apartment', 'do they have washroom in their apartment', 'do they have bathing equipment') has no statically difference （$P>0.05$）.

But there are statistically difference between diseases number and the home environment ('do they have steps in their apartment', 'do they have washroom in their apartment', 'do they have bathing equipment') while the diseases is categorized as 0, 1~2, ⩾3（$P<0.05$）.

Table 2 The analysis of the association between the number of chronic diseases and living environment of the home living dementia people (Chi-square test)

	Dementia with other chronic disease (0 kind) n(%)	Dementia with other chronic disease （1kind）n(%)	Dementia with other chronic disease （≥2 kinds）n(%)	*P*-Value
Living environment				0.111
floor=1orwith elevator	33(15.94)	25(12.08)	49(23.67)	
≥2without elevator	19(9.18)	32(15.46)	49(23.67)	
Indoor steps				0.457
with	6(2.9)	5(2.42)	15(7.25)	
without	47(22.71)	52(25.12)	82(39.61)	
Indoor armrest				0.829
with	8(3.85)	11(5.29)	18(8.65)	
without	45(21.63)	46(22.12)	80(38.46)	
Washroom				0.329
dependent	38(18.36)	37(17.87)	59(28.5)	
share	8(3.86)	5(2.42)	16(7.73)	
without	7(3.38)	15(7.25)	22(10.63)	
Bath equipment				0.394
dependent	36(17.39)	37(17.87)	58(28.02)	
share	9(4.35)	5(2.42)	17(8.21)	
without	8(3.86)	15(7.25)	22(10.63)	

2.4 The Relationship Between the Number of Chronic Diseases and Living Environment Among Dementia Patients

The table 3 shows about 64.95% old dementia people has more than one chronic diseases in the institution (Old People's Home and Nursing Home) among the present study. There are only 14.54% old dementia people has more than one chronic diseases in the home environment. The statistically significant difference were found in these three different living environment（P<0.0001）.

Table 3 The relationship between the number of chronic diseases and living environment among dementia patients (Chi-square test)

	Home n (%)	Old People's Home n (%)	Nursing Home n (%)	*P*-Value
Number of chronic disease				<0.0001
0	54(5.03)	112(10.44)	54(5.03)	
1	58(5.41)	122(11.37)	117(10.9)	
≥2	98(9.13)	119(11.09)	339(31.59)	

Discussion

The present study shows that old dementia people living in the institutions, was associated with a higher risk of developing more than one chronic disease compared with those living at home. To our knowledge, it is the very first time that the association between the number of chronic diseases and living environment have been examined. The present study found that the dementia old people mainly living in the Old People's Home, the lowest proportion of dementia old people was found in the home environment.

Our findings raise two main hypotheses. Firstly, the dementia old people might lose their AD,L ability and social ability in their late stage of dementia. The family members tend to sent the dementia patient to the professional institutions due to the course of dementia is quite long and the family member themselves is lack of professional healthcare skills.

Therefore, those living at home is relatively healthier and with less chronic diseases. However, several reports have shown that the majority of the dementia old people can not receive professional healthcare, instead, the family member take care of their dementia family member (Li et al., 2015; Chen, 2015).
Our second hypothesis is, the environment of institution lead to dementia people to develop more chronic diseases. In other words, home environment might be more suitable for dementia old people, although the institution might be more professional. This hypothesis could be an explanation for our research results, which found that dementia people in institution have more than one chronic disease than those live at home environment.

However, further research should disentangle whether the dementia people develop new chronic diseases after they start living in the institution. Several reports shows that there are a close relationship between the clinical symptom and individualized care, the function of dementia patient could progressively deteriorate if without proper intervention (Tang & Xiang, 2003; Jiang et al., 2012).

Conclusion

In conclusion, the prevalence of dementia is rising in recent years, it will become a heavy burden for the society if we do not take action. Lawton believe that environment is a complex, comprehensive constitution, it includes society, psychical, individual and physical environment (Lawton, 1980). The care institution is the living place for old people, there will be no support effect if we only consider the physical environment. Bicket et al. (2010) discovered that good living environment can relieve the nervous system symptoms of dementia patients, in the mean while, could reduce the risk of falls et al. Van Mierlo and his colleague's study (2010) also suggests that more research will bring a better understanding of which welfare and care interventions are effective for specific subgroups of dementia old people.

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