

Original Article

Investigation of the health status and life satisfaction of the elderly in pension institutions and analysis of their influential factors

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Abstract: Objective: To investigate the health status and life satisfaction of the elderly in pension institutions in central region of China and analyze their influential factors. Methods: The designed questionnaires of the survey on health status and life satisfaction of the elderly in pension institutions were applied to investigate the health status and life satisfaction of the elderly above 60 years old in 100 pension institutions in central region of China. And among them, 659 elderly were randomly selected. Logistic regression analysis and multiple-stepwise regression analysis were adopted to analyze the influential factors of health status and life satisfaction respectively. Results: More than half elderly in pension institutions in central region of China reckoned that they were in good health status. And above 60% were satisfied with their lives. Compared to the elderly in poor health status, those in good health status had a low proportion of negative emotions and were more satisfied with their lives. The result of Logistic regression analysis indicated that there were 6 influential factors of health status of the elderly: medicine taking ($P = 0.0000$), alcohol drinking ($P = 0.0011$), chronic disease such as heart disease ($P = 0.0000$), cerebrovascular disease ($P = 0.0000$), etc. heavy manual labor ($P = 0.0000$), appropriate activities ($P = 0.0000$), and happiness ($P = 0.0000$). Besides, the result of multiple-stepwise regression analysis implied that the factors, such as poor health status, bad marital status (unmarried, widowed or divorced) and bad services of pension institutions, were related to the descent of life satisfaction. Conclusion: The self-rated health status of the elderly is affected by chronic disease, life quality and mental health state. And the health status is the main influential factor of their life satisfaction.

Keywords: The elderly, health status, life satisfaction, influential factor

Introduction

Affected by several great social changes, like economic development, social transformation and demographic transition, population aging is an inexorable trend of the social development of China and will gradually soar in several decades of future [1]. For typical population aging characterized by the phenomenon of getting old before getting rich [2] and empty nesters [3] in China, the elderly's care relied on pension institutions has become an indispensable part and foundation to face the development of population aging in the severe social background, whose status, value and proportion all increase in social service system for the elderly. However, as a vulnerable group [4], the elderly's

health status and life satisfaction are easily ignored [5]. How to improve these of the elderly in pension institutions has become an extensively concerned social topic. For this, we investigate the health status and life satisfaction of the elderly in pension institutions in central region of China and analyze their influential factors in this study, to provide a reference for improving the health status and life satisfaction of the elderly in pension institutions.

Materials and methods

Investigated subjects

The elderly living in pension institutions in central region of China willing to join this investiga-

Health status and life satisfaction of the elderly and analysis of their influential factors

Table 1. The elderly's general information in pension institutions in central region of China, n (%)

Item	Number of people (n)	Percentage (%)
Age (Years old)		
60-70	80	12.14
70-80	216	32.78
Above 80	363	55.08
Gender		
Male	279	42.34
Female	380	57.66
Marital status		
Unmarried	36	5.46
Married	165	25.04
Widowed	440	66.77
Divorced	18	2.73
Educational status		
Illiteracy	263	39.91
Primary education at least	396	60.09
Offspring		
Yes	600	91.05
No	59	8.95
Occupation before retirement		
Officer	184	27.92
Enterprise staff	79	11.99
Farmer	192	29.14
Worker	142	21.55
Self-employed	30	4.55
Others	32	4.86
Major income sources		
Pension	364	55.24
Personal savings	64	9.71
Supported by offspring	165	25.04
Government relief	58	8.80
Others	8	1.21
Tumbling last year		
Yes	189	28.68
No	470	71.32
Medicine taking		
Yes	483	73.29
No	176	26.71
Alcohol drinking		
Yes	54	8.19
No	605	91.81
Smoking		
Yes	93	14.11
No	566	85.89
Medicare types		
Urban workers	239	36.27
Urban medical insurance	191	28.98
New Rural Cooperative Medical Scheme (NRCMS)	160	24.28
Others	69	10.47

tion were chosen to be the investigated subjects. According to the definition in Law of the People's Republic of China on the Protection of the Rights and Interests of the Elderly, the elderly aged 60 years old or above were selected. The investigated elderly could express themselves clearly, communicate and cooperate with the investigators effectively. Who was unable to complete the questionnaire because of terminal Alzheimer's disease, mental disorders or other reasons should be excluded. In this investigation, 875 questionnaires were distributed to 100 pension institutions. With 834 valid questionnaires, the effective respondent rate was 95.3%. The questionnaires of some elderly who failed to answer questions effectively or complete the questionnaire, were regarded as invalid questionnaires. And 659 investigated elderly were chosen among the respondents who provided valid questionnaires.

