Factor Analysis on the Satisfaction of Elderly--Taking pension institutions, yongchuan area of Chongqing as an example

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Abstract

This paper aimed at investigating the degree of satisfaction of elderly from pension agency in various aspects through integral sampling method in four private pension institutions and four public pension institutions of yongchuan area. SPSS19 has been used for factor analysis according to satisfaction coefficient. By comparison, we can come to a conclusion that there are some differences upon service level between public and private pension agency. It revealed the major factors that have great impact on degree satisfaction and provide the pension institute with proper recommendations.

Keywords

Pension institution, Factor Analysis, Degree Satisfaction.

1. Introduction

Nowadays, the pension issue has been a topic of moment. How to establish better old-age service system has become a subject of public concern. To further understand the current situation of the elderly pension and degree satisfaction with pension institutions,it is pretty important to resolve the deficiency of old-age care institutions.

From the development trend of China's aging population, Deng and Wu [1] analyzed the impact of population aging on China's basic old-age insurance and put forward solutions to the problem. According to the pension Agency's basic situation of Wuhan, Xiang [2] analyzed reasons for staying and relativity between satisfaction in addition to make recommendations. Wu [3] conducted further investigation on elderly in welfare house by using structured interviews and observation into the welfare of the elderly and analyzed the life satisfaction of them, Finally, he got the deficiency of the welfare and need situation of older persons. Cheng[4] managed factor analysis and cluster analysis in obedience with satisfaction factor on residential space and acquired the model of optimizing existing living space, which provided some available references for corresponding agency.

After extensive literature review, the purpose of this paper is to investigate elderly through structured questionnaire based on old-age care institutions of Yongchuan and carry on manual checking as well as logical checking. And finally putting result into SPSS database. Applying SPSS19.0 software packages to descriptive statistics analysis, factor analysis, statistical methods for data analysis, etc.

2. Empirical research

2.1 Acquiring of Sample size

Research data are from questioner survey on elderly residing in part of old-age care institutions of yongchuan in 2015. Issues include: first, the basic information, such as age, personality, marital status; Second, the satisfaction of elderly for old-age care institutions including the service, food, medical services, transportation, facilities, environment, charges and so on; Third, the elder's entertainment habits and whether they are willing to stay at old-age pension institutions. Questionnaire design the question that what is the favorite type of pension in your mind in order to reveal true desire of elderly. In addition, do you usually want to pour their hearts out to others? was also designed in research for unfolding their moral action. Questionnaires involved the normal entertainment place and

entertainment type of older people, which aimed at understanding whether the lives of older people are rich or not. Complete its investigation in this study applied for one oral question-and-answer method by trained researchers and interviewees talking face to face.

Selection criteria for the investigation objects are those elderly who aged 60 or over 60 years old of yongchuan and registered their residence in Chongqing .Cluster sampling method was used to sample in this paper. Sample quantity is based on the aging population distribution of 2015 in yongchuan area of Chongqing: there were about 220,000 old people in yongchuan. The estimated sample number is obtained around 317 under the margin of error is set 5.5% and credibility up to 95% and then distribute samples to 8 pension agencies according to elderly population of all pension institutions in yongchuan, 4 private pension institutions and 4 public pension agencies were included. Table 1 shows the distribution and proportion of sample in yongchuan.

When selecting objects for survey, random sampling method was used based on the different characteristics of pension institutions. The actual participation of survey were 307 with a total margin of error for 5.59% and credibility up to 95% excluded patients with serious mental illness and dementia, slightly less than the expected sample size .Actual statistical margin of error and credibility l were still within the valid range.

Based on questionnaire data obtained, using descriptive statistical methods to identify the demographic characteristics of older persons was the first step. Then, analyzing and extracting the main factors influencing satisfaction of older persons by factor analysis method.

2.2 Basic information

Table 2 shows the respondents' demographic attributes. Among them, the male respondents accounted for 64.50% and female respondents for 35.50%. Respondents in the ages of 60-69 accounted for 24.76% , accounting for 50.81% for 70-79 years of age ,those 80-89 years of age accounted for 22.48% and the remaining 1.95% is 90 years old or older . 35.50% of respondents were single, married but childless 7.49%, 47.88% were married and had children, 9.12% were married without their families. Basically, the vast majority of elderly are talkative, passion energetic, humorous, only a few of them were depressed and did not like sports and communication with other.

Table1 Distribution of samples

area	Sample proportion	Sample size
Yongchuan Gao Jing Hong apartments for the elderly (private)	19.87%	63
Yongchuan Yi Qian Zhuang apartments for the elderly (private)	15.77%	50
Yongchuan District Yongqing elderly nursing home (private)	9.78%	31
Yongchuan elderly happy home (private)	6.31%	20
Yongchuan Satellite Lake Street nursing home (public)	4.73%	15
Yongchuan District, South Street apartments for the elderly (public)	25.87%	82
Yongchuan District Victory Road apartments for the elderly (public)	13.88%	44
Yongchuan District, Zhongshan Street office nursing home (public)	3.79%	12
total	100.00%	317