Investigation and analytic methods

The designed questionnaires on health status and life satisfaction of the elderly in pension institutions were distributed to the pension institutions by uniformly trained investigators. They also investigated the elderly in these pension institutions and completed the forms. The questionnaire contents included the elderly's basic information, chronic disease, quality of life [6, 7], self-rated health status

Table 2. Results of self-rated health status

Self-rated health status	Number of people (n)	Percentage (%)
Excellent	16	2.43
Very good	102	15.48
Good	212	32.17
Fair	252	38.24
Poor	77	11.68

[8-10], activities of daily living, life satisfaction [11], service conditions of pension institutions and some other related questions. And among them, the investigated basic information was mainly composed of age, gender, marital status, educational status, offspring, occupation before retired, major income sources, tumbling last year, medicine taking, alcohol drinking, smoking and Medicare types. Chronic diseases mainly covered hypertension, heart disease, cerebrovascular disease, diabetes, gastroenteritis, rheumatoid arthritis, herniated disc, chronic obstructive pulmonary disease, gallstones cholecystitis, etc. Quality of life consisted of 9 parts: heavy manual labor, appropriate activities, lifting household goods, going up the stairs, bending, kneeling down, squatting, walking 1,500 m and washing and dressing themselves. The self-rated health status of the elderly were divided into 5 grades: excellent, very good, good, not bad and bad. The conditions of mental health included 5 parts: depression, exhaustion, fatigue, energy and happiness. And activities of daily living [12] included 6 parts: eating, shower, primping, defecating, urinating and dressing. The elderly's life satisfaction was divided into 5 grades and marked positive scores: very satisfied (5 scores), satisfied (4), fair (3), unsatisfied (2) and very unsatisfied (1).

In this thesis, the elderly's positive self-rated health status (excellent, very good, good) and negative self-rated health statuses (not bad, bad) were set as target variables, and were analyzed by one-way ANOVA from three aspects: chronic disease, life quality and mental health. Then among all the single factors, $P < 0.05$ was selected for Logistic regression analysis.

The independent variables of this investigation were 16 factors in 5 items: basic information of respondents, self-rated health status, quality of life (regarded as bad if any 2 items in 9 were

restricted), personal activities of daily living (regarded as bad if any of 6 items was completed difficultly or restricted) and service conditions of pension institutions. And the life satisfaction was analyzed by multiple-stepwise regression analysis.

Statistical methods

SPSS19.0 was applied to enter and analyze the data. Then descriptive analysis, one-way ANOVA, chi-square test, multiple-stepwise regression analysis and Logistic regression analysis were used to analyze the data. The difference was regarded as statistically significant if $P < 0.05$.

Results

General information

The basic features of general information of the elderly in pension institutions in the investigated area were analyzed, see **Table 1**. A large proportion of the respondents (55.08%) were above 80 years old, 57.66% of whom were female and 42.33% were male. The widowed accounted for 66.77%; 60% of the respondents received elementary education at least; above 90% had offspring; 55.24% depended on the pension; 73.29% were taking medicine.

Health status

According to the self-rated health status survey, the self-rated health status was described as excellent, very good, good, fair and poor, the respective proportion of the different status was 2.43%, 15.48%, 32.17%, 38.24%, 11.68%, good health status (excellent, very good and good) of which was 50.08%, and poor health status (fair and poor) was 49.92%, indicating that the elderly in good or poor health status accounted for nearly half respectively. See **Table 2**.

The relationship between the health status and the prevalence of chronic diseases of the elderly in pension institutions

The prevalence of chronic diseases of the elderly in the pension institutions were counted, and the case rate of hypertension, heart disease and cerebrovascular disease were the top three. Heart disease ($P = 0.0000$), cerebro-

Table 3. Relationship between self-rated health status and chronic diseases

Variable	Good health status		Poor health status		χ^2	P
	N	%	N	%		
Hypertension					0.2486	0.6180
Yes	149	45.02	154	46.95		
No	182	54.98	174	53.05		
Heart disease					20.4767	0.0000
Yes	37	11.18	81	24.70		
No	294	88.82	247	75.30		
Cerebrovascular disease					29.7811	0.0000
Yes	32	9.67	85	25.91		
No	299	90.33	243	74.09		
Diabetes					0.2863	0.5926
Yes	35	10.57	39	11.89		
No	296	89.43	289	88.11		
Gastroenteritis					4.2168	0.0400
Yes	23	6.95	38	11.59		
No	308	93.05	290	88.41		
Rheumatoid arthritis					7.3515	0.0067
Yes	18	5.44	37	11.28		
No	313	94.56	291	88.72		
Herniated disc					1.7063	0.1915
Yes	17	5.14	25	7.62		
No	314	94.86	303	92.38		
Chronic obstructive pulmonary disease					3.7307	0.0534
Yes	5	1.51	13	3.96		
No	326	98.49	315	96.04		
Gallstones cholecystitis					4.5953	0.0321
Yes	2	0.60	9	2.74		
No	329	99.40	319	97.26		
Others					0.0012	0.9729
Yes	71	21.45	70	21.34		
No	260	78.55	258	78.66		

vascular disease (P = 0.0000), gastroenteritis (P = 0.0400), rheumatoid arthritis (P = 0.0067) and gallstones cholecystitis (P = 0.0321) demonstrated the relationship between chronic diseases and health status was statistically significant. See **Table 3**.

The relationship between self-rated health status and quality of life

The results showed that the quality of life of the elderly was expressed as P = 0.0000 in heavy manual labor, appropriate activities, lifting household goods, going up the stairs, kneeling down, squatting, walking 1,500 meters and washing and dressing themselves, reaching statistically significant. See **Table 4**.

The main manifestations of the mental health status of the elderly in pension institutions

Mental health status is an important part of the physical and mental health of the elderly. As shown in **Table 5**, the results reflected the mental health status of the elderly. More than 95% of the elderly often felt energetic and happy, more than half sometimes felt depressed and exhausted. Compared to the elderly in good health status, those in poor health status had a higher proportion of some negative emotions such as depression, exhaustion, fatigue, etc. Depression, exhaustion, fatigue and happiness (P<0.05) had statistically significance in the elderly in good or poor health status.

Health status and life satisfaction of the elderly and analysis of their influential factors

Table 4. Analysis of the relationship between health status and quality of life in pension institutions

Variable	Good health status		Poor health status		χ^2	P
	N	%	N	%		
Heavy manual labor					34.9666	0.0000
Much restricted	185	55.90	249	75.915		
Little restricted	109	32.93	70	21.341		
Unrestricted	37	11.17	9	2.744		
Appropriate activities					41.4786	0.0000
Much restricted	68	20.54	126	38.415		
Little restricted	100	30.22	115	35.061		
Unrestricted	163	49.24	87	26.524		
Lifting household goods					32.6174	0.0000
Much restricted	49	14.80	99	30.183		
Little restricted	81	24.47	97	29.573		
Unrestricted	201	60.73	132	40.244		
Going up the multi-storey stairs					47.4564	0.0000
Much restricted	106	32.02	176	53.66		
Little restricted	97	29.31	98	29.88		
Unrestricted	128	38.67	54	16.46		
Bending, kneeling down, squatting					58.4818	0.0000
Much restricted	52	15.71	132	40.24		
Little restricted	84	25.38	86	26.22		
Unrestricted	195	58.91	110	33.54		
Walking 1,500 meters					54.2192	0.0000
Much restricted	114	34.44	198	60.37		
Little restricted	88	26.59	76	23.17		
Unrestricted	129	38.97	54	16.46		
Washing and dressing themselves					24.9673	0.0000
Much restricted	25	7.55	52	15.85		
Little restricted	51	15.41	82	25		
Unrestricted	255	77.04	194	59.15		

Table 5. The main manifestations of mental health of the elderly

Expression of mental health	Good health status		Poor health status		P
	N	%	N	%	
Depression					0.0025
Yes	247	74.62	276	84.15	
No	84	25.38	52	15.85	
Exhaustion					0.001
Yes	250	75.53	281	85.67	
No	81	24.47	47	14.33	
Fatigue					0.0087
Yes	261	78.85	284	86.59	
No	70	21.15	44	13.41	
Energy					0.0730
Yes	322	97.28	310	94.51	
No	9	2.72	18	5.49	
Happiness					0.0008
Yes	327	98.79	308	93.90	
No	4	1.21	20	6.10	