Table2 Demographic properties of the sample

variable	variable	Percentage (number of samples))	variable	variable	Percentage (number of samples))
gender	male	64.50(198)	character (Multiple choice)	Talkative	28.25(163)
	female	35.50(109)		love sport	18.20(105)
age	60-69years old	24.76(223)		Passion and vitality	15.77(91)
	70-79years old	50.81(156)		Humorous	4.51(26)
	80-89years old	22.48(69)		Calm	8.32(48)

	≥90years old	1.95(6)	Dull melancholy	2.08(12)
	single	35.50(109)	Do not love sports	7.80(45)
marital status	marital status	7.49(23)	Do not love exchange	4.68(27)
	Married and with children	47.88(147)	Other	10.40(60)
	Married without family	9.12(28)		

2.3 Satisfaction Factor Analysis

Firstly, we obtained statistics of KMO was 0.789 and greater than 0.5 through the KMO test and Pap test of hemispherical. The P value spherical Pap test was less than 0.01 .Therefore, it is advisable for nine qualitative variables to have factor analysis . Secondly, extracting five common factors applying for the method of principal component analysis, namely F1, F2, F3, F4, F5. orthogonal rotation the factors with standardized Kaiser to obtain the corresponding rotation matrix component and standardized its coefficients again , scoring matrix of the principal components were obtained as shown in Table 3 and Table4 .

As can be seen from Table 3, the main impact factors for F1 were X9, X10, X11, X13, X14; the main impact factors for F2 was X12; the impact factors for F3 was X15, the main impact factor for F4 was X16, major impact factor for F5 was X17. So extracting the first five eigenvalues and corresponding eigenvalues and establishing regression model of five main components . Regression model of F1 was shown in equation (1).In the same way, we can get F2, F3, F4, F5 regression model.

$$F1=0.353X9+0.306X10+0.159X11-0.173X12+0.456X13+0.321X14+0.007X15-0.172X16+0.028X17 \quad (1)$$

By variance contribution of each factor of five factors accounted for the proportion of total variance contribution rate as a weight -weighted summary , we obtained comprehensive score F of various pension institutions, such as formula(2)

$$F=0.4\,F1+0.18F2+0.16\,F3+0.15\,F3+0.11\,F3 \quad (2)$$

Table 3 rotation matrix composition

factors	rotation matrix composition				
	1	2	3	4	5
X9（living conditions）	0.71	-0.017	0.154	0.249	0.005
X 10（public facilities）	0.64	0.029	-0.169	0.229	-0.022
X 11（personnel's service attitude）	0.534	0.427	0.198	0.277	-0.115
X 12（transportation）	0.036	0.931	-0.081	0.074	0.013
X 13（environmental health）	0.718	0.334	0.159	-0.211	0.029
X14(treatment）	0.602	-0.133	-0.367	0.183	0.141
X 15（medical services）	0.023	-0.055	0.915	0.071	0.027
X 16（food）	0.261	0.109	0.054	0.883	0.034
X 17（overall service）	0.022	-0.003	0.013	0.024	0.989

By the same model, calculating the comprehensive score of each private and public pension institutions and then separate the total score for all private and public institutions. The average comprehensive score would be 0.052118 to 0.0664. We can get overall satisfaction levels higher than public pension agency according to evaluation pension institutions upon the overall satisfaction average comprehensive score. Score of each factor from private pension institutions F1 = -0.021, F2 = 0.247, F3 = 0.066, F4 = 0.089, F5 = -0.055; public pension agency F1 = 0.027, F2 = -0.320, F3 = -0.085, F4 = -0.115, F5 = 0.071, analysis of these factors were obtained : lower satisfaction with

public pension institutions exists mainly in transportation, health care and diet . The main reason of private pension institutions lies in living conditions , public facilities, staff attitude , sanitation and fees criterion.

Table 4 score coefficient matrix table

factors	score coefficient matrix table				
	1	2	3	4	5
X9（living conditions）	0.353	-0.162	0.136	0.035	-0.023
X 10（public facilities）	0.306	-0.095	-0.162	0.052	-0.052
X 11（personnel's service attitude）	0.159	0.268	0.152	0.11	-0.111
X 12（transportation）	-0.173	0.848	-0.115	0.033	0.059
X 13（environmental health）	0.456	0.183	0.151	-0.528	0.033
X14(treatment）	0.321	-0.217	-0.331	0.025	0.098
X 15（medical services）	0.007	-0.093	0.837	0.029	0.043
X 16（food）	-0.172	0.01	0.002	0.939	0.007
X 17（overall service）	-0.028	0.046	0.035	-0.008	0.98

3. Conclusion and Recommendation

From the external environment, the main problem of public pension agency is inconvenient transportation, the private pension institutions are living conditions, public facilities and sanitation are not satisfied; From Internal environment, the main problem is that private pension institutions staff attitude and service charges are not satisfied and public pension institutions catering and medical services are not satisfied. In a word, however, overall satisfaction levels for private institutions is higher than public.

Aim at the above problem, we offer the following suggestions. Firstly, establishing and improving the perfect medical service system .checking the body of the elderly regularly and making the corresponding record of physical condition of the elderly. Secondly, Creating a better hardware facilities and equipment, such as the construction of better roads, better housing and purchasing some basic living supplies for elderly people. Thirdly, strengthening education and training of staff in order to improve their professional level of service. Fourthly, organizing more recreational activities to enhance communication among the elderly.

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