Logistic regression analysis of the influential factors of health status of the elderly in pension institutions

To investigate the independent influential factors of health, the logistic regression analysis was used to analyze the general information, chronic diseases, quality of life and mental health. $P < 0.05$ was considered as the independent variable, and health status of the elderly as the dependent variable, see **Table 6**. In general information, medicine taking, alcohol drinking and some variables of chronic diseases were entered in the regression equation. The effects of heavy manual labor in quality of life and happiness in mental health on health status were particularly significant. As shown in **Table 6**, by con-

Table 6. Logistic regression analysis results of the influential factors of the elderly's health status

Variable		Regression coefficients	Wald value	Ratio (OR)	P	95% of CI
General information						
Medicine taking	Yes	0.670	93.5	1.96	0.0000	1.7060~2.2391
Alcohol drinking	Yes	1.069	332.1	2.91	0.0011	2.5972~3.2691
Chronic diseases						
Heart disease	Yes	0.320	46.7	1.25	0.0000	1.1304~1.7213
Cerebrovascular disease	Yes	0.274	35.8	1.16	0.0000	1.0709~1.6842
Gastroenteritis	Yes	0.189	33.5	1.09	0.0416	1.0887~1.5213
Rheumatoid arthritis	Yes	0.064	10.8	1.56	0.0067	1.2368~1.9501
Gallstones cholecystitis	Yes	0.055	42.5	1.05	0.0337	1.0258~1.7946
Quality of life						
Heavy manual labor	Restricted	1.872	455.2	2.45	0.0000	2.3079~3.0655
Appropriate activities	Restricted	1.024	96.8	1.09	0.0000	1.0033~1.8201
Lifting household goods	Restricted	0.092	10.6	1.12	0.0000	1.0229~1.2368
Going up the multi-storey stairs	Restricted	1.548	398.5	1.56	0.0000	1.4703~2.6102
Bending, kneeling down, squatting	Restricted	0.430	44.7	1.75	0.0000	1.0805~1.7856
Walking 1,500 meters	Restricted	1.216	278.0	1.70	0.0000	1.0893~1.7523
Washing and dressing themselves	Restricted	0.045	13.8	1.26	0.0000	1.2258~1.3946
Mental health						
Happiness	Yes	-1.6559	412.8	1.78	0.0000	1.0545~2.8675
	Constant term	-6.965	603.4	0.03	0.0003	

trast with the negative side of the variables or the unrestricted, there were several risk factors affecting the health status, such as medicine taking, alcohol drinking, chronic diseases, restricted heavy manual labor and appropriate activities, and unhappiness.

Life satisfaction of the elderly

Life satisfaction refers to the degree of subjective satisfaction that occurs when the individual's needs and aspirations are met. Life satisfaction of the elderly reflects their health from the side. In order to fully understand the satisfaction of the elderly's quality of life in pension institutions in the region, self-rated life satisfaction of the elderly in different health status was recorded and investigated, and the main performances of their current life satisfaction were analyzed. In addition, the influential factors were analyzed as follows.

The main performances of self-rated life satisfaction

The main performances of self-rated life satisfaction are shown in **Table 7**. More than 60% of the elderly reckoned their lives now were very good (64.19%), very interesting (60.70%), no need to change (77.54%); they were hard for

the most of time and finally could relax (67.37%), enjoyed the moment of life (67.98%), still needed to maintain good manners (61.61%). Over 55% felt happy (59.03%), in addition, nearly 50% thought they were as happy as young people, and engaged in many interesting activities. From the life satisfaction, it was found that the elderly in good health were more likely to be satisfied with the current life than those in poor health status. Except satisfied with the life, no need to change and need to maintain good manners, the other performances of life satisfaction had remarkably statistical significance.

Analysis of influential factors of the elderly's life satisfaction

Influential factors of the elderly's life satisfaction in pension institutions were analyzed by multiple-stepwise regression analysis and assignment of each independent variable is shown in **Tables 8** and **9**. Among all factors, marital status (X3), occupation before retirement (X6), major income sources (X7) and Medicare types (X12) were multi-class variables. For an exact reflection of the relationship between these factors and life satisfaction, these factors were assigned as dummy variables.

Health status and life satisfaction of the elderly and analysis of their influential factors

Table 7. The main performances of the elderly's life satisfaction

The main performances of life satisfaction	Good health status		Poor health status		χ^2	P
	N	%	N	%		
Life is very good now					18.5957	0.0000
Yes	239	72.21	184	56.10		
No	92	27.79	144	43.90		
I am as happy as my youth					12.5733	0.0004
Yes	187	56.50	140	42.68		
No	144	43.50	188	57.32		
I am hard most time in my life, and finally can relax					17.2442	0.0000
Yes	248	74.92	196	59.76		
No	83	25.08	132	40.24		
Engaged in many interesting activities					10.4662	0.0012
Yes	184	55.59	141	42.99		
No	147	44.41	187	57.01		
Enjoy the moment of life now					20.2996	0.0000
Yes	252	76.13	196	59.76		
No	79	23.87	132	40.24		
Satisfied with the present life, no need to change					3.2547	0.0712
Yes	247	74.62	264	80.49		
No	84	25.38	64	19.51		
Life is very interesting now					21.5312	0.0000
Yes	230	69.49	170	51.83		
No	101	30.51	158	48.17		
I am a happy person					15.2064	0.0000
Yes	220	66.47	169	51.52		
No	111	33.53	159	48.48		
Maintain good manners					0.3952	0.5296
Yes	200	60.42	206	62.80		
No	131	39.58	122	37.20		

Table 8. Assignment of influential factors of the elderly's life satisfaction in pension institutions

Independent variable	Assignment
Age (X1)	0 = 60~70, 1 = 70~80, 2 = Above 80
Gender (X2)	1 = Male, 0 = Female
Marital status (X3)	Dummy variable assignment
Educational status (X4)	1 = Illiteracy, 0 = Primary education at least
Offspring (X5)	1 = Yes, 0 = No
Occupation before retirement (X6)	Dummy variable assignment
Major income sources (X7)	Dummy variable assignment
Tumbling last year (X8)	1 = Yes, 0 = No
Medicine Taking (X9)	1 = Yes, 0 = No
Alcohol drinking (X10)	1 = Yes, 0 = No
Smoking (X11)	1 = Yes, 0 = No
Medicare types (X12)	Dummy variable assignment
Health status (X13)	1 = Good, 0 = Bad
Quality of life (X14)	1 = Good, 0 = Bad
Activities of daily living (X15)	1 = Yes, 0 = No
Service status of pension institutions (X16)	1 = Good, 0 = Bad

Table 9. Dummy variable assignment of influential factors of the elderly's life satisfaction in pension institutions

Variable	Assignment				
Marital status	X3 ₁	X3 ₂	X3 ₃		
Married (for reference only)	0	0	0		
Unmarried	1	0	0		
Divorced	0	1	0		
Widowed	0	0	1		
Occupation before retirement	X6 ₁	X6 ₂	X6 ₃	X6 ₄	X6 ₅
Officer (for reference only)	0	0	0	0	0
Enterprise staff	1	0	0	0	0
Farmer	0	1	0	0	0
Worker	0	0	1	0	0
Self-employed	0	0	0	1	0
Others	0	0	0	0	1
Major income sources	X7 ₁	X7 ₂	X7 ₃	X7 ₄	
Pension (for reference only)	0	0	0	0	
Personal savings	1	0	0	0	
Supported by offspring	0	1	0	0	
Government relief	0	0	1	0	
Others	0	0	0	1	
Medicare types	X12 ₁	X12 ₂	X12 ₃		
Urban workers (for reference only)	0	0	0		
Urban medical insurance	1	0	0		
New Rural Cooperative Medical Scheme (NRCMS)	0	1	0		
Others	0	0	1		

Except the independent variables ($P > 0.05$), 5 main influential factors ($P = 0.05$) were selected to enter in regression equation among all these independent variables. They were marital status (X3), smoking (X11), health status (X13), activities of daily living (X15) and service status of pension institutions (X16).

After assigned, the analytic result is shown in **Table 10**.

On the basis of the analytic result in **Table 10**, the regression equation was got as follows. The score of life satisfaction (M) = $8.157 + 0.534X_{3_1} - 1.836X_{3_2} - 2.078X_{3_3} + 0.532X_{11} + 2.126X_{13} + 1.207X_{15} + 0.865X_{16}$. Standard regression coefficients of variables in **Table 10**, shows the main influential factors of life satisfaction are health status (X13), marital status (X3₂ and X3₃), activities of daily living (X15), service status of the pension institutions (X16) and smoking (X11) in order.

Discussion

With the rapid development of population aging, the supporting problem becomes a concern over the international community.

Chronic diseases is the first problem for pension institutions in this area to solve health status of the elderly; chronic diseases as well as the health of the elderly are the concerns in other relevant researches [13-17]. In this research, we found the elderly had a high proportion of chronic diseases; the highest reached 45.98%, among which, hypertension, heart disease and cerebrovascular disease were the commonest. Heart disease, cerebrovascular disease, rheumatoid arthritis and gallstones cholecystitis had statistically significant differences. Compared with the elderly in poor health status, the prevalence rates of these chronic diseases were twice to four times as high as those in good health status. What was more, many chronic diseases were entered in Logistic regression equation. And it was found that health status was a key influential factor to life satisfaction

by multiple-stepwise regression analysis. Therefore, pension institutions need to focus on the elderly's prevention and therapy about chronic diseases, strengthen their health education, make early preparations for prevention, and improve their life quality and life satisfaction.

Pension institutions should improve the life quality and self-value of elderly people. This research analyzed the life quality of elderly people in pension institutions, especially for heavy manual labor, appropriate activities, etc. Over 90% of elderly people felt much restricted to heavy manual labor, but little or unrestricted to appropriate activities asked in the questionnaire. Whereas pension institutions should lay emphasis on improving the elderly's viability and sense of presence. The Logistic regression analysis further illustrated the comprehensive influential factors and their relative importance to health status of elderly people. Thereinto

Table 10. Analysis of main influential factors of the elderly's life satisfaction in pension institutions

Selected independent variable	Regression coefficient	Standard error	Standard regression coefficient	T	P
Marital status (X3 ₁)	0.534	0.416	0.156	2.015	0.0000
Marital status (X3 ₂)	-1.836	0.322	-0.207	-5.712	0.0000
Marital status (X3 ₃)	-2.078	0.489	-0.196	-5.860	0.0000
Smoking (X11)	0.532	0.384	0.221	4.564	0.0000
Health status (X13)	2.126	0.223	0.417	6.445	0.0004
Activities of daily living (X15)	1.207	0.375	0.346	3.426	0.0013
Service status of pension institutions (X16)	0.865	0.296	0.206	2.983	0.0000

alcohol drinking, heavy manual labor and happiness had obvious significance, indicating the health status of elderly people was closely related to the quality of their life, which was also mentioned in other relevant research [18-20].

Pension institutions should pay attention to psychological health of elderly people, too. After they stayed at pension institutions, the changes of living environment, physical function and the transformation of social role would make differences to both physical and psychological health of them [21-23]. This research showed the occasion that elderly people who never felt depressed or exhausted was only about 20% in pension institutions, which was a low percentage compared with others. Therefore, pension institutions should enrich psychological cultural life and promote communications of elderly people in case of their poor psychological health.

Most of the results showed elderly people in pension institutions had high life satisfaction. The multi-factor regression analysis about life satisfaction of elderly people in pension institutions demonstrated that marital status, health status, activities of daily living and service status of pension institutions were the important variables in the regression equation. Meanwhile, this research found life satisfaction was closely related to health status of elderly people, which was consistent with relevant research results [24].

In conclusion, this research investigates the health status and life satisfaction of the elderly in one hundred pension institutions in central region of China, finding that over half have good self-rated health status and more than 60% are satisfied with their lives. The analysis indicates the main influential factors of their health sta-

tus are heavy manual labor and happiness; the main influential factors of life satisfaction are their health status, marital status and so on. The results revealed there are many factors which can influence the health status and life satisfaction of elderly people, and some of the factors affect each other. As a result, pension institutions should pay attention to those influential factors and find the root cause to improve the health status and life satisfaction of elderly people. This investigation will provide pension institutions with powerful technical evidence to completely implement and improve the physical and psychological health, enhance the life satisfaction of elderly people and perfect the policies about service status of pension institutions. However, our research doesn't investigate all pension institutions in central region of China due to time limitation, and we will make more comprehensive analysis next time.

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None.

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